CHAPTER 9

The simple emerging from the complex

Nominal number in Juba Arabic creole

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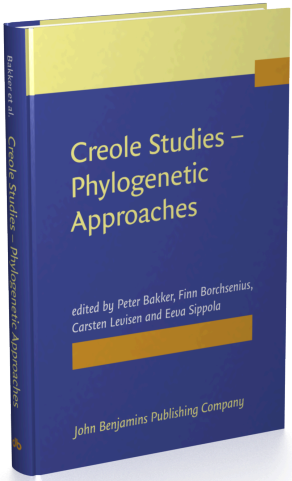

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CHAPTER 9

The simple emerging from the complex
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This chapter examines the system of nominal number in Juba Arabic. Its complexity is compared with its superstrate language, Sudanese Arabic, and its substrate, the Nilotic language Bari. It also compares its similarity with a number of creoles, Nilotic languages and Arabic dialects. Both Arabic and Nilotic languages are notorious for their complex systems of nominal number, making Juba Arabic an interesting case for the study of creole complexity. Following Bakker et al. (2011), I use computational phylogenetic tools to look at the linguistic similarity of the languages under examination. The findings show that Juba Arabic is simpler than its constrates, and that it is more similar to unrelated creoles than the languages from which it emerged.

9.1 Introduction

One of the major debates within the study of creole languages has been that of 'creole exceptionality'. Some creolists claim that the notion 'creole' is merely a sociohistorical term, arguing that the emergence of a creole language is a process of gradual development like any other process of language change (Mufwene 2000, 2001, 2008; Aboh 2009; Ansaldo et al. 2007). Others claim that creole languages are distinct from non-creole languages with regards to grammatical structure and complexity due to them having emerged through a process of pidginization (McWhorter 1998, 2001, 2011; Parkvall 2008; Parkvall & Goyette forthcoming).

The results of recent large scale empirical studies using computational phylogenetic tools (Bakker et al. 2011; Daval-Markussen 2013; Daval-markussen, Bøegh & Bakker this volume) all seem to support the view that creoles constitute a typologically distinct group of languages. These studies have all been based on mass comparisons of grammatical features from typological databases such as WALS (Haspelmath et al. 2005) and APiCS (Michaelis et al. 2013), covering morphology and syntax, and to a lesser extent phonology. The present study uses some of the same tools to closely examine one particularly interesting part of the

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grammar, focusing on just one language, i.e. Juba Arabic, the Arabic pidgincreole spoken today in South Sudan.

The feature that this study focuses on is the system of nominal number in Juba Arabic and its relation to Arabic as well as a sample of languages from the Nilotic language family. Both the Arabic lexifier and Bari, the Nilotic substrate of Juba Arabic, are notorious for the complexity of their systems of nominal number (Dimmendaal 2002: 219; Neme & Laporte 2013). Therefore, it is particularly interesting to examine what happens in this part of the grammar in the languages that emerged from the linguistic contact between the two; especially taking into account McWhorter's (2001) claim that "creole grammars are the world's simplest grammars."

Section 2 presents the two theories of creole development tested in this study. Section 3 contains the methodological preliminaries, giving an account of the phylogenetic tools used in this study as well as the methods of sampling and data collection. Section 4 contains an analysis of the linguistic data. Section 5 presents the results of the analysis and a discussion of the related findings. Section 6 discusses the theoretical implications of the findings and proposes a number of questions for further research. Finally, Section 7 concludes the study.

9.2 Theoretical preliminaries

Up until this day, there is little agreement among linguists on the definition of what constitutes a creole language and whether or not they make up a distinct typological group. A creole language is usually defined as a language that came into existence at a specific point in time in a situation of contact between groups that did not share a common language. These contact languages often have most of their lexicon from the language whose speakers were in a position of relative power over the other group(s) in the contact situation. This language will be referred to as the lexifier or the superstrate language. The lexifier is often the language of the colonial nations, whose influence spread with colonialist expansion. The language(s) spoken by the non-dominant group will be referred to as the substrate. In the case of Juba Arabic, the lexifier is Arabic and the substrate is the Nilotic language Bari. The term constrate will be used to when both lexifier and substrates are referred to. The role of the substrate and lexifier in the emergence of creoles and the typological status of these languages are still major issues of debate (Muysken & Smith 1994, 2015; Michaelis 2008, Bakker & Daval-Markussen 2014).

The typological status of creoles and the effects of the sociohistorical and cognitive processes involved in the emergence of creoles is a major topic of debate within the field of creole studies. Theoretically, this study focuses on two opposed theories on the typological profile and genesis of creoles: the feature pool hypothesis and the theory of creole distinctiveness.

9.2.1 The Feature Pool Hypothesis

Mufwene (2000) argues that creolization merely is a sociohistorical process. The processes of linguistic change in creolization are no different from the ones going on in language change in general. All changes in languages are explained as the result of competition between features found in different idiolects, dialects or languages, and in a situation of language contact the pool of competing features becomes larger and the competition more complex, but the basic mechanisms of selection are the same (Mufwene 2001: 6). Creoles are therefore not entirely new languages but merely seen as some of the latest languages or dialects to emerge within the family of their respective lexifier language (Mufwene 2008: 48). Aboh (2009, 2015), following the work of Mufwene, argues that no process of simplification occurs in the area of morphosyntax in creolization and that the notion of simplicity is irrelevant to understanding creole structure and genesis. Due to the larger pool of features, it would, on the contrary, be expected, that the languages are more complex and show a larger variety of structures.

The Feature Pool Hypothesis is testable as pointed out and demonstrated in McWhorter (2012: 175), i.e. features found in both the lexifier and the substrates should also exist in the creole, and features found in neither should not be present in the creole. Creole languages would then be expected to be part of the same language family as the lexifier, though with some influence from the substrate being present. McWhorter does not believe these statements about the creoles to be true and therefore considers the Feature Pool Hypothesis to be falsified.

9.2.2 Creole distinctiveness

Contrary to those advocating the Feature Pool Hypothesis, some creolists argue that creoles form a typologically distinct group. One of the first attempts to present a set of features that would separate all creoles from non-creole languages was undertaken by McWhorter (1998, revised in 2011). He claims that three features suffice to distinguish creoles from non-creoles: one phonological regarding tone, one semantic regarding derivation, and one morphosyntactic regarding inflection. Regarding morphosyntax he proposes that creoles have:

> little or no inflectional affixation, and among unbound inflectional markers, none of contextual inflection, or of inherent inflection (cf. Booij 1993 red.) of the paradigmatically complex sort. (McWhorter 2011: 111)

McWhorter (2001) makes another claim regarding creole distinctiveness, namely that *the world's simplest grammars are creole grammars*. The claim that a typology of creoles could be based on a measure of simplicity was examined in a large-scale quantitative analysis by Parkvall (2008) and Parkvall & Goyette (forthcoming),

which confirms McWhorter's statement that creole grammars are simpler than those of non-creoles. Studies of the typological status of creoles using mass comparison of large quantities of grammatical data powered by computational methods suggest that creoles form a typological group of languages, distinct from non-creoles methods (Bakker et al. 2011; Daval-Markussen 2013).

These studies all suggest that creoles form a distinctive group due to the sociohistorical context leading to the emergence of the creoles. Creolists such as McWhorter (2001) and Parkvall and Goyette (forthcoming) claim that it must have been due to the creoles' past status as pidgins, whereas Bakker et al. (2011: 36) explain it more broadly as an effect of the rapid creation of a new language for means of communication between individuals without a common language. Bakker (2014: 445) points out that the loss of grammatical categories is not the only process happening in creolization. Rather, the reconstitution of lost grammatical distinctions through grammaticalization plays a major role in making creoles typologically distinctive.

9.2.3 Hypotheses

Based on the above-mentioned theories it should be possible to form two sets of hypotheses that can be tested using data from the languages under examination; one following the Feature Pool Hypothesis, and one following the Creole Distinctiveness Hypothesis.

1. following the Feature Pool Hypothesis, one would expect: (a) all features found in Juba Arabic to also be found in one of its constrates; (b) all features found in both constrates to be present in Juba Arabic; (c) all features absent in both constrates to also be absent in Juba Arabic; (d) Juba Arabic to clearly group with the Arabic language sample in the phylogenetic tree based on structural features; (e) the creole languages of the sample to group along with their lexifiers.
2. Following the Creole Distinctiveness Hypothesis, one would expect: (a) the grammar of Juba Arabic to be simpler than the constrates, showing for instance little or no affixation; (b) the inflection found in Juba Arabic to not be of the paradigmatically complex sort; (c) Juba Arabic to group with the creole sample in the phylogenetic tree; (d) the creoles to form a linguistic group distinct from the non-creoles, not necessarily grouping along with their lexifier; (e) to find features in Juba Arabic that are not necessarily present in either constrate.

9.3 Methodological preliminaries

9.3.1 Phylogenetic trees and linguistics

The networks and trees in this study are produced using a distance-based method. This method works in two steps: First, a distance matrix is produced based on how much the languages differ with regards to the received data input. A distance of 1 from one language to another indicates that all features are different while a distance of 0 indicates that all features are shared. Once a distance matrix has been produced, various algorithms can be employed in order to produce a tree or network. For the large scale examination of all languages in this study, the Neighbour-joining algorithm is used. Neighbour-joining operates by computing a transformation of the produced distance matrix and pairing the languages that minimize the transformed distance (Nichols & Warnow 2008: 775). For close-up analyses of smaller numbers of languages, the Neighbor-Net algorithm is used (Bryant & Moulton 2004). Neighbor-Net has the advantage that it can depict lateral influences, which is an important factor in situations of contact. Since this study is purely cladistic, meaning that it examines the languages based structural similarity rather than historical family relations, all trees will be unrooted. This study uses the software SplitsTree (Huson & Bryant 2006).

There are various ways of testing the results produced by this kind of computational tool. One way is to benchmark the findings against widely accepted language classifications. Nichols and Warnow (2008: 777–779) suggest that the generated trees should contain established language groups, that no subgroups should be missing, and that no language from one group should be found in a group to which it does not belong, in order for the results to have a high level of validity. This of course presupposes that previous classifications are correct.

Another useful tool to test the validity of the proposed tree is by making a 'bootstrap resampling analysis', where the tree is generated for example 1000 times from a randomly selected subset of the data. If a single or few idiosyncratic feature(s) are responsible for the occurrence of a split in the tree, then this feature will be absent in a number of the resampled analyses. The analyses then measure the overall support for each split. If the split occurs in 100 percent of the resampled analyses, there is complete support for the given split, if it occurs 90 percent of the times, there is 90 percent support for the split (Dunn et al. 2008: 720).

However, none of these tests guarantee accuracy. If the analytical model used is inappropriate or the data is wrong or biased, the results will be unreliable in any event.

9.3.2 Sample

The selection of languages, their usual classification, and the main literature consulted on the languages is briefly summarized in Table 9.1. Since the main focus of the study is the historical affiliation of Juba Arabic creole, the sample has been chosen from three different language groups: a group of languages including and related to its lexifier; its substrates and constrates; and finally one consisting of a number of creole languages.

The language Juba Arabic emerged from contact between Arabic speaking soldiers from Northern Sudan and Bari speaking tribes after the soldiers settled in what is today the Juba area of South Sudan. Early forms of Pidgin Arabic have been reported to emerge in the area sometime between the 1850s and 1880s (Miller 2006). Today Juba Arabic serves the function of forming a major part of the national identity in that it distinguishes South Sudan from the Arabic speaking north (Mahmoud 1983; Miller 2014).

The first group of languages that will be compared with Juba Arabic in this study are its lexifier, Sudanese Arabic, as well as Syrian Arabic and Classical Arabic. Syrian Arabic is chosen because it is a dialect that is spoken quite far from Sudan and historically it had very little contact with Sudanese Arabic. Classical Arabic is chosen because it is temporally removed from Sudanese Arabic and known to be structurally more complex than the modern dialects (Owens 2006: 9). This should give a rather broad spread of Arabic dialects, which is favorable in order to assert whether Juba Arabic should be counted as a dialect of Arabic. My main source for Sudanese Arabic is Bergman (2002).[1]

The substrate language of Juba Arabic, Bari, is a Nilotic language of the Eastern Nilotic branch. The Nilotic sample contains one additional language from the Eastern branch, Maasai, and the Nuer and Dinka languages of the Western branch (cf. Dimmendaal 2007 on linguistic family relations within the Nilotic family). For general theoretical concerns regarding number marking in Nilotic languages, the analysis relies heavily on Dimmendaal (2002). Again the choice of languages from different branches of the same family will present a certain spread, which will help to validate the model of analysis. If the subfamilies of a greater language family are reproduced as sub-branches of the same branch, this will be an argument for the validity of the model of analysis.

Creole languages form the last sample. In order to get reliable and generalizable results regarding the nature of creole structures one needs a representative group of languages. The choice of languages in this study is based on lexifiers, with the goal

1. For some grammatical phenomena Bergman (2002) makes reference to them being like Modern Standard Arabic. My source for Modern Standard Arabic is Ryding (2005).

of including languages with non-Standard Average European lexifiers as well as one with a non-Indo-European lexifier (Bakker 2014: 443 on problems of sampling with regards to typological studies of creoles). This sampling method is ideal for testing the lexifier oriented Feature Pool Hypothesis versus the theory of creole distinctness because creoles have emerged from contact between languages that are structurally very different from each other. If they end up in the same group in the network, it can therefore not be due to common origin (i.e. a similar pool of features) but must be because creoles constitute a typologically distinct group of languages. The chosen languages are: Saramaccan, an English-based creole of Surinam; Karipúna, a French-based creole of Brazil; Korlai, a Portuguese-based creole of India; Hiri Motu, a pidgincreole based on the Austronesian language Motu of Southeast Papua New Guinea; and Nagamese, an Assamese-based language of India. Nagamese came about as a means of interethnic communication in trade rather than, as many of the others, in a situation of colonial expansion. It is known to be structurally fairly different from other creoles and is sometimes not classified as a creole, nevertheless it clearly groups with the creoles in the studies by Bakker et al. (2011).

Table 9.1 Language sample.

Language	Affiliation	Spoken in	Sources
Juba Arabic	Creole	South Sudan	Watson (1984), Manfredi (in press), Miller (2006), Nhial (1975)
Sudanese Arabic	Arabic	Sudan	Bergman (2002), Ryding (2005)
Syrian Arabic	Arabic	Syria	Cowell (1964)
Classical Arabic	Arabic	not spoken	Fischer (2002)
Bari	Eastern Nilotic	South Sudan	Mitterrutzner (1867), Müller (1864), Yokwe (1987), Spagnolo (1933)
Maasai	Eastern Nilotic	Kenya, Tanzania	Hollis (1905), Tucker & Mpaayei (1955)
Nuer	Western Nilotic	South Sudan	Frank (1999), Crazzolara (1933)
Dinka	Western Nilotic	South Sudan	Andersen (2014), Nebel (1948)
Saramaccan	Creole	Surinam	McWhorter & Good (2012), Bakker et al. (1994)
Korlai	Creole	India	Clements (1996, 2007)
Karipúna	Creole	Brazil	Tobler (1983)
Nagamese	Creole	India	Sreedhar (1985), Boruah (1993), Bhattacharjya (2007)
Hiri Motu	Creole	Papua New Guinea	Dutton & Voorhoeve (1974)

9.3.3 The data

In order for the analysis to be conclusive, the data needs to be sufficient, both qualitatively as well as quantitatively. It is difficult to ascertain how much data is needed, and of what type (cf. Bakker 2014). Following recent linguistic works using computational phylogenetic tools, the data used in this study is purely structural data (e.g. Bakker et al. 2011; Daval-Markussen 2013; Dunn et al. 2005, 2008). Whereas these studies mostly use the quite broad features of typological databases such as WALS (Haspelmath et al. 2005) and APiCS (Michaelis et al. 2013), the dataset used in this study was, for the most part, not predefined. Instead each data point is motivated through a close reading of the data. Since this is a cladistic study testing the typological affiliation of Juba Arabic with regards to marking of and agreement with nominal plurality, all structural distinctions made in the grammars of the languages of the chosen sample will be accounted for in a separate typological feature. The features exemplifying agreement with nominal number have been chosen by examining the typical targets of agreement (cf. Corbett 2002). The term 'nominals', in this account, covers both nouns and independent pronouns (Corbett 2002: 55; Daniel 2013).

This gives a relatively clear account for comparison of the ways the languages mark and agree with nominal plurality, in order to test whether the features present in Juba Arabic are taken from the lexifier or the substrate, or whether innovations are found, and if so, whether these innovations seem to be typical for the creole sample. Features will be coded as either present or absent for each language by means of a '1' or a '0' respectively unless otherwise noted. When the correct coding of a feature in a language is unknown, it will be coded with '?'. When a means of number marking is optional in a language, it will be coded as present.

9.4 The pool of features

9.4.1 Number affixing

All features dealt with here concern number affixing added to an unchanged inflectional base (cf. Corbett 2002: 139). Cases where affixing co-occurs with stem-change, as the Nuer example (1) below, are accounted for in F17.

(1) lɛ̈p → lɛ̈ɛ̈p-ni Frank (1999: 51)
needles.SG.GEN needles\PL;GEN-PL

Table 9.2 Features concerning number affixing.

F1	plural suffixing	Plural marked by a suffix contrasting with an unmarked singular noun.
F2	replacive suffixing	Both singular and plural marked by contrasting suffixes. Replacive patterns are common in the Nilotic languages (Dimmendaal 2000: 214).
F3	plural prefixing	Plural marked by a prefix contrasting with an unmarked singular noun.
F4	singulative suffixing	Singular marked by a suffix contrasting with an unmarked plural noun. This includes singulative marking of collective nouns.
F5	dual suffixing	Dual marked by a suffix.
F6	Transfixing	Number marked by replacive transfixing. A transfix is understood as a discontinuous affix placed within root, not as discrete entities but as one single meaningful unit, as shown in examples (2) and (3) below.

(2) sˤadiːq → asˤdiqaʔ Personal knowledge
sˤ<a>d<iː>q <a>sˤd<i>q<aʔ>
friend<SG> friend<PL>
'a friend' 'friends'

(3) kalb → kilaːb
k<a>lb k<i>l<aː>b
dog<sg> dog<pl>
'a dog' 'dogs'

Sudanese Arabic and Bari both show a large variety of features relating to affixation. Sudanese Arabic has plural suffixation as well as replacive patterns, singulative suffixes on collective nouns, dual suffixing, and transfixing, and Bari has plural suffixation as well as replacive patterns, plural prefixing, and singulative suffixing. The only feature present in Juba Arabic is plural suffixation.

The system is most definitely simpler in the creole than in the constrates with regards to structural variation in affixing. If we examine the system of plural suffixing in Juba Arabic in comparison with its constrates, this picture only gets clearer. In Juba Arabic we find the plural suffixes – *át* and – *ín*, stemming from the Arabic suffixes – *āt,* and – *īn*, where the long vowels have been exchanged with a short vowel with a pitch accent, and the plural suffix – *jín* from the Bari plural suffix *-jīn*. In Juba Arabic the suffix only marks plurality and the choice of suffix seems lexically motivated with some variation accepted. The suffix – *ín* is used mostly on animate nouns and adjectives, and *-jín* only occurs with a number of substratal and adstratal nouns (Manfredi 2014).

In Arabic, besides marking plurality, the suffixes also mark gender, making them paradigmatically more complex than in Juba Arabic. If we compare this with the plural suffixes in Bari, the complexity comes from the variety of possible suffixes. In Juba Arabic there are three possible suffixes, whereas in Bari there are more than 20 possible suffixes. It should be noted while examining comparative

complexity with regards to affixing that a major contribution to the complexity of the Arabic system of nominal number is the existence of more than 300 available transfixing patterns (Neme & Laporte 2013).

Table 9.3 Coding of affixing.

	JA	SU	SY	CL	BA	MA	NU	DI	SA	KO	KA	NA	HM
F1	1	1	1	1	1	1	1	0	0	0	0	1	0
F2	0	1	1	1	1	1	0	0	0	0	0	0	1
F3	0	0	0	0	1	0	0	0	0	0	0	0	0
F4	0	1	1	1	1	1	0	0	0	0	0	0	0
F5	0	1	1	1	0	0	0	0	0	0	0	0	0
F6	0	1	1	1	0	0	0	0	0	0	0	0	0

9.4.2 Number and noun stems

Table 9.4 Features concerning number and noun stem.

F7	suppletion	Suppletion as a means of number marking is here understood as cases in which the difference between singular and plural is expressed by a complete change of the word. A criterion for establishing a feature as a case of paradigmatic suppletion and not as different lexical items is that there must be a plural paradigm in the language that one would expect nouns to be governed by. When the noun does not adhere to the expected paradigm and there is a different word expressing the plural meaning of the word, it will be considered suppletion (cf. Ljuba 2013).
F8	tonal change	Number marked by tonal change, e.g. Bari *ŋutú – ŋútu* 'human – humans' (Spagnolo 1933: 50).
F9	vowel height	Number marked by raising or lowering of vowel height, e.g. Bari *kɛlɛ – kala* 'teeth – tooth' (Spagnolo 1933: 50).
F10	vowel length	Number marked by changed vowel length, e.g. Dinka *dɪ̰ːir – dɪ̰ir* 'grasshopper – grasshoppers' (Andersen 2014: 230).
F11	Breathiness	Number marked by change in breathiness, e.g. Nuer *thịn – thin* 'breast – breasts (Frank 1999: 29).
F12	Diphthongization and monophthongization	Number marked by diphthongization of monophthongs, or monophthongization of diphthongs, e.g. Nuer *tuŋ – tuɔŋ* 'spoon – spoons' or *thn̰ːän – thn̰ːn* 'leopard – leopards' (Frank 1999: 29).
F13	partial irregular stem change	This feature covers a group of seemingly irregular changes of the last part of the stem, such as Bari *kɔŋe – kɔnyɛn* 'eye – eyes' (Spagnolo 1933: 50), or Maasai, e.g. *giteñg – gīshu* 'ox – oxen' (Hollis 1905: 32). Dimmendaal (2002) argues that this group forms a coherent pattern.

Stem-internal change as a means of number marking is a pattern found in great variety across the Nilotic sample. In both Sudanese and Juba Arabic suppletion is the only process found involving stem change. The few nouns with suppletive patterns of number marking found in Juba Arabic are suppletive forms that were either taken over from the lexifier or originated from transfixing patterns in Arabic, which implies that the change is now non-transparent and can only be regarded as suppletive (Manfredi in press). Again, number marked by stem-internal change is not very widespread across the creole sample.

Table 9.5 Coding of number and noun stems.

	JA	SU	SY	CL	BA	MA	NU	DI	SA	KO	KA	NA	HM
F7	1	1	1	1	1	1	0	1	0	0	0	0	0
F8	0	0	0	0	1	1	0	0	0	0	0	0	0
F9	0	0	0	0	1	0	1	1	0	0	0	0	0
F10	0	0	0	0	0	0	1	1	0	0	0	0	0
F11	0	0	0	0	0	0	1	1	0	0	0	0	0
F12	0	0	0	0	0	0	1	0	0	0	0	0	0
F13	0	0	0	0	1	1	1	?	0	0	0	0	0

9.4.3 Collectives

Collective nouns are understood here as nouns that when unmarked for number refer to the plurality of something making up an internally coherent group and this is referred to as one. Singularization of collectives was dealt with in F4. Features concerning collectives are presented in Table 9.6.

Table 9.6 Features concerning collectives.

F14	plural of paucity	The plural of paucity is a subtype referring to a smaller collective than the unmarked one.
F15	plural of abundance	The plural of abundance is a type of pluralized collective noun referring to a larger quantity than the unmarked collective.
F16	plural of collectives	The plural of collectives is a type of pluralized construction that refers not to one bigger collective but to a number of different ones.

We demonstrate the different collectives using examples Bari and Syrian Arabic in (4) and (5).

(4) dəbbānāt (Corbett 2002: 32)
flie.paucity
'some flies'

(5) dababīn (Corbett 2002: 32)
flie.abundance
'many flies' or 'various flies'

The pattern that we saw in the two previous paragraphs holds for the data relating to collectives as well. No subgroupings of collective nouns are found in Juba Arabic even though a number of these are found in both constrates. Bari has both a plural of abundance and plural of collectives. Sudanese Arabic has a plural of paucity but due to insufficient description it is not possible to settle whether it has a plural of abundance. In either case it would again be an argument in favor of a process of simplification. If the feature is present in Sudanese Arabic it would be a case of a feature being present in both constrates but absent in the creole, whereas if it is absent in Sudanese Arabic it would be a case of competing features where absence (i.e. simplicity) is chosen over presence (i.e. complexity). Inflectional subgroupings of collectives seem to be absent across the creole sample.

Table 9.7 Coding of collectives.

	JA	SU	SY	CL	BA	MA	NU	DI	SA	KO	KA	NA	HM
F14	0	1	1	1	0	0	0	0	0	0	0	0	0
F15	0	?	1	0	1	1	?	1	0	0	0	0	0
F16	0	0	0	0	1	0	?	0	0	0	0	0	0

9.4.4 Other types of number inflection of nouns

Table 9.8 Other features concerning number inflection.

F17	co-occurrence of affix and stem change	Co-occurrence of any one of F1-F6 with any one F7-F14.
F18	plural word	A plural word is here understood as an otherwise semantically empty word marking the following noun or noun phrase as being plural. See examples from Juba Arabic in (6) and (7).
F19	reduplication	Reduplication is here understood as partial or full repetition of the noun

(6) nas silá (Miller 2006)
PL weapon
'weapons'

(7) nas ardá
PL termite
'termites'

The existence of a prenominal word marking plurality is the only feature regarding inherent inflection found in Juba Arabic that does not exist in any one of the constrate languages. The Juba Arabic word *nas,* also meaning 'people', can function as a plural word. When functioning as a plural marker the word is semantically empty and does not carry any meaning of 'personhood' or animacy, as in (6) and (7).

Table 9.9 Coding of other inflectional features.

	JA	SY	SU	CL	BA	MA	NU	DI	SA	KO	KA	NA	HM
F17	0	0	0	0	1	0	1	0	0	0	0	0	0
F18	1	0	0	0	0	0	0	0	0	0	0	0	1
F19	0	0	0	0	0	0	0	0	0	1	0	0	1

9.4.5 Pronominal number

Table 9.10 presents other features concerning pronominal number. Since pronouns are inflected for number in all languages in the sample, the system will not be evaluated on the presence or absence of number inflection but on whether number inflection of independent personal pronouns is marked by affixation or suppletion, coded with '1' and '0' respectively. F23 regarding dual pronouns will be coded normally for presence or absence. A pronoun will be regarded as suppletive when there is no recognisable recurring stem, and as pluralized by an affix, when it can be analysed as an affix added to a recurring stem (cf. Daniel 2013).[2]

Table 9.10 Other features concerning pronominal number.

F20	first person pronoun	Number inflection of the first person independent pronoun.
F21	second person pronoun	Number inflection of the second person independent pronoun.
F22	third person pronoun	Number inflection of the third person independent pronoun.
F23	dual pronoun	A pronoun used for two referents exactly.

Looking at F20–F23 I find it hard to argue that either suppletion or affixation is simpler or more complex than the other, taking the Juba Arabic second person pronouns as an example. Juba Arabic third person pronouns are pluralized by means of an affix *-kum*, that is not found anywhere else in the language. In a case such as Nagamese, in which all pronouns are pluralized with the same suffix as

2. 'Suppletion' in my terminology is called 'person-number stem' and 'affixation' is called 'person-number affix' by Daniel (2013).

the nouns, a strong case can be made for this being simpler than suppletion, since the system is completely consistent.

Table 9.11 Personal pronouns of Sudanese Arabic, Juba Arabic, and Bari.

Singular		**Sudanese Arabic**	**Juba Arabic**	**Bari**
first person		*ana*	*ana*	*nan*
second person	masculine	*inta*	*itá*	*dɔ*
	feminine	*inti*		
third person	masculine	*hu*	*úo*	*nye*
	feminine	*hi*		
Plural				
first person		*niḥna*	*anina*	*yi*
second person	masculine	*intu*	*ítakum*	*ta*
	feminine	*intan*		
third person	masculine	*hum*	*úmon*	*sɛ*
	feminine	*hin*		

Sources: Nhail (1975: 82) and Manfredi (pc) for Sudanese Arabic and Juba Arabic, and Spagnolo (1933: 80) for Bari.

When examining the pronominal system in Juba Arabic and its constrates (see Table 9.12), it is clear that the pronouns come from Sudanese Arabic. A difference, though, is that second and third person pronouns in Sudanese Arabic are inflected for gender whereas in Juba Arabic they are not. This is in line with the prediction by McWhorter (2011) that there will be no inflection in creoles of the paradigmatically complex sort.

Table 9.12 Other features concerning pronominal number.

	JA	**SU**	**SY**	**CL**	**BA**	**MA**	**NU**	**DI**	**SA**	**KO**	**KA**	**NA**	**HM**
F20	0	0	0	0	0	0	0	0	0	0	0	1	0
F21	1	1	1	1	0	0	0	0	0	0	0	1	1
F22	0	1	0	1	0	0	0	0	0	1	0	0	1
F23	0	0	0	1	0	0	0	0	0	0	0	0	1

9.4.6 Number agreement

Table 9.13 collects the features concerning number agreement. In order to be sure of comparing like with like, the analysis is focused on the typical targets of agreement (cf. Corbett 2002: 178). The element determining the agreement is referred to as the 'controller' and the element whose form is determined by the agreement is referred to as the 'target'. In the case of the indefinite and definite articles (F28 and F29), they will be coded as number marking being absent if they are either missing or not marked for number.

Table 9.13 Features concerning number agreement.

F24	demonstratives	Demonstrative pronouns are targets of number agreement with controller noun or noun phrase.
F25	singular indefinite article	An indefinite article is defined as a target element accompanying a controller noun or noun phrase marking it as pragmatically indefinite in the sense that it is unknown to the hearer (Dryer 2013b). Indefinite articles found in the data exist only in the singular. This will be regarded as number agreement, because the number of the controller determines the possibility of there being a target indefinite article.
F26	definite article	A definite article is here defined as a target morpheme which accompanies a controller noun and codes definiteness or specificity, including bound as well as unbound morphemes but not demonstratives, since they are dealt with in F27 (cf. Dryer 2013a).
F27	adjectives	Adjectives agree with the number of the noun they modify. The compared adjectives are attributive adjectives.
F28	verb agreement with subject	Verbs agree with the number of its subject.
F29	verb agreement with number of the object	Verbs agree with the number of the object. The bound object pronominal suffix in Arabic will not be considered verbal number agreement because it cannot co-occur with a free object.
F30	split nominal number with numerals	Nouns are marked for number in one way after some numerals above two and in another way after some higher numerals.

Both F24 and F30 are present in both constrates but not in the creole. F24 (demonstratives) follows the proposed tendency for creoles to have little or no contextual inflection (cf. McWhorter 2011) and is thus a case of a feature having vanished leaving the system simpler in the creole than in the constrates. In the case of F30 the situation is slightly different. The Arabic split number systems

differ significantly from the one found in Bari. In Arabic, nouns after the numerals 3–10 are followed by a plural noun, whereas nouns following numerals above 10 are singular in form. In Bari nouns following numerals 1–19 are singular, nouns following numerals 20–99 are plural, and for nouns following numerals 100 and above either form is possible. No such system is found in Juba Arabic, a fact which can only be interpreted as simplification.

The existence of an indefinite article derived from the numeral 'one' has been proposed as a pan-creole feature by Daval-Markussen (2014). Having an indefinite article not distinct from the word for 'one' is cross-linguistically quite common among those languages that have an indefinite article (Dryer 2013b). This feature is found in both Sudanese Arabic and Juba Arabic (Manfredi p.c.) so our data does not point to it being an innovation particular to creoles. The data is not sufficient to be conclusive on this point.

Adjectives agreeing for number constitute a feature found in Juba Arabic as well as both constrates but in no other creole of the data. This also seems to contradict the statement by McWhorter that there should be no contextual inflection in creoles. If we compare the systems of adjectival number agreement between Juba Arabic and its constrates, it is again clear that there is some sort of simplification at play. In both Sudanese Arabic and Bari, number agreement on adjectives is obligatory whereas in Juba Arabic it is optional. In Arabic number agreement on adjectives is also affected by gender and animacy.

Table 9.14 Coding of agreement.

	JA	SU	SY	CL	BA	MA	NU	DI	SA	KO	KA	NA	HM
F24	0	1	1	1	1	1	1	1	0	0	1	1	0
F25	1	1	0	0	0	0	0	0	1	1	?	1	?
F26	0	0	0	0	0	1	0	0	1	0	0	0	0
F27	1	1	1	1	1	1	1	1	0	0	0	0	0
F28	0	1	1	1	0	0	1	1	0	0	0	0	0
F29	0	0	0	0	0	1	0	0	0	0	0	0	0
F30	0	1	1	1	1	0	0	1	0	0	0	0	0

9.5 Phylogenetic analysis

Figure 9.1 shows a network based on all languages and all data points processed with the Neighbor-Net algorithm.

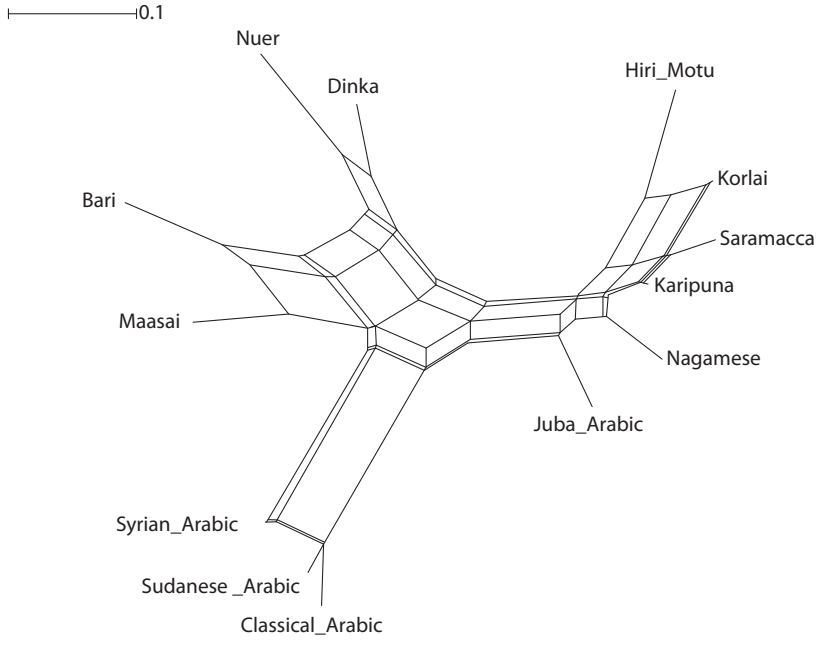

Figure 9.1 Neighbor-Net including 13 languages and 30 features.

What we see in Figure 9.1 is a clear tripartite split of the languages into the following clusters: one containing the Arabic languages in the bottom left of the figure; one containing the Nilotic languages in the upper left of the figure; and one containing all creole languages including Juba Arabic in the rightmost cluster of the figure.

Before entering into the discussion of the theoretical implications of the outcome of this analysis, I will evaluate the validity of the tree based on the criteria explained in Nichols & Warnow (2008: 777–779). These criteria are based on the relation between established language groups. Before discussing the creoles, we will look at the well-established language groups. Both the group of Arabic dialects and the Nilotic language group come out as distinct groups. Furthermore, the subdivision of Nilotic into Eastern Nilotic, containing Maasai and Bari, and Western Nilotic, containing Nuer and Dinka (cf. Dimmendaal 2007), stands out as well, and no language that should be in one group is found in another. This supports the method of sampling and data collection. If we examine the cluster at the right side of the network, we see that it contains all the creole languages and that they do not seem to group as would be expected if the creoles were merely a continuation of the lexifiers. Figure 9.2 shows a Neighbor-Net containing all creole languages including Juba Arabic.

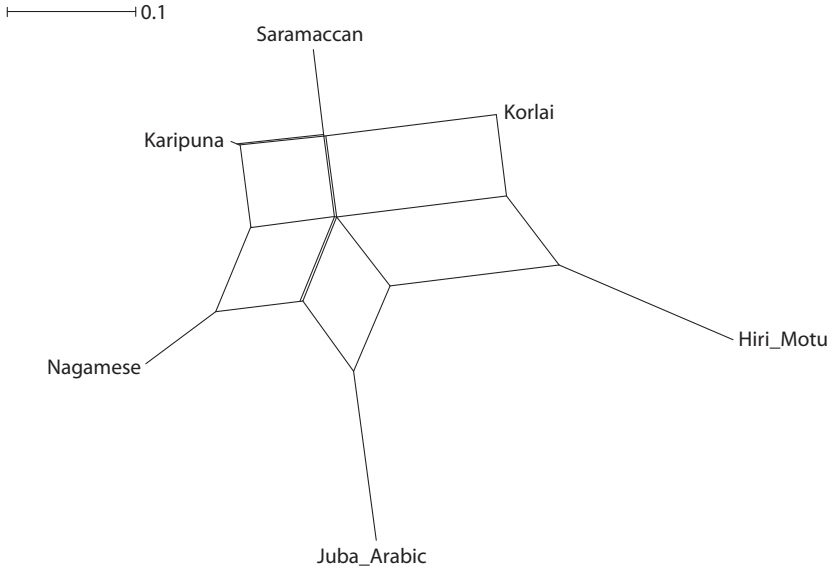

Figure 9.2 Neighbor-Net including 6 creoles with 30 features.

In Figure 9.2 the seeming lack of clear clustering is striking. From the point of view of the Feature Pool Hypothesis the creoles would be expected to group according to their lexifiers. The Indo-European-based creoles would be expected to group subdividing into a Romance branch containing Karipúna and Korlai, and an English-based branch containing Saramaccan. If this were to be explained by the Portuguese adstratal influence, one can ask why Saramaccan is closer to the French-based Karipúna than the Portuguese-based Korlai. The Arabic and Motu-based creoles would then be expected be complete outliers. On the contrary we see that Saramaccan and Karipúna form a cluster, Korlai being closer to the branch leading to Hiri Motu than to its nearest Indo-European-based neighbor, and the Assamese-based Nagamese being a bit closer to the branch leading to Juba Arabic than to its nearest Indo-European-based neighbor. This seems to go along the lines of the theory of creole distinctiveness.

Figure 9.3 shows the relation between Juba Arabic and the group of Arabic dialects.

Figure 9.3 Neighbor-Net over three Arabic dialects and Juba Arabic.

Figure 9.3 gives a quite clear picture that from a structural point of view Juba Arabic, on the far right of the network, is not part of the Arabic dialect cluster on the far left of the cluster, in contrast to what would be expected from the Feature Pool Hypothesis.

The trees and networks shown so far in this section have all been based on all features applied to all or to a subset of the languages. In what follows we will examine the linguistic affiliation of the language based on a subset of the data by first producing a tree based solely on features relating to number marking, as shown in Figure 9.4, and then on the features related to agreement 5.5.

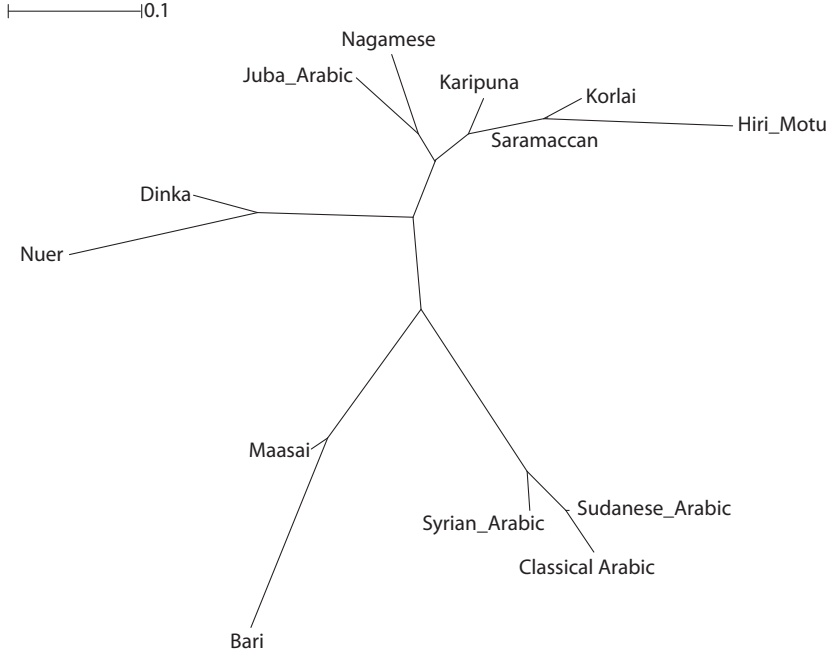

Figure 9.4 Neighbor-joining tree based on features related to number marking (F1–23).

The tree produced based solely on the features related to inherent inflection, F1-F23, gives an overall picture that is similar to the tree based on all features shown in Figure 9.1. The creoles still form a distinct group, and the other established group as subgroups are reproduced. Figure 9.5, based only on the rather small sample of features related to agreement, shows a slightly different result.

In Figure 9.5 we see that the established groups and subgroups have collapsed. Dinka is found with Syrian and Classical Arabic, and Nuer and Bari are closer than the more closely related Bari and Maasai. This is due to an insufficient number of data points and/or the possibility that features based solely on agreement patterns are not sufficient to distinguish the established groups and subgroups from each

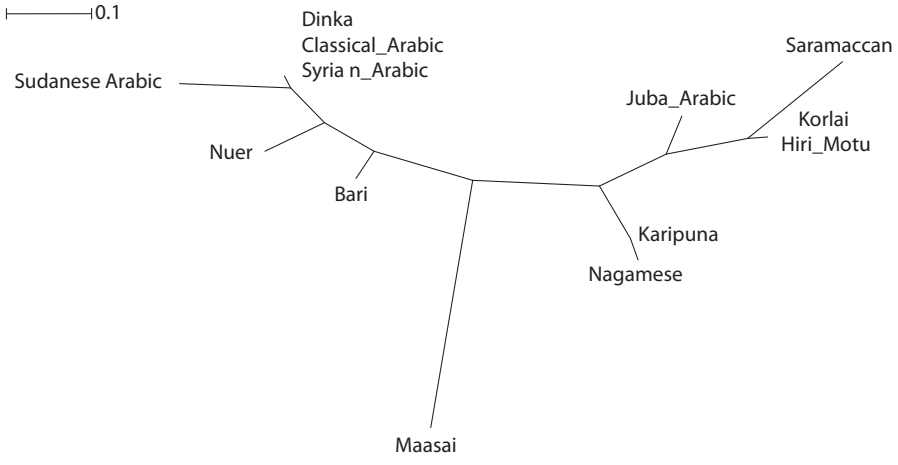

Figure 9.5 Neighbor-joining tree based on agreement (F24–30).

other. Nevertheless, we still see that the creole languages form a group distinct from the non-creoles based only on the data related to agreement. In spite of the insufficiency of the data on agreement patterns, this strengthens the case for creole distinctiveness.

9.6 Theoretical implications and questions for further research

The analysis clearly shows that Juba Arabic displays a far smaller variety of features marked 'present' than both constrates. Of the features coded for presence/absence only five features were present in Juba Arabic compared with 12 in Sudanese Arabic and 13 in Bari. The only two features related to inherent inflection shared by Juba Arabic and both constrates are F1 plural suffixing, and F7 suppletion. From the data available it is not possible to compare the full extent of suppletive patterns and their contributions to the complexity of the respective languages. When analysed, it is clear that the system of plural suffixing in Juba Arabic is simpler than in the constrates, showing neither the paradigmatic complexity found in Arabic nor the vast possible variety of forms as found in Bari. Even the much sparser selection of features related to agreement shows a similar overall picture, with two features being present in Juba Arabic, three in Bari and five in Sudanese Arabic, even though the data on agreement is not sufficient to draw more complete conclusions.

The findings of this study thus make a case against the claim by Aboh (2009: 340), who holds that

> [t]he notion of simplicity is completely irrelevant to the understanding of the structure and genesis of creole languages (…). This is because creole languages are linguistic hybrids. They emerged from the recombination of linguistic features from different languages.

It has been proposed by Aboh and others that this restructuring happens as part of a regular unbroken transmission of the lexifier languages with features from the substrates entering the slowly transformed language (Mufwene 2001, 2008; Aboh 2009). Neither the notions of restructuring nor hybridization seem to adequately explain the analysed data here. This is clear when examining the entire set of features. Of the seven features present in both constrates, only three are present in Juba Arabic. In the cases where a feature is present in just one of the constrates, only two out of 13 are found in Juba Arabic. These findings support what was found by Parkvall (2008), who showed that, based on a broad set of typological features, creole languages as a group stand out from non-creoles as being structurally less complex. The theory that simplification is crucial to understanding creole structures due to a shared past as structurally simple pidgins (cf. McWhorter 1998, 2011; Parkvall & Goyette forthcoming) seem more plausible to explain the findings of this study.

The results of the phylogenetic analysis carried out in Section 5 comply well with similar studies using computational phylogenetics to study creole typology (Bakker et al. 2011; Daval-Markussen 2013; Daval-Markussen et al., Chapter 7, this volume). Like in these studies, creoles are clearly identified as clustering with neither the lexifier nor the substrates, but instead making up a group of languages distinct from the non-creoles. Applied to the data of this study, the method has shown to be sufficient to establish the languages as belonging to the groups predicted by recognized genealogical grouping.

Owens (2001) claimed that the Arabic creoles had been neglected by both arabists and creolists, especially with regards to analyses of the comparative grammatical structure and possible restructuring of features from Arabic. Though a lot has been published since then, such as Wellens' grammar of Nubi (2005), the special issue of the *Journal of Pidgin and Creole Languages* on Arabic-based Pidgins and Creoles (Manfredi & Tosco 2014), and the soon-to-appear grammar of Juba Arabic (Miller & Manfredi forthc.), the question of their structural relation with the Arabic dialects and with each other has not yet been seriously addressed. To include creole languages such as Nubi, which it has been proposed have common origins with Juba Arabic going back to an Arabic military pidgin (Miller 2007) in a study like the present one, could make a great contribution to both the study of creole languages and the study of Arabic dialectology. The same holds for Arabic-based pidgins such as Turku (Tosco & Owens 1993), Pidgin Madame (Bizri 2010) and Gulf Arabic Pidgin (Naess 2008), as well as various African varieties of Arabic.

9.7 Conclusions

The comparative study shows that Juba Arabic is significantly simpler than the constrates, and that innovation has taken place. The phylogenetic analysis established creoles as a group of languages distinct from the non-creoles. Also, the creoles did not group according to the lexifier. These findings make a clear case against the Feature Pool Hypothesis and the notion that creolization would be a matter of restructuring and hybridization (Mufwene 2001, 2008; Aboh 2009). Rather, the findings comply very well with the Creole Distinctiveness Hypothesis: due to their past as pidgins, the creoles are simpler than non-creoles (McWhorter 2001; Parkvall 2008; Parkvall & Goyette forthc.) and group together as a distinct typological group (Bakker et al. 2011).

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