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Relexification and dialect levelling in the genesis of creoles:
the case of the Arabic-based creole, Nubi

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Abstract. This paper addresses the genesis of Nubi, an Arabic-based creole, spoken in Uganda and Kenya. A novel account is offered using the relexification approach (Lefebvre, 1998, 2009). The study tests the hypothesis that the genesis of Arabic-based creole, Nubi can best be accounted for using the cognitive processes of relexification and dialect levelling. The two major cognitive processes of relexification and dialect levelling are shown to have played a major role in the genesis of Nubi. It is demonstrated that the phonological form of Nubi lexical items is derived from Sudanese Arabic, the superstrate language. Following Wellens (2003), a subset of the languages that exercised a substrate influence on the development of Nubi is considered. The cognitive processes of relexification and dialect levelling are shown to have played a major role in the genesis of Nubi minor category possessive forms and negative markers. The same processes are also shown to have played a major role in the genesis of Nubi major category personal pronouns. The word order of Nubi lexical items shows the following pattern: minor category lexical items (the definite article, the demonstrative determiner, and cardinal numerals) follow the word order of some of the substrate languages (Nuba, Kunuz Nubian, Acholi and Ma'di), but major category lexical items (adpositions, attributive adjectives, lexical verbs, and adverbs) follow the word order of the superstrate language. The results of the study lend support to the hypothesis that the genesis of Nubi can best be accounted for using the cognitive processes of relexification and dialect levelling.

Keywords: Relexification; Dialect levelling; Nubi; Arabic-based creole; Word order; Major category lexical items; Minor category lexical items

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1. Introduction

There have been a number of studies on Arabic-based creoles such as Juba Arabic, spoken in the south of the Sudan and (Ki)-Nubi, spoken in Uganda and Kenya. However, the bulk of these studies focuses on describing the phonological, lexical and morphosyntactic properties of these pidgins/creoles. The most comprehensive work on Nubi is found in Wellens (2003, 2005), where a description and a linguistic analysis of this creole is offered. Avram (2015, 2017) focuses on the etymology of a number of Nubi words. Avram (2020) is an overview of eight Arabic-based pidgins and creoles. Manfredi (2017a) looks at the current stage of grammaticalization in the definite article in both Juba Arabic and (Ki)Nubi. Manfredi (2017b) investigates the current stage of grammaticalization in the definite article in both Juba Arabic and (Ki)Nubi. In another study, Manfredi (2017) examines some lexical and morphological aspects of Juba Arabic. Miller (1998) deals with the grammaticalization of the verb 'to say' in Juba Arabic. Nakao (2012) explores the substratal/adstratal influence on Juba Arabic. Nakao (2014) discusses the syntactic and semantic/pragmatic properties of two focus constructions in Juba Arabic.

In the literature cited above, there are no studies that attempt to identify the differential contributions of both the lexifier (henceforth the superstrate) language and the substrate languages in the genesis of Nubi. Theoretically speaking, all the literature cited above is also cast within the functional approaches to creolization. None of the literature cited above attempts to look at Arabic-based creoles using a generative theoretical framework, such as that of relexification. This is despite the fact that there have recently been some of the generative studies that attempt to account for the genesis of creoles using the generative approach (Aboh, 2019; Aboh and deGraff,

2016). Furthermore, the relexification approach to the genesis of creoles has never been tested against an Arabic-based creole.

This paper shows that the cognitive processes of relexification and dialect levelling are major processes responsible for the genesis of Nubi. The present study is couched in the approach to creolization known as the relexification approach (Lefebvre, 1998, 2009). This approach contrasts with the other approaches to creolization in the following ways. First, unlike some other approaches to creolization (e.g. McWhorter, 2005), which considers creoles to be a distinct typological language class having a prototypical set of properties, the relexification approach does not assign creoles any special status. Therefore, any properties that are or are not shared among creoles are the natural consequence of the fact that creoles are natural languages, and all natural languages do share a number of properties and have some language-specific properties.

Second, unlike all the other approaches to creole studies, this approach is grounded in the Principles and Parameters theory of linguistic knowledge (Chomsky, 1981, 1986). One of the central tenets of this theory is the idea that the language faculty is a system of modules, where each module has properties that are independent of the properties of the other modules. Phonological representations are therefore independent of the morphosyntactic and semantic representations. Thus, this approach makes it possible for the lexical entries to be manipulated at various levels of representation. Having a modular structure, this theory provides a unique tool to explain the kinds of manipulation that are attested in creoles.

The present paper attempts to address the gaps in the literature by examining the differential contributions of the superstrate and substrate languages that influenced the

genesis of Nubi. Unlike all of the literature on Nubi cited above, an alternative theoretical framework, namely the rellexification approach, is used to examine the phonological form and the distributional properties of a number of major and minor lexical categories of Nubi.

This paper is organized as follows. In Section 2, a historical background to the genesis of Nubi is introduced. In Section 3, the superstrate and substrate languages that influenced Nubi are identified. In Section 4, the theoretical framework of this study is laid out. Section 5 introduces the hypothesis and the methodology used in this study. A comprehensive analysis of the data is offered in Section 6 of this paper to show that minor category lexical items such as definite articles and numerals follow the word order of their substrate languages, whereas major category lexical items, such as lexical verbs, attributive adjectives, adpositions, adverbs of manner) in Nubi follow the word order of their superstrate languages. Section 7 concludes the paper.

2. Historical background

This section is a brief history of the genesis of Nubi (for a thorough and detailed account, see Owens, 1985; Wellens, 2003: 10-24). Before 1820, all routes from and to the Sudan were used by travellers for the purpose of commercial activities and pilgrimages. After 1820, intertribal contact in the Sudan increased due to Egypt's Mohammed Ali's policy of installing military training camps in the Sudan. The military forces of Ali were then expanded by an influx of forced recruitment of East African Sudanese and through the purchase of slaves from merchants, active in southern Sudan. Between, 1874 and 1882, the trading camps or *zariba*, and the military camps witnessed a contact between a small minority of Arab officers and a vast majority of East African Sudanese people working as either slaves or as soldiers joining the armed forces. It is from this group of 'Sudanese', approximately 900 officers and 8,000 to 9,000 workers/soldiers, that the present-day Nubi developed.

3. Substrate, superstrate and adstrate influences in Nubi

In her work on the Arabic-based creole, Nubi, Wellens (2003: 207) lists among others the following languages that had a substrate influence on the early genesis of Nubi. Among these substrate languages are Kordofanian: Koalib-group (which includes Nuba), Niger-Congo Kordofan group (which includes Mundu), Eastern Sudanic languages (which include Shilluk, Acholi, Lur, Luo, Dinka, Nuer), Nilo-Saharan language group (which includes Central Sudanic Ma'di, and Western Nilotic Acholi).

As for the superstrate influences on the first pidgin that was later developed into the creole, Nubi, Heine (1982: 17) identifies Modern Egyptian and Modern (Sudanese) Khartoum Arabic as the possible ancestors of the language, and Owens (1985: 231) identifies Sudanese Arabic as the ancestor of Nubi. Avram (2015: 155) also mentions Egyptian Arabic and Sudanese Arabic as languages that provided the superstratal input for Nubi.

In addition to the influences of the substrate and superstrate languages mentioned above, other languages that seem to have influenced the lexicons and phonology of Arabic-based creoles such as Juba Arabic and Nubi as adstrate languages are Swahili and Luganda (see Wellens, 2003: 206, Nakao, 2012: 132).

In this study, Khartoum Arabic (henceforth Sudanese Arabic) is taken as the superstrate language of Nubi, while Nuba, Kunuz Nubian, Acholi and Ma'di will serve as the substrate languages of Nubi. The choice of only a subset of the substrate languages is made for purely practical reasons, as it would be extremely difficult to trace the contribution of all 21 substrate languages to the development of Nubi. A future study might be dedicated to looking at the impact of some of those other substrate languages on Nubi.

4. Theoretical framework

As a theoretical framework, the rellexification approach to the evolution of creoles is adopted (Lefebvre, 1998, 2009)

where language change in general, and the genesis of mixed languages and pidgins and creoles in particular can be accounted for by using major cognitive processes that are assumed to be available to human cognition. These major processes are relexification and dialect levelling, which are defined as follows:

- (a) Relexification: “a mental process that builds new lexical entries by copying the lexical entries of an already established lexicon and replacing their phonological representations with representations derived from another language” (Muysken, 1981: 61; Lefebvre, 1998: 16; Lefebvre, 2009: 25).
- (b) Dialect levelling: “dialect levelling reduces the variation between the lexicons produced by the relexification of the various substratum lexicons...dialect levelling operates on the output of relexification” (Lefebvre, 1998: 46; Lefebvre, 2009: 27).

Two points are worth noting here. First, relexification is semantically driven (Lefebvre, 1998: 37; 2009: 32). “for relexification to occur, the semantic representations of source and target language entries must partially overlap, otherwise, the two entries would never be associated with each other” (Muysken, 1981: 62). Second, unlike Muysken’s (1981) approach, Lefebvre (1998, 2009) proposes a slightly different model, whereby it is phonetic strings rather than phonological representations that are copied in the process of relexification.

5. Hypothesis and Methodology

This paper puts forward the following hypothesis: The genesis of Nubi can be best accounted for using the two cognitive processes of relexification and dialect levelling. In other words, the claim here is that the development of Nubi can be traced back to the interaction between two cognitive processes, relexification and dialect levelling.

The methodology of this paper rests on using the linguistic facts of Nubi and trying to trace the origins of various linguistic properties of Nubi to their proper ancestors be

these the superstratum language or the substratum languages. The data is taken from published work done on Nubi, and the data on the superstratum and the substratum languages is taken from published work conducted on those languages. A descriptive analysis of the data is conducted to test the hypothesis.

Some major category lexical items such as adpositions, lexical verbs, attributive adjectives and adverbs are investigated, and by examining their phonetic shape and their grammatical behavior, an attempt is made to decide whether those phonetic and grammatical features are derived from the source language or from the substrate languages. Minor category lexical items are also studied, and the same procedure is applied in order to make a decision regarding the source of the phonetic and grammatical features of those minor category lexical items.

6. Data Analysis

Relexification is the process of assigning a copied lexical entry of a substratum language a new label in the creole making use of what the linguistic tools the superstrate language makes available to the creators of the creole. In the particular case of relexifying functional category lexical entries, Lefebvre, (1998: 37; 2009) claims that functional category lexical entries of the substratum can be relexified in the creole in response to three types of factors. This means that only functional categories of the copied lexicon that have some semantic content can be assigned a new phonological form in the creole. Second, the distributional properties of the superstrate major lexical entry form and those of the copied functional lexical entry should be similar. Third, phonological similarity between the superstrate major lexical entry and the substratum functional lexical entry might also trigger relexification of the latter in the creole.

6.1. Relexification of minor category lexical items

This section explores the major contribution that relexification and dialect levelling make to the genesis of Nubi. It will

be shown that these two major cognitive processes conspire together in the development of the creole under investigation.

One of the minor category lexical items in Nubi is the possessive forms, and the claim is made here that they are the result of the

- (1) (...) *nyere'ka 'tena ke'd(e) 'aruf ba'dum.*
(...) child.PL PRON. POSS.1PL SUBJ know-Ø RECIP
(...)'our children should know each other.' (Nubi, Wellens, 2003: 54)
- (2) *La'kin 'ina 'tena ka'man 'arufu 'ma.*
but PRON.1.PL PRON.POSS.1PL EMPH know-Ø NEG
'But we ourselves do not know.' (Nubi, Ibid: 55)
- (3) *'Ana 'tai bi- 'jowz(u) 'uo, sul'tan 'sidu.*
PRON.1.SG PRON.POSS.1.SG FUT-marry PRON.3.SG sultan self
'I, myself, will marry him, the sultan himself.' (Nubi, Ibid: 55)
- (4) *'Umon 'gai ma 'marya 'to 'de.*
PRON.3.PL stay-Ø P wife PRON.POSS.3.SG DEF
'He stayed with his wife.' (Nubi, Wellens, 2003: 56)

distributional properties of copied functional lexical entries from the substrate languages, being relabeled and assigned their phonological form based on the phonetic strings of Sudanese Arabic. To provide evidence for this claim, consider the following examples from Nubi.

Based on the examples in (1-4), it can be concluded that Nubi possessive forms are postnominal. The claim here is that the phonological representation of Nubi possessive is based on phonetic strings from the Sudanese Arabic lexical category genitive

exponent. To illustrate, consider the following table which shows some of the Nubi possessive forms and their counterparts in Sudanese Arabic, the superstrate language, and four substrate languages.

Table 1. A comparison of some Nubi possessive forms and their counterparts in the superstrate language and four substrate languages

Arabic-based creole	Superstrate language	Substrate languages			
Nubi Wellens (2003: 52)	Sudanese Arabic Dickens (2011: 561)	Acholi (Blackings, 2009)	Nuba (Stevenson, 1938: 84)	Ma'di (Blackings and Fabb, 2003)	Kunuz Nubian (Abdel-Hafiz, 1988: 133)
'tena 'PRON POSS. 1.PL'	<i>bi-taʕ-na</i> P-belonging to- PRON.1.PL	a. <i>Méwá</i> b. <i>tíwā</i> (p. 166)	<i>wouŋ</i>	<i>àm- à</i> (p. 193)	
'tai 'PRON. POSS 1.SG'	<i>bi-taaf-i</i> P-belonging to- PRON.1.SG	a. <i>nā</i> b. <i>-a</i> (p. 164)	<i>woun</i> 'my'	<i>má-à</i> (p. 127)	<i>am-</i>
'to 'PRON.POSS 3.SG'	<i>bi-taaf-o</i> P-belonging to- PRON.3.M.SG	a. <i>mérrèè</i> b. <i>méggéè</i> (p. 156) c. <i>-e</i> (p. 164)	<i>anun</i>	<i>āná-à</i> (p. 123)	

As can be seen from Table 1, the Nubi possessive forms phonetically resemble their counterparts in the superstrate language, and

- (5) a. *'tena* > bi-taʃ-na
 b. *'tai* > bi-taaʃ-i
 c. *'to* > bi-taaʃ-o

Thus, the fact that the Nubi possessive forms are phonologically similar to the Sudanese genitive exponents and phonologically unlike their substrate counterparts leads to the conclusion that the Nubi forms are phonetically derived from Sudanese Arabic, the superstratum language.

As for the distributional properties of the Nubi possessive forms, the claim here is that these are lexical entries copied from the substratum languages. In other words, the distributional properties of the Nubi possessive forms are not derived from

- (6) a. *naas* ***bitaaʃiin/haggiin*** *kalaam* *katiir*
 people GEN.M.PL/GEN.M.PL talking much
 'Talkative people [people of much talking]' (Sudanese Arabic, Dickens, 2011: 570)
- b. *galaam-a*
 pen-POSS.3.F.SG
 'her pen' (Sudanese Arabic, Ibid: 561)
- (7) a. *rijl-i*
 foot-POSS.1.SG
 'my foot/leg' (Sudanese Arabic, Dickens, 2011: 570)
- b. **ʔal-rijil* ***bitaaʃ-t-i/hagga-t-i***
 DEF-foot.F GEN-F-my/GEN-F-my
 'my foot/leg' (Sudanese Arabic, Ibid: 570)

Based on the example in (6), it can be noted that both the construct state and genitive exponence are fine when the possessee does not encode body parts or family, i.e. alienable possession. This is in contrast to (7), where only the construct state is acceptable, as the examples involve body parts or family, i.e. inalienable possession. In other words, while inalienable possession can only be linguistically encoded with possessive suffixes in Sudanese Arabic, alienable possession can be encoded either by the construct state (i.e. lack of genitive exponence) or by genitive exponence. This is

they do not show any resemblance to any of their substrate counterparts. This as is also illustrated in (5) below.

Sudanese Arabic, but from the substrate languages. There are two pieces of evidence that can be brought to support this claim. First, there are two ways of expressing possession in Sudanese Arabic, and these are the construct state (synthetic genitive) and the genitive exponents (analytical genitive). In the construct state structure, two nouns are not linked together by a genitive exponent. In the genitive exponent structure, on the other hand, a genitive exponent links the two nouns. To illustrate, consider the following examples from Sudanese Arabic.

in contrast to the linguistic encoding of possession in Nubi, which involves the use of postnominal possessive forms regardless of whether the relationship involves alienable or inalienable possession. In other words, the syntactic properties of Nubi possessive forms do not seem to correspond to those of Sudanese Arabic, a superstratum language. To provide further support for the claim that the Nubi possessive forms are syntactically derived from those of the substratum languages, consider how possession is linguistically encoded in the substrate languages.

- (8) a. **woun** *aba*
POSS.1.SG father
'my father' (Nuba, Stevenson, 1938: 87)
- b. **woun** *besə*
POSS.1.SG house
'my house' (Nuba, constructed based on the information given in Stevenson 1938)
- (9) a. **ann-id**
POSS.1.SG-husband
'my husband' (Kunuz Nubian, Abdel-Hafiz, 1988: 82)
- (10) a. **tye-na**
foot-POSS.1SG
'my foot' (Acholi, Kitching, 1932: 34)
- b. **odo-na**
stick-POSS.1.SG
'my stick' (Acholi, Ibid: 34)
- (11) a. *má* *ndrē* *ópí* *ʔà* *ēndrē* *nī* *ádʒínī*
PRON.S see Opi POSS mother SPEC PRON yesterday
'I saw Opi's mother yesterday.' (Ma'di, Blackings and Fabb, 2003: 276)
- b. *ópí* *ʔà* *dʒó* *ʔī*
Opi/chief POSS house FOC
'It's Opi's house.' (Ma'di, Ibid: 16)

Having examined the examples in (8) through (11), the possessive forms in Nuba, Acholi and Ma'di do not seem to make any linguistic distinction between alienable possession and inalienable possession. As for Kunuz Nubian, the distinction between alienable possession and inalienable possession seems to be linguistically marked. In this context, Abdel-Hafiz (1988: 82) states that Kunuz Nubian "has special prefixes for kinship terms." Assuming that Kunuz Nubian exhibits a linguistic distinction between alienable possession and inalienable possession, the question that might arise is why Nubi does not exhibit any such linguistic distinction between alienable possession and inalienable possession. The claim here is that lack of such a distinction stems from dialect levelling, the other major cognitive process in Lefebvre's (1998, 2009) model. This is a scenario where the creators of Nubi relexified

four different lexicons, three of which show no linguistic distinction between alienable possession and inalienable possession, and only one shows such a distinction. In such a scenario, the other major cognitive process, namely dialect levelling takes those four substrate lexicons as its input and in the process of creating a stable Nubi, levels out the differences among those relexified lexicons by leaving out of Nubi the Kunuz Nubian distinction between alienable and inalienable distinction.

Another minor category lexical item in Numbi is the negative exponent. One of the striking facts about Nubi sentential negative markers '*ma*'/*me* and '*mafi*' is their position in the sentence. The negative sentential marker '*ma*' can be in any position; whereas '*mafi*' mainly occupies the sentence-final position (Wellens, 2003: 181). To illustrate, consider the following examples from Nubi.

- (12) *'De* *li'go* *'lisa* *Ingi'lis* *'lisa* *'rasul* **'mafi** *mo* *'ukum*
DEF when still English still arrive NEG P government
'to
PRON. POSS.3.SG

'This was when the English had not yet arrived with his [their] government.' (Nubi, Ibid: 181).

- (13) 'Ana 'me 'endi ma'ma, 'ana 'me 'endi ba'ba.
 PRON.1.SG NEG have-Ø mother PRON.1.S NEG have-Ø father
 'Bes, 'ana a'gi 'tai je'de.
 just PRON.1.SG alone PRON.POSS. 1.SG EMPH
 'I do not have a mother; I do not have a father. I am just alone.' (Nubi, Ibid, ft. 68: 55)

- (14) 'Ma- ta- gi- 'fadul 'wara ma 'haya.
 NEG- ADR.SG PROG- remain behind P shame
 'Do not stay behind with shame!' (Wellens, 2003: 126)

- (15) La'kin 'ina 'tena ka'man 'arufu 'ma.
 but PRON.1.PL PRON.POSS.1.PL EMPH know-Ø NEG
 'But we ourselves do not know.' (Nubi, Ibid: 55)

Based on the data provided in (12-15), it seems that the Nubi sentential negative marker can be in any of the four following positions: (a) postverbal, as in (12); preverbal, as in (13); (b) prefixed to the verbal complex, as in (14), or (c) sentence-final, as in examples (15).

Having established the distributional facts of the Nubi sentential negative marker, the question that needs to be answered is the following: where does this distributional property of the Nubi sentential negative marker come from? According to the adopted theoretical framework, this should come from the substrate languages rather than from the

superstrate languages. This is because sentential negative markers are minor category lexical items, and the syntactic, semantic and pragmatic properties of these categories, in the adopted theory of creole genesis, are copied from the lexicons of the native languages of the creators of creoles. As for their phonological form, the prediction is that this should be derived from some of the phonetic strings of the superstrate languages. As far as the phonetic form of the Nubi negative marker 'ma is concerned, the claim here is that it is copied from Sudanese Arabic, as can be seen from Table 2 below.

Table 2. The phonetic form of the negative marker in Nubi, the superstrate language, and the substrate languages

Nubi	Superstrate Languages	Substrate Languages			
Arabic based creole Nubi (Wellens, 2003)	Sudanese Arabic (Dickens, 2011: 570)	Acholi (Kitching, 1932: 17)	Nuba (Stevenson, 1938: 115)	Ma'di (Blackings and Fabb, 2003: 20, 25, 466-467)	Kunuz Nubian (Abdel-Hafiz, 1988: 180)
a. 'ma	maa	a. pe	fa	a. kōrò	a. min
b. 'me		b. ko		b. kō	b. me:n
		c. boŋo			

To test the syntactic position of the Nubi negative marker against data from the

superstrate language, consider the following examples from Sudanese Arabic.

- (16) a. huwwa maa samiḥ
 PRON.3.M.SG NEG handsome
 'He is not handsome.' (Kuz'mina, 2007: 16)

- b. *huwwa* ***maa*** *katab*
PRON.3.M.SG NEG write.PAST.3.M.SG
'He did not write.' (Ibid: 16)
- c. *laa*, ***maa*** *ʕaawiz-Ø* *ʕaahi*
no NEG want.PART.M.SG tea
'No, I do not want tea.' (Ibid: 17)

The examples in (16) show that the Sudanese sentential negative marker precedes the predicate of the sentence.

When the phonological and distributional properties of the Nubi sentential negative marker are compared to those found in the superstrate language, it can be argued that the claims made in the adapted theoretical framework are borne out by the data.

The Nubi sentential negative marker has copied the phonetic shape but not the distributional property of the Sudanese Arabic sentential negative marker *maa*. Thus, while the Sudanese negative marker precedes the predicate, the Nubi counterpart can be

- (17) a. ***pe*** *ʔeyo*
NEG know.1SG.I
'I do not know' (Acholi, Kitching, 1932: 17)
- b. *ʔeyo* ***ko***
know.3SG NEG
'He does not know' (Acholi, Ibid: 17)
- c. *ʔeyo* ***boʔo / boʔo*** *ʔeyo*
know.3.SG. NEG/NEG know.3SG.
'He does not know.' (Acholi, Ibid: 17)

- (18) a. *a* *mai*
PRON.1.SG know
'I know.' (Nuba, Stevenson, 1938: 115)
- b. *a* ***fa*** *mai*
PRON.1.SG NEG know
'I don't know.' (Nuba, Ibid: 115)

Second, similar to Nubi, the negative marker can be located sentence-finally,

- (19) *m' - āw i'* *dʒo 'tī* ***kō***
1.SG-open door NEG.PAST
'I did not open the door.' (Ma'di, Blackings and Fabb, 2003: 20)

The claim here is that these data provide evidence that the distributional property of the Nubi negative marker is derived from the substrate languages.

prefixed to the verb complex, be used as an unbound morpheme preverbally and postverbally, and be used as an unbound morpheme sentence finally. The claim here is that the distributional properties of the sentential negative marker of Nubi are all instantiated in the substrate languages. This claim rests upon the following two pieces of evidence.

First, similar to Nubi, the negative marker can be an unbound form which precedes or follows the verb, as in Acholi (see the examples in 17), or precedes the verb, as in Nuba (see the examples in 18).

as is the case in Ma'di (example 19).

The question that needs to be answered is how Nubi ended up having the distributional properties that are available in a number of substrate languages; yet, they are

not the exact match of any particular substrate language. The claim here is that these properties can be the outcome of the second major cognitive process in the genesis of creole, namely dialect levelling. In the adopted framework, it is hypothesized that in the process of creating a creole, speakers of various substratum languages bring to the developing creole the syntactic and semantic properties of their own copied lexicons. This means that the result of the relexification of different lexicons is not uniform. In the words of Lefebvre (1998: 46), “[t]he features that are common to all the relexified lexicons (that is, to all substratum languages) will most probably be maintained in the creole. The idiosyncratic features, however, are those that are subject to levelling. It is hypothesised that, when the speakers of the creole community stop targeting the lexifier language and start targeting the relexified lexicons, that is, the early creole, they begin levelling out the differences between the relexified lexicons [...] different creole communities may arrive at different compromises”.

With this in mind, the claim here is that the compromise that the creole community of Nubi has arrived at in the context of sentential negation is one that includes the distributional properties of sentential negation in three of the four substrate languages, and none which mimics the distributional properties of sentential negation in any particular substrate language.

Having considered a number of cases of relexification in Nubi, it is hoped that these cases show that the cognitive processes of relexification and dialect levelling play role in the genesis of Nubi.

6.2 Relexification of major category lexical items

This section explores the major role of relexification in the genesis of major category lexical items in Nubi.

An example of the relexification in Nubi of a major category lexical item can be found in the person pronominal system of Nubi. Nubi has three persons and two numbers. This is shown in Table 3 below (based on Wellens, 2003: 52).

Table 3. The personal pronouns of Nubi

Number		Singular	Plural
Person	1	<i>'ana</i> ('an) 'I'	<i>'ina</i> 'we'
	2	<i>'ita</i> ('ta) 'you'	<i>'itokum</i> ('itakum, 'tukom, 'tom) 'you' (PL)
	3	<i>'uo</i> ('awo) 'he', 'she', 'it'	<i>'umon</i> ('omon) 'they'

As can be seen in Table 3, Nubi has six personal pronouns. In comparison, Sudanese Arabic, the superstrate language, has three

persons, two numbers and two genders. This is shown in Table 4 below (based on Kuz'mina, 2007: 16).

Table 4. The personal pronouns of Sudanese Arabic

Number		Singular	Plural
Person and gender	1 M/F	<i>ʔana</i> 'I'	<i>niħna</i> 'we'
	2 M	<i>ʔinta</i> 'you'	<i>ʔintu</i> 'you'
	2 F	<i>ʔinti/ʔitti</i> 'you'	<i>ʔintan</i> 'you'
	3 M	<i>ħuwwa</i> 'he/it'	<i>ħum</i> 'they'
	3 F	<i>ħiyya</i> 'she/it'	<i>ħin</i> 'they'

As can be seen in Table 4, Sudanese Arabic has ten personal pronouns. To examine

the person pronominal systems in the substrate languages, consider now Table 5.

Table 5. The personal pronouns of Acholi, Nuba, Ma'di and Kunuz Nubian

Substrate language	Acholi (Kitching, 1932: 9)		Nuba (Stevenson, 1938: 83) Nominative case only		Ma'di (Blackings and Fabb, 2003: 110) The U-Paradigm only		Kunuz Nubian (Abdel-Hafiz, 1988: 88) Nominative case only		
	Number	Singular	Plural	Singular	Plural	Singular	Plural	Singular	Plural
Person	1	<i>a, ai</i> 'I'	<i>anyi</i> 'we'	<i>a-, an</i> 'I'	<i>wa-, wan</i> 'we'	<i>á-, má</i> 'I'	<i>à-, àmà</i> 'we'	<i>ay</i> 'I'	<i>ar(gu)</i> 'we'
	2	<i>i</i> 'you'	<i>nyi</i> 'you'	<i>i-, in</i> 'you'	<i>wu-, wun</i> 'you'	<i>í-, ní</i> 'you'	<i>ì-, ànì</i> 'you'	<i>er</i> 'you'	<i>ir(gu)</i> 'you'
	3	<i>en</i> 'he/she/it'	<i>ani</i> 'they'	<i>o-, e-, en</i> 'he/she/it'	<i>gi-, gin</i> 'they'	<i>ḥ-</i> 'he'	<i>ḥ-(kà)</i> 'they'	<i>ter</i> 'he/she/it'	<i>tir(gu)</i> 'they'

Table 5 shows that the person pronominal systems of all the substrate languages have three persons and two numbers. Having examined the person pronominal systems in the substrate languages, it can be concluded that Nubi

- (20) a. *'ana ~ 'an > ?ana* 'I'
 b. *'ita > ?inta* 'you'
 c. *'uo ~ 'awo > huwwa* 'he/it'
 d. *'ina > niḥna* 'we'
 e. *'itokum ~ 'itakum ~ 'tukom ~ 'tom > ?intu* 'you.PL'
 f. *'umon ~ 'omon > hum* 'they'

In terms of the morphosyntactic distinctions, Nubi personal pronouns pattern with the personal pronouns of the substrate languages rather than with the personal pronouns of Sudanese Arabic. Thus, while Sudanese Arabic personal pronouns show distinctions in gender, in addition to person and number, gender distinctions are lacking in Nubi and in all the substrate languages. One way to account for this difference between Nubi and Sudanese Arabic is to claim that the creators of Nubi have copied the major category lexical entries of the personal pronouns of their first languages, and assigned to them the phonetic strings of the personal pronouns of Sudanese Arabic. In other words, this is an example of relexifying already available lexical entries in the process of creating a creole. Thus, Nubi makes a three-way distinction in person and a two-way

personal pronouns are phonologically derived from the phonetic strings of Sudanese Arabic personal pronouns rather than from any of the substrate languages, as is also illustrated in (20) below.

distinction in number because these are the distinctions realized in the lexical entries of the personal pronouns of the first languages of the creators of Nubi.

This subsection has shown how a major category lexical entry, namely that of personal pronouns, is relexified in the process of creating Nubi. The next section examines how the directionality of word order of the major and minor lexical categories of Nubi is developed.

6.3. Directionality of word order in Nubi

Lefebvre (1998: 39-40; 2009: 46) conjectures that in pidgin and creole genesis, the directionality of word order should be determined in the following manner: major lexical categories (nouns, main verbs, adjectives, adverbs, prepositions) can be identified by the creators of creoles, as the

creators of creoles copy the phonetic strings of the superstratum language. Given that creole genesis is a special case of second language acquisition (Lefebvre, 1998: 29; 2009), it is predicted that the directionality of these categories follows that of the superstrate language. On the other hand, minor lexical categories (i.e. functional categories) cannot be identified by the creators of creoles given insufficient exposure to the superstrate

- (21) 'Uo 'meles fu 'lufra 'de.
 PRON.3SG slip-Ø P hole DEF
 'He slipped into the hole' (Nubi, Wellens, 2003: 102-103)

Based on the example in (21), it can be concluded that the definite article 'de 'the', which is a minor lexical category follows its complement rather than precedes it. To see

language. In this situation, the directionality of these categories follows that of the native languages of the creators of creoles, i.e. the substrate languages. The next subsections show that this prediction is borne out by the data from Nubi.

Consider first one of the minor category lexical items, namely the definite article by examining the example below.

how definiteness is expressed in the superstrate and substrate languages, consider the data in Table 6 below.

Table 6. The linguistic encoding of definiteness in Nubi and some superstrate and substrate languages

Nubi	Superstrate Languages	Substrate Languages demonstrative forms			
		Acholi (Kitching, 1932)	Nuba (Stevenson, 1938: 24)	Ma'di (Blackings and Fabb, 2003: 131)	Kunuz Nubian (Abdel-Hafiz, 1988: 101)
Arabic based creole Nubi (Wellens, 2003)	Sudanese Arabic (Dickens, 2011: 570)				
'de postnominal	a. ʔal- procliticized to the noun	does not seem to exist	does not exist	r̥i post-nominal	have zero morphological exponence

An examination of Table 6 shows the following: the phonetic shape of the definite article in Nubi neither looks like the phonetic shape of the definite article in the superstrate language nor like the phonetic shape of the definite article in the only substrate language

that has definite articles, namely Ma'di; three out of the four substrate languages lack a definite article. In Ma'di, the only substrate language that has definite articles, the article follows rather than precedes the noun, as can be seen in (22).

- (22) indri aṯi dʒɔā r̥i
 goat first one-of DEF
 'The first goat' (Ma'di, Blackings and Fabb, 2003: 131)

A similar pattern of word order is observed with another functional category lexical item, namely demonstrative

determiners in Nubi. This is shown in (23) (for more examples, see Wellens, 2003: 70-76):

- (23) 'Ter 'de kan 'b(i)- arija 'ja 'gai
 bird DEF if FUT- return come-Ø sit-Ø

fī 'ras ta neyere'ku 'de, (...)
P head GEN child DEM.PROX

'If the bird will come back and sit on the head of this child, (...)' (Nubi, Wellens, 2003: 70)

The example in (23) shows that the demonstrative determiner follows rather than precedes the head noun in Nubi. At this point, it is worth pointing out that the fact that both the definite article and the demonstrative determiner are homophonic in Nubi is probably due to the definite article being diachronically derived from a demonstrative (see Ibid: 70 for such a claim). For the

purpose for this study, it is crucial to note that the definite article in Nubi follows rather than precedes the noun, contrary to the word order in Sudanese Arabic. Note also the fact that the definite article and the demonstrative determiner in Nubi are two separate syntactic determiners, as can be verified by the possibility of their co-occurrence (example 24).

(24) *Gi-rasu'lu ma ma'ma 'de 'na'de*
PROG-arrive.PASS P mother DEF DEM.PROX
'They arrived with that mother.' (Nubi, Ibid: 73)

In terms of the order of the demonstrative determiners in relation to the head noun in Nubi, there are two possibilities to consider. The first is that the postnominal

order of demonstrative determiners is derived from Sudanese Arabic, the superstrate language. To illustrate, consider (25) and (26) from Sudanese Arabic.

(25) *ʔal-beet da*
DEF-house DEM.PROX.MSG
'this house' [Lit., the house this] (Sudanese Arabic, Kuz'mina, 2007: 23)

(26) *ʔal-madrasa di*
DEF-school DEM.PROX.FSG
'this school' [Lit., the school this] (Sudanese Arabic, Ibid: 23)

The examples in (25) and (26) show that the demonstrative determiners of Sudanese Arabic occupy a postnominal position. At first sight, this could be taken as evidence that the order of demonstrative determiners in relation to their head nouns in

Nubi is derived from the superstrate language, contrary to the predictions of the adopted theoretical framework. To verify whether this is indeed the case, consider the syntactic position of demonstrative determiners in the substrate languages, as illustrated in the examples below.

(27) *l̥acòò r̥ù l̥akwòò*
man DEM.PROX thief
'This man is a thief.' (Acholi, Balckings 2009: 181)

(28) *wadaŋ d̥ə*
man/men DEM.DIS
'that man, those men (nearby)' (Nuba, Stevenson, 1938: 77)

(29) *d̥zɔ́ d̥i kò-wē r̥ō rá*
house DEM.PROX 3DIR-sweep REFL AFF

‘(By time T) this house should certainly have been swept.’ (Ma’di, Blackings and Fabb, 2003: 91)

- (30) *in* *id*
DEM.PROX man
‘this man’ (Kunuz Nubian, Abdel-Hafiz, 1988: 206)

Examples 27-30 demonstrate that demonstrative determiners follow their head nouns in three substrate languages, a word order similar to that found in Nubi. Of the four substrate languages, Kunuz Nubian is the only language where demonstrative determiners precede the head noun, as is shown in (30). The claim in this study is that the word order of demonstrative determiners in Nubi is derived from that of the substrate languages rather than from that of the superstrate language. One piece of evidence

to support this claim can be gleaned from the syntactic behavior of demonstrative determiners in the superstrate language, which sets them apart from the demonstrative determiners of Nubi and those of the substrate languages. Demonstrative determiners in Sudanese Arabic can only be used when the modified noun is marked as definite by the use of the proclitic definite article, as is shown in examples (25) and (26) above. This is further confirmed by the following contrastive pair from Sudanese Arabic.

- (31) a. *ʔal-qalam* *da* *qisayyir*
DEF-pencil DEM.PROX.M.SG small.M.SG
‘This pencil is small.’ (Sudanese Arabic, Trimmingham, 1946: 19)
b. **qalam* *da* *qisayyir*
pencil DEM.PROX.M.SG small.M.SG
‘This pencil is small.’ (Sudanese Arabic)

The examples in (31) show that the demonstrative determiner can only be used when the head is definite. Sudanese Arabic is thus characterized by the typologically rare property of nominal overdetermination according to which a noun which is identified by an adnominal demonstrative must also be morphosyntactically determined by the definite article (Himmelman, 2001: 840). The fact that Sudanese Arabic has this morphosyntactic property, which is lacking in Nubi and in all the substrate languages is a clue that the word order of Nubi demonstrative determiners is derived from the substrate languages rather than from the superstrate language.

The question that remains to be answered is why Nubi demonstrative determiners derived their distributional

property from Acholi, Nuba and Ma’di, and not from Kunuz Nubian, where demonstrative determiners occupy a prenominal position. The claim here is that this is yet another result of dialect levelling, the other major cognitive process in the genesis of creoles according to the adopted theoretical framework. When four relexified lexicons compete in the early stages of the development of creoles, differences are levelled out in the process. The fact that the distributional property of one substrate language loses to the distributional properties of three other substrate languages should therefore come as no surprise. Table 7 is a summary of the phonological forms of demonstrative determiners and their word order in Nubi, the superstrate language, and the substrate languages.

Table 7. The phonological forms of demonstrative determiners and their word order in Nubi and the superstrate and substrate languages

Nubi	Superstrate Languages	Substrate Languages demonstrative forms			
Arabic based creole Nubi (Wellens, 2003: 70)	Sudanese Arabic (Dickens, 2011: 561)	Acholi (Kitching, 1932: 11)	Nuba (Stevenson, 1938: 77)	Ma'di (Blackings and Fabb, 2003: 123)	Kunuz Nubian (Abdel-Hafiz, 1988: 88)
a. 'de (sg) dol (pl) uwe'de (sg.near) 'dol/de (pl.near) 'na'de (sg. far) 'na'de, 'na'dol/de (pl.far) (postnominal)	a. for near referents: da (m.sg) di (f.sg) dēl (pl) b. for distant referents: dāk (m.sg) dīk (f.sg) dēlak; also dēk (postnominal)	a. <i>man, eno, rù</i> (for close singular referent) b. <i>meno</i> 'that' (postnominal)	a. <i>nɔ</i> 'this, these' b. <i>dɔ</i> 'that, those' (nearby) c. <i>dɔl</i> 'that, those' (distant) d. <i>nya</i> 'a certain, certain, some' (postnominal)	a. proximal in the physical context <i>dī</i> 'this' b. distal in the physical context <i>nà</i> 'that' (postnominal) c. near you in the physical context <i>ilédī</i> 'that which is near you' d. the entity mentioned in the previous discourse, but in the preceding utterance <i>rī</i> 'the entity in question' e. the aforementioned entity <i>nā</i> 'the one mentioned in the previous utterance' f. identifiable but not mentioned in the previous discourse ‡ 'low tone suffix'	a. near the speaker <i>in</i> 'this' <i>in-gu</i> 'these' b. far from the speaker <i>man</i> 'that' <i>man-gu</i> 'those' (prenominal)

It can be concluded from Table 7 that the demonstrative determiners in Nubi take their phonological form from the phonetic strings of the demonstrative determiners in the superstrate language rather than from any of the substrate languages. This is illustrated in (32).

- (32) a. 'de > da
 b. dol > dēl

As for the syntactic behavior of the demonstratives in Nubi, one cannot make the case whether the syntactic behavior is derived from the superstrate language, or from the substrate languages, since Sudanese Arabic, the superstrate language, and Acholi and Ma'di, two

of the substrate languages show a similar syntactic position. In other words, the data on demonstratives in Nubi does not provide evidence neither for nor against the relexification approach, especially as far as the syntactic

behavior of demonstratives is concerned.

Another minor lexical category to consider is that of cardinal numerals. Cardinal numerals (3 onwards) follow their head nouns, as can be seen in (33) and (34).

(33) *'Ana* *'fekeri* *'an(a)* *'endu* *'sana* *'ashara* *au* *i'dashar*.
 PRON.1.SG think-Ø PRON.1S.G have-Ø year(s) NUM or NUM
 'I think I had ten or eleven years/ I was ten or eleven years old.' (Nubi, Wellens, 2003: 147)

(34) *Yo'wele* *'ja* *ka'la* *'rasu* *'saba*.
 boy become-Ø EMPH head(s) NUM
 'The boy had become [with] seven heads.' (Nubi, Ibid, ft. 143: 157)

However, the opposite order is found with such cardinal numerals in Sudanese

Arabic, as can be seen in the contrasting pairs of (35) and (36).

(35) a. *xattê-t* *lë-ki* *taläta* *hitat* *fî* *š-šây*
 put-1.SG for-PRON.2.F.SG three piece.PL P DEF-tea
 'I put three pieces in your tea.' (Sudanese Arabic, Kaye, 1976: 173)
 b. **xattê-t* *lë-ki* *hitat* *taläta* *fî* *š-šây*
 put-1.SG for-PRON.2.F.SG piece.PL three P DEF-tea
 'I put three pieces in your tea.' (Sudanese Arabic)

(36) a. *ʔaywa, l-iyya* *ʕašrat* *siniin*
 yes P-PRON.1.SG NUM year.PL
 'Yes, I have [been here] for ten years.' (Sudanese Arabic, Kuz'mina, 2007: 35)
 b. **ʔaywa, l-iyya* *siniin* *ʕašra*
 yes P-PRON.1.SG year.PL NUM
 'Yes, I have [been here] for ten years.' (Sudanese Arabic)

In this study, minor category lexical items such as cardinal numerals are predicted to derive their phonological form from the superstrate language, which is indeed the case

here, as is clear from Table 8 of Nubi cardinal numerals and their equivalents in the superstrate and substrate languages.

Table 8. Some Nubi cardinal numerals and their equivalents in the superstrate and substrate languages

Nubi	Superstrate Languages	Substrate Languages			
Arabic based creole Nubi (Wellens, 2003)	Sudanese Arabic (Kaye (1976: 173-174); Kuz'mina (2007); Trimmingham, 1946: 77)	Acholi (Kitching, 1932: 7-8)	Nuba (Stevenson, 1938: 72)	Ma'di (Blackings and Fabb, 2003. 128-129)	Kunuz Nubian (Abdel-Hafiz, 1988: 208-209)
'saba 'seven'	sab ^ʕ a 'seven'	abiro 'seven'	kwalad(u) 'seven'	túùdēri 'seven'	kolod 'seven'
'ashara 'ten'	ʕašara 'ten'	apar 'ten'	fəru 'ten'	mūdri 'ten'	dimin 'ten'

The data in Table 8 shows that the phonological forms of cardinal numerals in Nubi are similar to those of the superstrate language, Sudanese Arabic, and that they are unlike any cardinal numerals in the substrate languages. This means that the phonological forms are as shown in (37) below.

- (37) a. 'saba > sabfa
b. 'ashara > řařara

In terms of their distributional property, cardinal numerals in Nubi seem to derive their

- (38) wa didia mul
NOM elder.PL five
'five elders' (Nuba, Stevenson, 1938: 73)

- (39) e:n kolod
woman.PL NUM
'seven women' (Kunuz Nubian, Abdel-Hafiz, 1988: 209)

- (40) sàà kámsà
hour NUM
'five o'clock. (morning or evening)' (Ma'di, Blackings and Fabb, 2003: 130)

- (41) anwoño roya acel keken
found.1.SG.I calf NUM itself
'I found one calf by itself.' (Acholi, Kitching, 1932: 10)

The examples in (38) through (41) from all four substrate languages show that cardinal numerals in these languages follow rather than precede their head nouns, a pattern similar to that in Nubi, and unlike the pattern in the superstrate language.

To summarize, we have so far provided evidence to support the claim that the word

- (42) 'Uo 'jib bi'niya 'de fi 'batna 'be 'in.
PRON.3.SG bring-Ø girl DEF P belly home here
'He brought the girl into our home here.' (Nubi, Wellens, 2003: 104)

The data in (42) shows that adpositions, which constitute a major category lexical item, precede rather than follow their complements in Nubi. This is also the same

- (43) sallim-Ø řala waald-ak
greet.IMP.2M.SG P father- POSS.2.M.SG

word order from the substrate languages rather than from the superstrate language. This is confirmed by the fact that cardinal numerals in Nubi are all postnominal rather than prenominal, a position which is similar to that of cardinal numerals in the substrate languages. The following examples from the substrate languages make this point clear.

order of functional categories in Nubi is derived phonologically from the superstrate language, but syntactically from the substrate languages.

Consider now as an example of major lexical categories adpositions and the directionality they observe in Nubi. The following is an example.

position of adpositions in Sudanese Arabic, the superstrate language, as can be shown in (43).

‘Say ‘Hi’ to your father.’ (Sudanese Arabic, Kuz’mina, 2007: 11)

While it is true that Nubi has prepositions rather than postpositions, it is also true that two of the substrate languages

of Nubi have prepositions and two others have postpositions. This is shown in the following examples.

(44) *an abido wi kom*
 PRON.1.SG sit.I P chair
 ‘I sit on a chair.’ (Acholi, Kitching, 1932: 30)

(45) *ɔtʃɛ ɔ-tʃi ɔpi nɪ pá gá*
 dog 3-bite Opi PRON leg P
 ‘A dog bit Opi on the leg.’ (Ma’di, Blackings and Fabb, 2003: 18)

(46) *ka:n agillo a:gi*
 house-GEN P sit
 ‘S/he is sitting in front of the house.’ (Kunuz Nubian, Abdel-Hafiz, 1988: 220)

(47) *kitabū dɔŋ*
 book.GEN P
 ‘on the book’ (Nuba, Stevenson, 1938: 99)

The examples in (44) through (47) show the following: Acholi uses prepositions, whereas Ma’di, Kunuz Nubian and Nuba use postpositions. Two possibilities can be considered here. The first possibility is that the word order of adpositions in Nubi is derived from Acholi, one of the four substrate languages. This possibility is ruled out by the mechanism of dialect levelling, the second major cognitive process in the adopted theoretical framework. If the word order of Nubi adpositions had been derived from the substrate languages, then dialect levelling would have favored the word order of the three other substrate languages, and would have levelled the differences by eliminating

the word order of Acholi. Having ruled out this possibility, the claim here is that the Nubi word order of adpositions is derived from Sudanese Arabic.

Another major category lexical item to consider is that of attributive adjectives. These follow rather than precede the head noun in Nubi (Wellens, 2003: 76-79), as can be seen in (48).

(48) *'moyo was'kan*
 water dirty.SG
 ‘dirty water’ (Nubi, Ibid: 59)

This is also the order of attributive adjectives in the superstrate language, as can be shown in (49) from Sudanese Arabic.

(49) a. *kaan-at ʔijaaza mumtisa jiddan*
 be.PAST-3.F.SG break.F.SG pleasant.F.SG very
 ‘It was a very pleasant break.’ (Sudanese Arabic, Kuz’mina, 2007: 12)
 b. **kaan-at mumtisa jiddan ʔijaaza*
 be.PAST-3.F.SG pleasant.F.SG very break.F.SG
 ‘It was a very pleasant break.’ (Sudanese Arabic, Sudanese consultant)

To examine the position of attributive adjectives in relation to their head nouns in

the substrate languages, consider the following examples.

- (50) *la-lit-oto*
LA-ear-dead
'a deaf man' (Acholi, Kitching, 1938: 4)
- (51) *essi-du:l*
water-big
'sea' (Kunuz Nubian, AbdeHafiz, 1988: 79)
- (52) *ɲì sō bɔŋgó ɪkā àzō rì áō*
2.S.DIR wear dress red long DEF FOC
'(You should) put on the long red dress.' (Ma'di, Blackings and Fabb, 2003: 16)
- (53) *kwir kediŋ*
pot small
'small pot(s)' (Nuba, Stevenson, 1938: 56)

In his discussion of Acholi, Kitching (1938: 6) states that "[t]here are no true adjectives in Acholi, their place being supplied by verbs in the relative form." He adds that "[a]djectives always follow the substantive qualified by them," as is shown in example (50). In Kunuz Nubian, another substrate language of Nubi, attributive adjectives are bound morphemes that are suffixed to the head noun, as is shown in (51). In Ma'di, attributive adjectives are postnominal, as is shown in (52). In Nuba, attributive adjectives are also postnominal, as is shown in (53).

Having examined the distributional properties of attributive adjectives in Nubi, and in the superstrate and the substrate

languages, the question that needs to be answered is whether the word order of Nubi attributive adjectives is derived from the superstrate language or from the substrate languages. If the Nubi word order is derived from the substrate languages, it must have derived it from the two substrate languages where attributive adjectives occupy a postnominal position, namely Ma'di and Nuba. However, the possibility that the word order of Nubi attributive adjectives is derived from Nuba is ruled out by the fact that the word order of modifiers in the nominal domain of Nubi is different from the word order of modifiers in the nominal domain of Nuba. To illustrate, consider example (54) from Nubi and example (55) from Nuba.

- (54) *a'ku 'to 'wai ke'bir 'de*
brother PRON.POSS.3.SG NUM big DEF
'his one eldest brother' (Nubi, Wellens, 2003: 97)
- (55) *kweni aie.ɟam asa*
knife.PL sharp NUM
'three sharp knives' (Nuba, Stevenson, 1938: 73)

The example in (54) shows the cardinal numeral 'wai 'one' in Nubi precedes the attributive adjective *ke'bir* 'big'. However,

Wellens (2003: 97) shows that these two modifiers can exchange positions, as can be seen in the following example.

- (56) *fì 'dar 'gala 'wai 'na'de al ke'bir 'de,*
P back hill NUM DEM.DIS.SG REL big DEF

Al gi- na'di N'isamishi
 REL PROG- call.PASS N.PROP
 'at the back of that one hill, which is big, which is called Nsamishi' (Nubi, Ibid: 96)

The example in (56) shows that the cardinal numeral 'wai 'one' can also follow the attributive adjective 'dar 'back'. This is in contrast to the situation in Nuba, where cardinal numerals always follow the attributive adjectives, as can be seen in (55).

Having established that the word order of modifiers in Nubi is different from the word order of modifiers in Nuba, it follows that the word order of attributive adjectives in Nubi cannot be traced back to Nuba.

The other possibility that can be entertained is that the word order of Nubi attributive adjectives is derived from Ma'di. However, this hypothesis is weakened by the fact that unlike Nubi, where cardinal numerals and attributive adjectives can exchange positions, this does not seem to be the case in Ma'di, where attributive adjectives precede numerals, as can be seen in the following example.

(57) *àgō ālī sū rì zì ̄-nā èbí rá*
 men short.PL NUM DEF other 3-eat fish AFF

(a) 'Of the four short men, some certainly ate fish.' (Could be one or two or three of them, but not four of the men.)

(b) 'There is a set of four short men, and another set of four short men certainly ate fish.' (Ma'di, Blackings and Fabb, 2003: 354)

The example in (57) suggests that attributive adjectives always precede numerals in Ma'di. This conclusion casts doubt on the idea that the word order of Nubi attributive adjectives must have been derived from Ma'di. In fact, even if the word order of modifiers in Ma'di matches that of modifiers in Nubi, dialect levelling would not have

allowed the word order of attributive adjectives in Ma'di to derive that of Nubi, as the Ma'di word order clearly does not represent a common word order among the substrate languages.

Having ruled out the possibility that the word order of Nubi attributive adjectives is derived from that of the substrate languages, the claim in this study is that the word order of Nubi attributive adjectives is derived from that of the superstrate language.

Another major category lexical item is the lexical verb. Nubi is essentially an SVO language, as is shown in the example below:

(58) *Fi'lel, 't(a) 'futa 'lufra ke'biri.*
 S V DO
 at night PRON.2.SG dig hole big
'Ito 'kubu la'kata 'de 'kulu fi 'lufra
 S V DO
 PRON.2.SG throw-Ø firewood DEF all P hole
'de 'na
 DEF there

'At night, you dug a big hole. You threw all the firewood in the hole there.' (Nubi, Wellens, 2003: 179)

The example in (58) shows that the Nubi verb 'futa means 'to dig', and the Nubi verb 'kubu means 'to throw'. In Sudanese Arabic, the verb yifuut means 'to pass', and

the verb yukubb means 'to pour out' or 'to discharge'. In Acholi, the verb pùūr means 'to dig' and the verb bàā or bōōl means 'to throw' (Blackings, 2009: 181). In Ma'di, the verb sò

means ‘to dig’ and the verb *vī* means ‘to throw’ (Blackings and Fabb, 2003: 456, 646). In Nuba, the verb *bijeg* means ‘to throw’ and the verb *tiw* means ‘to dig’ (Stevenson, 1938: 33, 143). Based on the data, it seems that

Nubi lexical verbs are phonologically derived from the superstrate language rather than from the substrate languages, as can be seen in (59) below.

- (59) a. *futa* > *fuut* (Sudanese Arabic imperative forms)
b. *kubu* > *kubb* (Sudanese Arabic imperative forms)

To see how lexical verbs behave syntactically in the superstrate languages and the substrate languages, consider the

following two examples from Sudanese Arabic.

- (60) *Ahmed* *ʔeshtara* *ʕarabiya*
Ahmed buy.PAST.3M.SG car
‘Ahmed bought a car.’ (Sudanese Arabic, Taha, Sultan, and Yasin, 2016: 1618)

- (61) *wa* *kamaan* *ʔanaa* *ʕaawz-a* *ʕuwayit* *bahaar-aat*
and also PRON.1.SG want.PART-F.SG little spice-F.PL
‘And I also want some spices.’ (Sudanese Arabic, Kuz’mina, 2007: 15)

The examples provided in (60) and (61) demonstrate that the lexical verb in the superstrate language precedes the object.

To see where lexical verbs are syntactically positioned in relation to the object in the substrate languages, consider the following examples.

- (62) *a* *yəŋ* *ka* *wishi*
PRON.1.SG PRON.2.SG PROG greet
‘I greet you.’ (Nuba, Stevenson, 1938: 105)

- (63) *saab* *kaare-g* *kal-s-u*
cat fish-ACC eat-PAST-3.SG
‘The cat ate the fish.’ (Kunuz Nubian, Abdel-Hafiz, 1988: 201)

- (64) a. *ká* *èbī* *āzī*
3 fish sell.N.PAST
‘She is selling fish/She sells fish.’ (Ma’di, Blackings and Fabb, 2003: 160)
b. *ḥ-* *nā* *èbī*
3S eat fish
‘He ate fish.’ (Ma’di, Ibid: 139)

- (65) *winyo* *o-camo* *bel* *woko*
bird.PL O-IMPERF-eat corn entirely
‘The birds have eaten up the corn.’ (Acholi, Kitching, 1932: 3)

The examples presented in (62) and (63) show that the lexical verb follows the object in Nuba and Kunuz Nubian. In Ma’di, the lexical verb also follows the object when the verb is inflected, as can be seen in (64a), but

precedes the object when the verb is uninflected, as is shown in (64b). In Acholi, the verb precedes the object, as is shown in (65). Given that the pattern where the verb follows the object is available in three of the

four substrate languages, it seems that Nubi's sentence structure where the verb precedes the object cannot be said to derive from Acholi, the only substrate language, with an SVO order. In fact, this possibility is ruled out by the mechanism of dialect levelling, which only allows common features in the substrate languages to prevail in the developing creole. The simplest hypothesis to entertain is one where Nubi's sentence structure is derived

- (66) *'Ana* *'feker* *'ke an* *bu- lo'go* *'bata 'tan*
 PRON.1.SG think-Ø SUBJ PRNO.1.SG FUT receive belly other
'gwam *'ma*
 fast NEG
 'I thought I should not get another pregnancy fast.' (Nubi, Wellens, 2003: 128)

Wellens (2003: 161) states that adverbs of manner generally occupy the sentence-final position, as can be seen in (71) above. This is also the position of the manner adverb

- (67) *jiib* *ʔal-guruuʃ* *gawaam*
 bring.IMP DEF-money quickly
 'Bring the money quickly' (Sudanese Arabic, Sudanese consultant)

The example in (67) shows that the manner adverb *gawaam* 'quickly' is sentence-final in Sudanese Arabic. Notice also that the Nubi manner adverb *'gwam* 'quickly' is

- (68) *e:n* *gowwa:n* *ta:-s-u*
 woman quickly come-PAST-3.SG
 'The woman came quickly.' (Kunuz Nubian, Abdel-Hafiz, 1988: 212)

- (69) *lalay* *kada-i!*
 quickly go-IMP
 'Go quickly!' (Nuba, Stevenson, 1938: 175)

- (70) *i-woto* *oyot*
 2.SG-walk fast
 'You walk fast.' (Acholi, Kitching, 1932: 22)

- (71) *ē-mú* *ēzè* *ēzè*
 (3)-VE-go early early
 'He came quickly.' (Ma'di, Blackings and Fabb, 2003: 127)

Based on the examples of the manner adverb *quickly* in the superstrate language and in the substrate languages, it can be

from the superstrate language. This lends further support to the claim made in this study that the word order of major category lexical items such as lexical verbs is predicted to derive from the superstrate language rather than from their substrate languages.

Another major category lexical item is that of adverbs. To see how adverbs behave in Nubi, consider the example of the adverb of manner *'gwam* 'quickly' in (66).

gawaam 'quickly' in Sudanese Arabic, the superstrate language, as can be illustrated in (67).

phonologically very similar to the Sudanese Arabic *gawaam* 'quickly'.

To examine the manner adverb *quickly* in the substrate languages, consider the examples in (68) through (71).

established that the Nubi manner adverb *'gwam* 'quickly' is phonologically derived from the Sudanese Arabic phonetic string

gawaam ‘quickly’ rather than from any of the substrate languages.

The general picture that seems to emerge from the discussion of directionality of major and minor lexical category items is that the data support the predictions of the adopted theoretical framework, and the data discussed overwhelmingly support the hypothesis put forward in this study.

7. Conclusion

Based on the evidence that is provided in this paper, it can be concluded that Nubi lexical items are phonologically derived from the phonetic strings of Sudanese Arabic. Syntactically, however, a more complex picture emerges in that minor category lexical items derive their word order from the substrate languages, whereas major category lexical items derive their word order from the superstrate language.

The results therefore lead us to believe that the development of the Arabic-based Creole can find its source in the interaction between the two cognitive processes of relexification and dialect levelling.

In future research, the phonetic/phonological and syntactic properties of the other substrate languages involved in the development of Nubi should be considered in order to verify whether or not the results gained in the present study can be confirmed or disconfirmed.

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Appendix. Abbreviations

The following abbreviations are used in the study:

1, 2, 3 = first, second and third persons;
3DIR = third person directive pronoun;
ACC = accusative case;
ADR = addressee;
AFF = affirmative;
DEF = definite article;
DEM.PROX = demonstrative proximal;
DO = direct object;
EMPH = emphasizer;
F = feminine;
FOC = focus;
FUT = future;
GEN = genitive;
I = class one verbs;
IMP = imperative;
INTR = interrogative;
M = masculine;
N.PAST = non-past;
N.PRO = proper name;
NEG = negative marker;
NEU = neutral tense;
NOM = nominative case;
NUM = numeral;
P = preposition/postposition;
PART = participial;
PASS = passive;
PL = plural;
POSS = possessive;
PRES = present;
PROG = progressive aspect;
PRON = pronoun;
PST = past;
RECIP = reciprocal;
REFL = reflexive pronominal;
REL = relativizer;
S = subject;
SG = singular;
SPEC = specific determiner;
SUBJ = subjunctive mood;
V = verb;
VE = ventive prefix

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