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QUANTIFICATION IN HAUSA

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1. INTRODUCTION

This chapter discusses the syntactic distribution and interpretation of quantifying expressions in Hausa, the largest of the Chadic languages.[*] Hausa is spoken by more than 35 million people (Newman 2000: 1), mainly in northern Nigeria and southern Niger, and as a lingua franca through wide parts of the Sahel region. Being a Chadic language, Hausa belongs to the Afro-Asiatic phylum, making it a distant cousin of the Semitic languages Hebrew and Arabic, and raising the interesting question to what extent both language groups show typical Afro-Asiatic traits in their respective quantificational systems.

Hausa is by no means an endangered language. At present, its influence is even increasing, at least in northern Nigeria, with Hausa replacing many smaller (West) Chadic languages. The language is well-researched from a phonological, morphological, and syntactic point of view. There are a number of dictionaries and two excellent reference grammars, which have been recently published, Newman (2000) and Jaggar (2001). Semantic aspects have not been as thoroughly researched from a formal perspective, but a lot of valuable information on the quantificational system of Hausa can be found in the above-mentioned grammars, on which this article frequently draws.

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Quantification: Universals and Variation

Hausa does not differ from the Indo-Germanic languages of Europe in exhibiting instances of both adnominal and adverbial quantification. Both types of quantification will be considered in turn. The structure of the chapter is as follows. Section 2 discusses indefinite and definite expressions. Section 3 introduces the three kinds of adnominal quantification that can be observed in Hausa and that give rise to interpretations of the indefinite *some*-, the universal *every*-, and the proportional *most*-type, respectively (see Keenan, this volume). Accordingly, adnominal quantificational elements in Hausa will be grouped as class-A, class-B, and class-C quantifiers, respectively. Section 4 looks at the different ways of expressing universal quantification in Hausa. Section 5 looks at the relative scope behaviour of various quantifiers. Section 6 gives a brief overview of the syntactic and semantic behaviour of adverbial quantifiers and exhaustive focus particles. Section 7 concludes.

The remainder of this section provides some background information on the grammar of Hausa, which will facilitate a better understanding of the data to come. Hausa is a tone language with two register tones, H (unmarked) and L (`). The basic word order is SVO and there is no overt case marking. Nominal arguments of the verb are identified on the basis of their relative order with respect to the verb and by means of an obligatory subject pronoun. The subject pronoun forms a morphological unit, or *person-aspect complex (PAC)* (Newman 2000: 564), with preverbal aspect or mood markers which encode aspectual and modal distinctions such as *perfectivity*, *imperfectivity*, *subjunctive*, or *habituality* (see section 6.1). The subject pronoun is often, but not necessarily accompanied by a full subject NP, cf. (1).[1]

(1) (Audù) yaa tàfi kàasuwaa
A. 3sg.PERF go market
'(Audu) he went to the market.'

Focused and questioned (*wh*-) constituents can be moved to a left-peripheral position, cf. (2ab). With focused and questioned subjects, such focus movement is obligatory. Application of overt focus movement is accompanied by so-called relative morphology on the aspectual marker (in italics) and by the optional presence of the particle *nee/cee* (with polar tone), following the focused or questioned constituent (Tuller 1986, Green 1997).

(2) a. *wàanee nèe* t*a* àuraa t_1 ?
who PRT 3sg.PERF.REL marry
'Who did she marry?'

[1] The following abbreviations are used in the glosses: sg = singular, pl = plural, f = feminine, m = masculine, DEF = definite, DIM = diminutive, DISJ = disjunction, FUT = future, NEG = negation, PERF = perfective, PROG = progressive, PROG.REL, PERF.REL = relative (the aspectual form used in relative clauses, wh-clauses, and with focus fronting), PRT = particle, REL = relative marker, SUBJ = subjunctive.

b. *Muusaa*$_1$ *(nèe)* t*a* àuraa t_1 [Newman 2000: 187]
M. PRT 3sg.PERF.REL marry
'It was MUSA she married'

With the exception of the progressive aspect, negation is typically expressed by a negative bracket *bà(a)…ba*, which enconpasses either the VP, or the entire clause (Newman 2000: 357), cf. (3ab). The two kinds of negation are referred to as VP-negation and sentence negation, respectively. Sentence negation occurs with overtly fronted focus constitutents and has the semantic effect of narrowly negating the focus constituent only, cf. (3b):

(3) a. Hàwwa *bà* tà daawoo *ba*
H. NEG 2sg.f.SUBJ return NEG
'Hawwa did not return.'

b. *bàa* Tàlaatù ta zàagee shì *ba* [Newman 2000: 187]
NEG T. 3sg.f.PERF.REL insult 3sg.m NEG
'It was not TALATU who insulted him.'

Concerning the internal syntax of nominal expressions, nouns and their modifying adjectives can occur in both orders N > A and A > N, cf. (4ab). In the latter case, A and N are linked through the genitive linkers *–n* (masc., pl.) or *–r̃* (f.), which are normally found in possessive or associative constructions, cf. (5), and which show gender (and number) agreement with the element on their left.

(4) a. gidaa *farii*
house white

b. *fari*-**n** gidaa
white-LINK house
'white house'

(5) gida-**n** Audù
house-LINK Audu
'Audu's house'

The obligatory presence of the genitive linker in (4b) suggests that the order A>N in (4b) may be derived by predicate fronting, as discussed in den Dikken (1998), Corver (2001) and others. With this basic information on Hausa, we now turn to the question of how the language expresses various quantificational concepts.

2. THE EXPRESSION OF (IN)DEFINITENESS IN HAUSA

Hausa has no overt indefinite article, but it has at least two ways of explicitly coding definiteness, namely a definite article, or better *previous reference marker*, and demonstrative markers. We consider bare indefinite NPs, definite NPs and demonstrative NPs in turn.

2.1 Bare indefinites

2.1.1 Existential indefinites

One way of expressing indefiniteness in Hausa is to use bare NP-expressions. Typically, such bare indefinite NPs receive an existential interpretation and refer to unspecified (sets or quantities of) individuals, as illustrated in (6a-c) for bare mass NPs, plural count NPs and singular count NPs, all in object position, respectively.

(6) a. mun shaa *ruwaa* [Ma Newman 1990: 252]
3pl.PERF drink water
'We drank *some water*.'

b. sun kaamà *dawaakii* nè.
3pl.PERF catch horses PRT
'They caught *horses*.'

c. mùtûm yaa ginà *gidaa*. [Newman 2000: 719]
man 3sg.PERF build house
'The man built *a house*.'

The paraphrases show that the bare NPs receive an existential reading, corresponding to the interpretation of *a/some*-NPs in English. The occurrence of bare indefinites in (negative) existential sentences is thus unsurprising (examples from Newman 2000: 178-9):

(7) a. àkwai *ruwaa* 'There is water.'
exist water

b. àkwai *àlbasàa* 'There are onions.'
exist onion.pl

c. baabù / bâ *yâaraa* à gidaa 'There are no children at home.'
not.exist children at home

(8ab) show that bare NP-indefinites are not restricted to the object position of sentences containing transitive verbs, nor to existential sentences. In addition, they can be used to express indefiniteness in subject and adjunct position, even with singular count NPs.

(8) a. wata raanaa *yautai* ya-nàa kiiwòo à baayan gàrii …
some day nightjar 3sg-PROG feeding at behind town
'one day a nightjar was feeding behind the town…' [Jaggar 1988: 56]

b. *soojà* yaa hàr̃bee shì [Newman 2000: 719]
soldier 3sg.PERF shoot him
'A soldier shot him.'

The evidence in (8) notwithstanding, bare indefinite NPs are not evenly distributed over sentence position and NP-types, where NP-type stands for [+/-human] reference. Jaggar (1988) shows that bare indefinite NPs typically occur in non-initial position and refer to non-humans. As Hausa is strictly SVO, apart from the existential construction in (7), non-initial occurrence is restricted to non-subject NPs in sentences with a full verb. If an NP has a human referent, however, or if it occurs sentence-initially, i.e. in subject (or topic) position, and especially if both is the case, the NP is likely to be realized with an overt indefinite marker *wani*, *wata*, *wa(ɗan)su* 'some, a certain (m., f., pl.)', as witnessed by the frame adverbial *wata raanaa* 'one day' in (8a). We return to the indefinite marker *wani*, *wata*, *wa(ɗan)su* in section 3.2.

Finally, notice that bare NPs can also receive a definite reading, depending on context:

(9) *tùuluu* yaa fashèe [Newman 2000: 143]
pot 3sg.PERFbreak
'The/ A water pot broke.'

There is thus no strict 1:1-correspondence between bare NPs and an indefinite interpretation.

2.1.2 Generic readings with bare NPs

Apart from indefinite and definite interpretations, bare NPs in Hausa can also be used generically in generic statements. In this case, the bare noun typically occurs in the singular (Newman 2000: 465):

(10) *ƙudaa* ya-nàa kaawoo cùutaa [Newman 2000: 465]
fly 3sg-PROG bring disease
'Flies bring disease.' (lit. 'The/A fly brings disease.')

2.1.3 Interaction of bare (indefinite) NPs and negation

Concerning their interaction with negation, bare indefinite NPs take semantic scope under negation when they occur embedded under a negation marker, e.g. in VP-internal object position (11a) or in negative existential sentences (11b). The bare object NP *hùulaa* 'cap' in (11a) cannot have a specific reading and take scope over negation.

(11) a. Audù **bà**-i sàyi *hùulaa* à kàasuwaa **ba**
Audu NEG-3sg buy cap at market NEG
'Audu didn't buy a cap in the market.'
NOT: 'There is a (certain) cap that Audu didn't buy.'

b. **baabù** *wutaa*
not.exist electricity
'There is no electricity.'

Bare indefinite NPs can take syntactic scope over negation, e.g. the subject NPs in (12a) and (13a) precede and c-command the negation marker, but semantically they are still interpreted in the scope of negation. (12ab) and (13a-c) are logically equivalent on an indefinite construal of *manòomii* 'farmer' and *mutàanee* 'people', at least judging from the intuitions of one consultant, despite the difference in relative order of indefinite and negation marker.

(12) a. *manòomii* **bà**-i zoo **ba**
farmer NEG-3sg come NEG
'Farmers didn't come.' = 'No farmer came.'

b. **baabù** *manòomii* dà ya zoo
not.exist farmer REL 3sg.PERF.REL come
'No farmer came.'

(13) a. *mutàanee* **bà** sù tàfi kàasuwaa **ba**
people NEG 3pl go market NEG
'People didn't go to the market.' = 'Nobody went to the market.'
NOT: 'Some people didn't go to the market.'

b. **bàa** gàskiyaa cèe *mutàanee* sun tàfi kàasuwaa **ba**
NEG truth PRT people 3pl.PERF go market NEG
'It is not the case that people went to the market.'

c. **baabù** *mutàanee* dà su-kà tàfi kàasuwaa
not.exist people REL 3pl-PERF.REL go market
'There are no people who went to the market.'

Semantic judgments for (12) and (13) are hard to obtain and one should not jump to hasty conclusions. Clearly, more research is required in order to establish the well-formedness and the interpretation of sentences such as (12a) and (13a).[2] Despite these uncertainties, though, we can establish one semantic fact with certainty: Hausa differs from English in that (12a) and (13a) have no interpretation on which the indefinite subject NP takes existential scope over negation. For instance, that *mutàanee* 'people' does not take existential wide scope in (13a)

[2] For instance, Russell Schuh (p.c.) does not consider (12a) well-formed at all. He suggests the following example in the progressive aspect, instead:

(i) manòomii baa yàa mutuwàa don yunwàa
farmer neg 3sg.prog death for hunger
'No farmer dies of hunger.' NOT: 'Some farmer does not die from hunger.'

shows from the fact that the sentence cannot be used to describe a situation where some people didn't go to the market, while others did, which would be in accordance with a wide scope interpretation for the indefinite. For this reading to arise, *mutàanee* would have to be preceded by the indefinite marker *wa(dan)su* (see section 3.2.4). The data in (12) and (13) suggest, then, that syntactic differences have no effect on the relative scope of negation and bare indefinite NPs. It appears that negation always takes scope over bare subject NPs:

(14) NEG >> bare indefinite NP

The absence of relative scope effects with negation and bare indefinite NPs suggests that the latter have no existential force by themselves and thus should not be treated as denoting an existential quantifier à la Barwise & Cooper (1981), cf. e.g. Heim & Kratzer 1998 for discussion of this diagnostic. While so much is clear, there are at least three ways of accounting for the readings observed with the sentences in (12) and (13). First, a possibility suggested by Russell Schuh (p.c.), the singular subject NP could be interpreted generically on a par with the singular generic subject NP in (10). This would work for Schuh's sentence (i) in fn.2, which would be interpreted as *In general, a farmer doesn't die of hunger*, which is more or less equivalent to *No farmer dies of hunger*. However, this account does not extend to the episodic sentence (13a) with a plural indefinite NP. Second, it is conceivable that the plural indefinite NP (13a) gets a specific or definite interpretation, same as the the subject NP in (9), such that there is a specific group of people that did not go to the market.[3] This reading would be more or less equivalent to *Nobody (of the relevant set of people) went to the market* (Russell Schuh, p.c.). However, this account does not fare too well with respect to (12a) with a singular NP, as *The / A specific farmer did not come* is by no means equivalent to *No farmer came*.

While it is certainly possible that different factors are responsible for the semantic facts in (12) and (13), it is also possible to come up with a unified analysis for indefinite NPs that accounts both for the unmarked existential interpretation of bare indefinite NPs, and for their obligatory scope under negation. On this analysis, bare indefinite NPs are analysed as introducing a restricted variable in the DRT-tradition of Kamp (1981) and Heim (1982). In order to yield an existential reading, this variable is then *existentially closed off* by a covert existential quantifier (Heim 1982), which would have to be situated below the negation marker at the left edge of VP (Diesing 1992). While there is independent evidence that existential closure over event variables and other unbound variables must apply below negation (Zeijlstra

[3] The general availability of this reading is confirmed by the following example, taken from a Hausa rendering of the German fairy-tale *The Pied-Piper of Hameln* in the story collection *Magana Jari Ce* by lhaji Abubakar Imam. In (i), the bare subject *mutàanee* refers to the previously established inhabitants of the city of Hameln.

(i) mutàanee bà su san àbî-n dà su-kà yi dà Sarki ba.
people NEG 3pl know thing-DEF REL 3pl-PERF.REL do with leader NEG
'The people (of the town) didn't know what they did with the Piper.'

2004), this analysis necessitates the reconstruction of the subject NP to a position below negation in order to yield the logical configuration *[NEG [∃e,x [SUBJ(x) & P(e,x)]]]*. Notice, though, that the reconstruction of indefinite subject NPs is not in the spirit of Diesing (1992) at all. In view of this difficulty, a more promising solution would be to treat bare indefinite NPs as predicates in the spirit of van Geenhoven (1998), following Carlson's (1977) work on bare plurals in English. On van Geenhoven's account, the existential import of sentences containing (bare) indefinites comes from the denotation of the lexical verb, which forms a complex predicate with the indefinite NP. In the case of (13a), the verb *tàfi* would denote a relation between a predicate and an event $\lambda P_{<e,t>}.\lambda e.\ \exists x\ [P(x)\ \&\ go'(x,e)]$. The bare NP provides the value for the predicate P, namely $\lambda x.\ people'(x)$, yielding $\lambda e.\ \exists x\ [people'(x)\ \&\ go'(x,e)]$ as the combined meaning of verb and subject. Given that the verb is in the scope of negation, it follows directly that its associated existential quantifier will also take scope under negation, cf. Carlson (1977). Notice that this solution requires Hausa transitive verbs to have the capacity to form complex predicates both with indefinite objects and with indefinite subjects, a conclusion also arrived at in Zimmermann (2007) for Bura (Central Chadic). In this respect, Hausa transitive verbs appear to be more flexible than their English counterparts, which license an existential construal of bare indefinite subjects only sometimes, as e.g. in *Dogs entered the room* from Carlson (1977), and its negative counterpart *Dogs didn't enter the room* from van Geenhoven (1998: 177) with negation outscoping existential quantification.

Summing up, the semantic analysis of bare NPs in the context of negation in Hausa is hampered by the fact that these NPs allow for an indefinite as well as a specific or definite construal. Nonetheless, it seems fair to conlude on the basis of the data in (12) and (13) that bare NPs in Hausa do not denote existential quantifiers.

2.2 Definite NPs

Definiteness markers in Hausa fall into two subclasses: (i.) bound possessive pronouns, which are linked to the head noun by the genitive linker *–n/ –r̃*, which shows gender agreement as shown in (15); and (ii.) a definite article *–`n/ –`r̃*, which cliticizes on the head noun.[4]

[4] There is a third element that is used for anaphoric reference to hearer-old information, namely the postnominal element *ɗ'în* 'the/that one in question' (Jaggar 2001: 321ff.):

(i) yaaròo ɗ'î-n
boy DI-DEF
'the boy we were talking about'

As already indicated in the gloss, Jaggar (2001) analyzes this element as a complex expression consisting of a semantically empty host morpheme *ɗ'i* plus the definite determiner *–`n*. We will therefore treat this way of marking definiteness as a special instance of the definite determiner.

(15) a. kuɗi-n-*kà* ‘your (m.) money’
money-LINK.m-2sg.m

b. mootà-r̃-*kà* ‘your (m.) car’
car- LINK.f-2sg.m

c. mootà-r̃-sà ‘his (m.) car’
car- LINK.f-3sg.m

Here, we will concentrate on the distribution and function of the definite article only.

The definite article *–`n/ –`r̃* normally occurs right after the head noun. Like the genitive linkers, it agrees with the head noun in gender and number, *–`n* being used with masculine singular NPs and all plural NPs, and *–`r̃* with feminine singular NPs ending in *–aa*. Please notice that the definite article differs formally from the segmentally identical genitive linker in that it carries a lexical low tone (`). The definite article attaches to both count and mass NPs in all syntactic environments, and it can co-occur both with demonstratives (16a), and with free possessives (16b).

(16) a. wannàn dookì-*n* ‘this horse in question’ [Newman 2000: 143]
this horse-DEF

b. jàakî-*n* nàawa ‘the donkey of mine’ [Newman 2000: 143]
donkey-DEF mine

The definite article normally occurs on the semantically definite head noun of a relative clause (17a). Interestingly, in such cases the definite article is frequently doubled and occurs a second time attached to the final element of the relative clause, (17b) (Newman 2000: 146).

(17) a. yaarò-*n* dà ya tàfi [Newman 2000: 145]
boy-DEF REL 3sg.m.PERF.REL leave
‘the boy who went’

b. mutàanê-*n* dà na gayàa musù-*n* [Newman 2000: 146]
men-DEF REL 1sg.PERF.REL tell 3pl-DEF
‘the men that I told’

Turning to the semantic or pragmatic function of the definite marker, notice that it combines freely with personal pronouns and even proper names in order to indicate previous reference in the preceding discourse (Newman 2000: 145, Jaggar 2001: 319):

(18) a. shî-*n* [Newman 2000: 145]
3sg-DEF
‘he/him we were referring to’

b. kaa ga Audù-*n* [Jaggar 2001: 319]
2sg.m see Audu-DEF
'Did you see (the prementioned) Audu?'

The definite article is also commonly found on clause-initial, topicalized NPs (Jaggar 2001: 318), which are typically discourse-old:

(19) yaarinyà-ɾ̃ dai, taa kai wà Muusaa kuɗii.
girl-DEF TOP 3sg.f.PERF take to Musa money
'As for the girl, she took the money to Musa.'

At the same time, it is not required on NPs referring to unique individuals by virtue of their lexical meaning, such as *raanaa* 'sun', *watàa* 'moon', *Allàah* 'god' and *sarkii* 'emir' (Jaggar 2001: 319). These findings suggest that the definite article in Hausa does not so much encode uniqueness of the NP-referent, but rather familiarity or givenness in the previous discourse. Because of the anaphoric character of the definite article in Hausa, Newman (2000: 143) suggests the alternative term *previous reference marker* (but see Jaggar 2001 for an alternative view on which the referents of expressions can also be accommodated).

Notice that this analysis comes close to the analysis of the English definite article *the* as a marker of familiarity in Heim (1982). However, while Heim conceives of the notion of familiarity as relative to the *common ground* of the interlocutors, i.e. their mutually shared set of background assumptions (Stalnaker 1978), the familiarity expressed by the Hausa definite article seems to be more directly related to the preceding *linguistic* context, see Newman (2000: 143). A similar deictic use of definite determiners as referring to information in the preceding or following context has been observed in Frisian (Ebert 1971).

2.3 Demonstratives

The definite article must be kept apart form demonstrative elements. There are two kinds of deictic demonstrative expressions in Hausa (Newman 2000: 147ff.): The first occurs prenominally and agrees in gender and number with the head noun (20).

(20) *wannàn* mootàa [Jaggar 2001: 327]
this.sg car

This kind of demonstrative is morphologically complex. It consists of a prefix *wa*, the nominal linker *-n/-ɾ̃,* and a locative adverbial, namely *nân* 'here', *nan* 'there', *cân* 'there (distal)' or *can* 'there (remote)', as schematised in (21) (Jaggar 2001: 324):

(21) wa + LINK + nân/ nan/ cân/ can

Depending on the adverbial, the demonstrative can express various degrees of proximity or remoteness to speaker and/ or hearer, respectively, as shown in (22):

(22) a. wa-n-*nàn* (m., f.), waɗà-n-*nân* (pl.) 'this (near speaker)'
b. wà-n-*nan* (m., f.), wàɗà-n-*nan* (pl.) 'this (near hearer)'
c. wa-n-*càn* (m.), wa-c-*càn* (f.), waɗà-n-*cân* (pl.) 'that (distal from speaker & hearer)'
d. wà-n-*can* (m.), wà-c-*can* (f.), wàɗà-n-*can* (pl.) 'that (remote from speaker & hearer)'

The locative adverbials can also function as demonstrative modifiers on their own. These morphologically simple forms occur in post-nominal position, are linked to the head noun by the genitive linker *–n/ – r̃*, and show no agreement with the head noun:

(23) a. dookì-*n* *nân* 'this horse' [Newman 2000: 149]
horse-LINK here
b. taagà-*r̃* *cân* 'that window' [Jaggar 2001: 150]
window- LINK there

Notice that the (a)- and (b)- forms in (22), same as some of the simple adverbial forms can be used as discourse-anaphoric elements (Newman 2000: 149): They can be used to refer back to previously mentioned individuals, similar to the definite determiner. This similarity aside, the two kinds of demonstratives exhibit differences in their syntactic distribution and their semantic interpretation, see Newman (2000: 150ff.) for details.

2.4 The syntax of definite and demonstrative NPs: A unified account?

Based on the discussion so far, the syntactic distribution of definite article and demonstrative elements appears to be quite heterogeneous: The definite article follows the head noun, while the demonstrative precedes it in its long form, and follows it in its short form. These findings are summarized in (24):

(24) a. NP-DEF
b. *wa*+LINK+DEM NP
c. NP- LINK DEM

Apart from their different position relative to the head noun, the definite and demonstrative elements in (24a-c) vary in other important respects: The prenominal demonstrative agrees with the head noun, while the postnominal demonstrative does not. The postnominal demonstrative, in turn is linked to the head noun through the genitive linker *–n/ –r̃*, which is known to occur with instances of predicate inversion, cf. (4b) in section 1, and whose segmental skeleton is also found with the definite article.

Given all this, one could think of a unified analysis on which the structure in (25) is taken to be the underlying structure of all three constructions in (24):

(25) $[_{DP}$ D NP]

The D-position would be occupied by the various definite or demonstrative elements, namely by *wan+nan/can*, *nan/can*, or just the falling tone (`), respectively. The differences in word order would be the result of the (non-)application of predicate (NP-) fronting (cf. Longobardi 1994). Such movement will not apply in the case of the long demonstrative (24b), which thus surfaces in its base-generated position, preceding and agreeing with the NP. In (24a) and (24c), however, the NP is moved across the determiner element in D to the DP-initial position. The presence of the genitive linker would then be a morpho-syntactic reflex that indicates the application of DP-internal movement. The resulting surface structures for the definite NP (24a) and the demonstrative NP in (24c) are given in (26).[5]

(26) i. $[_{DP}\ [NP_1 – n/ – \tilde{r}\ ]\ \ [_D\ `\ ]\ t_1\ ]$

ii. $[_{DP}\ [NP_1 – n/ – \tilde{r}\ ]\ \ [_D$ *nan/can* $]\ t_1\ ]$

Notice that the definite article would only consist of a low tone on this analysis, thus paving the way for a principled explanation for the segmental identity of definite article and the genitive linker: The apparent segmental content of the definite article would be nothing else than the genitive linker itself. A unified analysis along these lines also ties in with the historical origin of the two elements, which both derive from the same source, as pointed out by an anonymous reviewer.[6]

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[5] The construction in (26i) is reminiscent of the structure of definite NPs in Danish (Longobardi 1994), cf. (ia). The construction in (26ii) is reminiscent of certain demonstrative NPs in French, cf. (ib):

(i) a. bil-en ‘the car’ b. la voiture là ‘this there car’
car-DEF the car there

[6] The fact that prenominal demonstratives sometimes occur together with the definite determiner (Jaggar 2001: 328) poses an obvious problem for this line of thinking:

(i) *wannàn* r̃àhootò-*n*
this report-DEF

Obviously, this potential unified analysis needs to be substantiated by additional data, and a great number of theoretical and empirical consequences would have to be explored. E.g., the simplified analysis in (26) leaves open the question of where additional NP-internal material, such as adjectives and numerals, would be located with respect to the head noun and the determiner in D[7], see section 3.1.1 for some more discussion. Nonetheless, there is good reason to consider the existence of a prenominal D-position in Hausa. As will be shown in section 3.2.1, there are other determiner-like elements, namely certain strong quantifiers, which occur in prenominal position and agree with the NP.

3. ADNOMINAL QUANTIFICATION

This section considers the various ways of expressing adnominal quantification in Hausa. The discussion concentrates on three kinds of adnominal quantifying elements with different syntactic and semantic properties: (i.) weakly quantifying elements, such as numerals and quantity expressions, which follow the head noun and function semantically as modifiers (class A); (ii.) two quantifying elements that come with existential (*some*) and universal (*every*, *any*) force, respectively, and which precede and agree with the head noun (class B); (iii.) proportional quantifiers corresponding to *most*, which also occur prenominally, but which are nominal in nature and combine with the head noun by means of the genitive linker (class C). We will consider each kind of quantifying expression in turn.

3.1 Class-A quantifiers: NP-modifiers

Among the quantifying elements belonging to this class are numerals and quantity expressions such as *dà yawàa*, *mài/màasu yawàa* 'much/many' and *kàdan* 'little/few', as well as more complex expressions derived from these basic elements. The primary semantic function of this

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One way to approach this problem would be to assume a more articulated DP-structure which also contains a DemP-projection headed by a demonstrative element: [D [DemP [NP]]]. The word order facts in (i) will come out right if it is the DemP *wannàn ɾ̃àhootò* that moves to the DP-internal position. Semantically, it would make sense to postulate two functional projection (and possibly even more, cf. (37) in 3.1.1), given that pronominal demonstratives and definite determiners have a slightly different meaning (Lisa Matthewson, p.c.).

[7] In the sources consulted, I could not find a single instance of prenominal adjective and definite determiner co-occurring in the sequence *A –n/ –ɾ̃ N–`n/ –`ɾ̃*. If the linker *–n/–ɾ̃* is not a functional head, but just a morphological reflex of DP- (or NP-) internal fronting, such structures are predicted to exist. Notice that stacking of linkers is observed in cases of more than one adjective preceding the head noun (Newman 2000: 30):

(i)	zungureerìya-*ɾ̃*	saabuwa-*ɾ̃*	fara-*ɾ̃*	mootàa
	long –LINK	new-LINK	white-LINK	car

class of quantifying elements is to modify indefinite NPs, such as to restrict their denotations to contain only sets of a particular size.

Syntactically, all class-A expressions typically occur in postnominal position, as illustrated for various numeral expressions in (27a), and for quantity expressions in (27b-d). Unlike in English, the quantity expressions *dà yawàa* and *kàdan* combine with mass and count nouns alike, giving rise to *much-* and *many-* readings and *little-* and *few*-readings, respectively (Jaggar 2001: 367). As for *mài(sg.)/màasu(pl.) yawàa* in (27bi.ii), the linking element agrees in morphosyntactic number with the head noun. Its form as *sg.* or *pl.* is thus often, but not necessarily, correlated to the mass-count distinction (but see the discussion surrounding (35) below). [8]

(27) a. i. yaaròo *ɗaya*
boy one
'one boy'

ii. ɗàalìbai *biyu / ukù*
students two / three
'two / three students'

b. i. lookàcii ***mài*** *yawàa*
time possessor.sg quantity
'much trouble'

ii. mutàanee ***màa-su*** *yawàa*
people possessor-pl quantity
'many people' [Jaggar 2001: 367]

c. i. wàhalàa ***dà*** *yawàa*
trouble with quantity
'much trouble' [Jaggar 2001:367]

ii. mutàanee ***dá*** *yawàa*
people with quantity
'many people' [Jaggar 2001: 367]

d. i. kuɗii *kàdan*
money little
'little money'

ii. birai *kàdan*
monkeys few
'few monkeys'[Newman 2000: 382]

Like their counterparts in other languages (see e.g. Faller & Hastings, this volume, for Cuzco Quechua, Keenan, this volume for Malagasy, and Krifka & Zerbian, this volume, on Bantu), class-A quantifiers in Hausa exhibit typical properties of non-quantificational modifiers. First, they occur in postnominal position, as do adjectival and PP-modifiers (28a-c). Second, some of them (*dà yawàa*, *mài/màasu yawàa*) employ the same linkers (*dà*, *mài/màasu*) as other modifiers (28bc). Third, they can be followed by other adjectives (29a). And fourth, they can occur in predicative position (29b) (see also Faller & Hastings and Keenan, this volume).

(28) a. gidaa *farii* 'white house' (cf. 27a)
house white

b. yaaròo ***mài*** *hùulaa* 'boy with a cap' (cf. 27b)
boy possessor cap

c. yaaròo ***dà*** *sàndaa* 'boy with a stick' (cf. 27c)
boy with stick

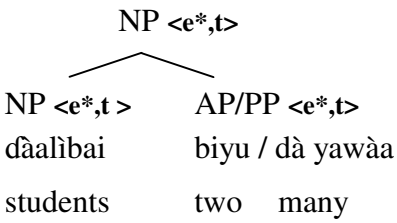
[8] Another quantifying element that often occurs in postnominal position is the collective universal modifier *dukà* 'all', which will be discussed in section 4.1.

(29) a. mootoocii *bìyaɾ̃* jaajàayee ‘five red cars’ [Newman 2000: 383]
cars five red

b. maata-nsà *huɗu* ‘His wives are four.’ [Newman 2000: 383]
wifes-his four

The parallels observed in (27) to (29) support an analysis of class-A quantifiers in postnominal position as adnominal modifiers. As modifying elements, they can be analysed as property-denoting expressions of type <e*,t> :

(30)



In (30), the quantificational modifiers *biyu* and *dà yawàa* take a set of plural individuals as their semantic argument, mapping it onto a set containing only plural individuals of a particular size. In the case of *biyu*, these are plural individuals consisting of two’s. In the case of *dà yawàa*, these are plural individuals that are big relative to a contextually given standard (Partee 1989). Given that quantity expressions (*dà yawàa*, *màì/màasu yawáa*, *kàɗan*) freely combine with count and mass nouns alike, it also follows that both types of nouns should be treated on a par semantically (Link 1983), the only difference being that the pluralities denoted by mass nouns are not built from a set of clearly identifiable minimal, i.e. atomic elements.

By and large, then, quantificational modifiers of this class have the same semantic impact as the weak quantifiers *a*, (unstressed) *some*, (unstressed) *many* etc. in English indefinite NPs (Milsark 1977). The parallel is further strengthened by the fact that Hausa class-A quantifiers share other properties with English weak quantifiers and with modifying quantifiers in Cuzco Quechua (Faller & Hastings, this volume): They are symmetric (cf. 31), they can serve as (plural) antecedents for anaphoric back-reference across sentence boundaries (cf. 32), and they can occur in existential sentences introduced by *àkwai* ‘there is’ (cf.33). See also Faller & Hastings (this volume) for more discussion of modifying quantifiers in existential sentences.

(31) a. *ɗàalìbai biyu / dà yawàa* Bùràawaa nèe. [symmetry]
students two many Bura.people PRT
‘Two / many students are Buras.’

b. ⇔ Bùràawaa biyu / dà yawàa dàalìbai nèe.
Bura.people two many students PRT
‘Two / many Buras are students.’

c. ⇔*mùtûm biyu / dà yawàa* Bùràawaa nèe kumaɗàalìbai nèe
person two many Bura.people PRT also students PRT
'Two / a large group of people are Buras and students.'

(32) àkwai *mutàanee dà yawàa* à kàasuwaa. *su*-nàa yî-n cìnikii
exist people many at market 3pl-PROG doing-LINK trading
'There were *many people* at the market. *They* were trading.

(33) àkwai *ɗàalìbai biyu* à ƙauyèe-nàa
exist students two at village-1sg
'There are two students in my village.'

Finally, NPs modified by a numeral can be unselectively bound by a higher quantifier, same as bare indefinite NPs, as witnessed by (34a) and the classic donkey sentence in (34b):

(34) a. kullum in *ɗàalìbai biyu* sun gàmu dà juunaa à cikin gàrii,
always if students two 3pl.PERF meet with each.other at inside town

su-kàn tsayàa, *su*-kàn yi taaɗii
3pl-HAB stop 3pl-HAB do chatting
'Always if two students meet in town, they stop and have a chat.'

b. ìdan *manòomii* ya-nàa dà *jàakii*, sai yà gaanàa *masà* àzaabàa.
If farmer 3sg-PROG with donkey then 3sg.SUBJ cause it anguish
'If a farmer owns a donkey, he treats it badly.' (= all farmers and all donkeys)

Despite these parallels, Hausa class-A quantifiers differ in an interesting way from their English counterparts. This difference concerns the grammatical number of the modified nouns. Unlike in English, these expressions often combine with singular count nouns even though they appear to restrict pluralities of individuals, and even though there exists a grammatically plural form of the noun in question (Newman 2000: 382):

(35) a. kàtiifàa huɗu
mattress.SG four
'four mattress*es*'

b. hùulaa nawà
cap.SG how.many
'how many cap*s*?'

c. kadàa dà yawàa
crocodile.SG many
'many crocodile*s*'

The indiscriminate behaviour of these quantifiers is easily accounted for if one assumes that Hausa singular count nouns do not denote sets of atomic individuals, but sets containing both atomic and plural individuals. Plural count nouns, in contrast, denote sets containing only plural individuals. A parallel claim for Brazilian Portuguese is found in Müller (2002) and for

Cuzco Quechua in Faller & Hastings (this volume). On this view, the singular count noun *kadàa* 'crocodile' in (35c) will have the denotation in (36a), while the corresponding plural forms *kàdànni* or *kadoojii* have the denotation in (36b):[9]

(36) a. [[kadàa]] = {x: x is an atomic or plural crocodile individual}

b. [[kàdànni/ kadoojii]] = {x: x is a plural crocodile individual}

Semantically plural numeral or quantity expressions in Hausa can operate on the lexical entry in (36a) by singling out plural individuals of the appropriate size.[10]

3.1.1 Numerals

Numerals in postnominal position follow any enclitic determiners or possessives, and also postnominal demonstratives (Jaggar 2001: 359). At the same time, they precede other adjectives, cf. (29a), and relative clauses (Newman 2000: 383), such that the unmarked word order is as in (37):

(37) N > DET/DEM/POSS > *NUM* > ADJ /REL

Notice that the relative word order in (37) necessitates a slight revision of the internal structure of definite and demonstrative DPs that was given in (26i,ii). It appears that it is not the entire NP, including all adjectival and numeral adjuncts, that moves to the DP-initial position, but only a smaller constituent containing the head noun. This movement operation leaves adjectives and numerals stranded in their base position between D and N.

Turning to the inventory of cardinal numeral expressions in Hausa, basing ourselves on Newman (2000: 379ff.), the basic cardinal numerals from one to ten are shown in (38):

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[9] The semantic analysis in (36) is supported by the fact that the numeral *ɗaya* 'one' can combine only with singular count nouns, cf. Jaggar (2001: 359).

[10] The analysis of singular count nouns in (36a) is further supported by the behaviour of the classifier element *gùdaa* 'unit', which can combine both with grammatically singular and plural nouns, as shown in (iab) (cf. also Newman 2000: 381).

(i) a. kujèeraa gùdaa huɗu
chair.sg unit four

b. kùjèeruu gùdaa huɗu
chair.pl unit four
'four chairs'

Given that a classifier typically picks out a set of atomic individuals from a plurality of individuals, the co-occurrence of *gùdaa* and the singular count noun *kùjèeraa* in (ia) is accounted for if the lexical denotation of *kujèeraa* contains plural individuals next to atomic individuals.

(38) *dàya* 'one', *biyu* 'two', *ukù* 'three', *hudù* 'four', *bìyař* 'five', *shidà* 'six', *bakwài* 'seven', *takwàs* 'eight', *tařà* 'nine', *goomà* 'ten'

Numerals from eleven to nineteen are formed by combining *goomà* 'ten' plus the connecting particle *shâ* plus one of the basic numerals:

(39) *(goomà) shâ dàya* 'eleven', *(goomà) shâ biyu* 'twelve' etc.
ten PRT one ten PRT two

Multiples of ten from twenty through ninety are loanwords from Arabic (40a)[11], a hundred is *dàrii*, a thousand is *dubuu*, and a million is *miliyàn* borrowed from English. Multiples of hundreds and thousands are formed by adding a subsequent basic numeral as in (40b). Any intermediate numerals are formed using the connector *dà* 'and, with', cf. (40c):

(40) a. *àshìřin* 'twenty', *tàlàatin* 'thirty', *àřbà'in* 'forty', …

b. *dàrii ukù* 'three hundred', *dubuu takwàs* 'eight thousand', …

c. *àshìřin dà tařà* 'twenty-nine', *dàrii biyu dà tàlàatin dà takwàs* 'two hundred and thirty eight'

Finally, ordinal numerals are formed from cardinals that are linked to the preceding head noun through the linking element *na* or *ta*, subject to gender agreement (41ab). In predicative position, ordinals can also occur without a head noun, cf. (41c) (Jaggar (2001:365):

(41) a. dookì *na* *bìyař*
horse LINK five
'fifth horse'

b. mootàa *ta* *ukù*
car LINK three
'third car'

c. nii nèe *na* *farkoo*
1sg PRT LINK first
'*I* am the first.'

To conclude this section, we look at the interpretation of numerals combining with conjoined nouns of the form *N_1 and N_2*. Under certain conditions, such numerals can modify the totality denoted by the two nouns, specifying the total number of individuals denoted by N_1 and N_2 together (Newman 2000: 385, Jaggar 2001: 362). This interpretation is the one referred to as *split reading* by Heycock & Zanmparelli (2005). Like English, Dutch, and Finnish (Heycock &

[11] According to Bargery (1934) and Newman (2000), there are two defunct archaic systems for expressing the numbers twenty through ninety that predate the introduction of the Arabic loanwords. The first system used multiples of ten and was based on the form *gòomiya* 'ten'. The second system used the form *hâuyaa* 'score' (= twenty) as a base, e.g. *hauyaa ukù dà goomà* 'seventy' (= three score and ten).

Zamparelli 2005: 209), Hausa allows both plural (cf. 42a) and singular split readings, cf. (42b) from Jaggar (2001: 362).

(42) a. awaakii dà tumaakii *goomà*
goats.pl and sheep.pl ten
'a total of ten goats and sheep'

b. rìigaa dà hùulaa *ukù*
gown.sg and cap.sg three
'a total of three gowns and caps'

Interestingly, the split reading is possible even with the small numeral *three*, unlike in English, where it is ruled out for pragmatic reasons according to Heycock & Zamparelli (2005). Notice, too, that the derivation of the split reading in Hausa must necessarily be different from that in English, as all Hausa count nouns, singular or plural, contain pluralities of individuals in their denotation. As a result, there is no need for assuming a pluralizing operation located in a syntactic head PL(ural) in Hausa. Notice, finally, that the availability of the split reading in Hausa is subject to additional restrictions: the two nouns have to be semantically related, cf. (43); both must be either morphologically singular or plural; and both must not contain a demonstrative nor a definite determiner.

(43) wuƙàaƙee dà [dawaakii takwàs] [Newman 2000: 385]
knives and horses eight
'knives and eight horses'
NOT: 'a total of eigth knives and horses'

If the conditions for a split reading are met, as in (42ab), the construction will be structurally ambiguous between the sum reading and a reading where the numeral only modifies the second noun N_2, i.e. *goats and ten sheep*.

3.1.2. Modifications

It is possible to modify quantificational modifiers, or the NP containing such modifiers, in order to obtain readings corresponding to *about n*, *very many*, *more than n*, *exactly n*, *up to n*, etc. There are various cases of such modifier-modifying constructions.

First, a numeral can be followed by a specifying adverb or an ideophone[12], giving rise to a *precisely n* or *exactly n*- reading (Newman 2000: 387):

[12] According to Newman (2000), following Cole (1955), ideophones form a class of phonaestetic words with a high degree of expressiveness that are 'descriptive of sound, colour, smell, manner, appearance, state, action, or intensity' and which are 'vivid vocal images or representations of vidual, auditory and other sensory or mental experiences' (Cole 1955: 370). Phonologically, they have special phonotactics and special intonational features.

(44) a. lèemoo ɗaya *tak* akà baa nì.
orange one IDEO 3imp.PERF.REL give 1sg
'They gave me precisely one orange.'

b. awàa biyu *cuř*
hour.SG two IDEO
'exactly two hours'

Second, the numeral can be modified by a preceding preposition or adverb. Depending on the meaning of the preceding element, various modified numeral readings obtain, such as 'close to, almost' with *kusan*, 'as much as, to the extent of' with *hař*, and 'more than' with *fìye dà* (Newman 2000: 387):

(45) a. soojoojii *kusan* *ɗàrii* sukà ɓulloo.
soldiers almost hundred 3pl.PERF.REL appear
'Nearly a hundred soldiers appeared.'

b. an kashè mutàanee *hař* *gùdaa* *tàlàatin.*
3imp.PERF kill people as.many.as unit thirty
'They killed up to thirty people.'

c. sun kaamà ɓàràayii *fìye* *dà* *hàmsin*
3pl.PERF catch robbers more.than fifty
'They caught more than fifty robbers.'

A similar strategy is found with intensifying elements on quantity expressions, e.g. the degree adverbs *gàske* 'truly, really' with *dà yawàa* 'many', or the diminutive *ɗa-n(m.) / 'ya-ř(f.) / 'ya-n(pl.)* 'quite, very (lit. *child-of (-m./f./pl.)*)' with *kàɗan* '(a) little' (Jaggar 2001: 368). While the adverbial *gàske* follows the adnominal modifier in (46a), the diminutive *ɗan* in (46b) shows the typical syntactic behaviour of diminutives, i.e. it precedes the modified element and combines with it by means of the linker *-n / -ř*, thus forming a complex XP:

(46) a. naa ga mootoocii *dà* *yawà-n* *gàske* à hanyàa
1sg.PERF see cars with quantity-LINK truly on road
'I saw a really large number of cars on the road.'

b. zâ-n ci àbinci [$_{XP}$ *ɗa-n* *kàɗan*]
FUT-1sg eat food DIM-LINK little
'I will eat a (very) little food.'

The construction type in (46b) is also used to express the negative superlative 'least, fewest' with *kàɗan*, cf. (47a). Alternatively, this reading can be expressed by using the linking element

mafìi (< *fi* 'exceed, surpass') 'more, most', cf. (47b). When preceding the quantity expression *yawàa*, *mafii* can also express the positive comparative 'more' and the superlative 'most', cf. (47c). Notice that the comparative or superlative linker *mafìi* is also used with non-quantificational modifiers, as is to be expected if the quantifiers *(dà) yawàa* and *kàdan* are semantic modifiers.

(47) a. yaa yi kùràakùrai '*yan kàdan* à ajì-n [Jaggar 2001: 369]
3sg.PERFdo mistakes DIM little at class-DEF
'He made the fewest mistakes in class.'

b. kudì-nsà *mafìi kàdan* nèe [Ma Newman 1990: 150]
money-3sg more/most little PRT
'He has the least money.'

c. màasu zàngà-zangà *mafìi yawàa* [Jaggar 2001: 368]
demonstrators more/most quantity
'the larger / largest group of demonstrators' = 'more / most demonstrators'

So far, we have only encountered instances of additional modifiers attaching to the numeral or quantity expression itself, thus modifying it directly. However, there are also cases where an adverbial modifier combines with the NP containing the quantifying expression as a whole:

(48) a. ya-nàa nan *wajen kàmaɾ̃* [*mîl goomà*] dàgà gàri-n-mù
3sg-PROG there about mile ten from town-LINK-1pl
'It's there about ten miles from our town.' [Newman 2000: 387]

b. *ƙasà dà* [*shèekaràa ukù*] [Ma Newman 1990: 151]
below P year three
'less than three years'

It seems, then, that at least some additional modifiers do not modify the numeral quantifier itself, but the entire NP containing the quantifier. This is in line with a claim put forward in Krifka (1999), that at least some apparent numeral modifiers in English, such as *at least*, modify the entire NP containing the numeral, rather than the numeral itself.

3.1.3. Partitive Constructions

Next to their postnominal use as modifiers, class-A quantifiers can occur in partitive constructions. There are two basic kinds of partitive constructions.[13] In both constructions, the

[13] Yet another way of forcing a strong partitive reading of these quantifying expressions is to focus them by moving the entire DP containing them to the focus position, as in (i) (Zimmermann 2005). This strategy corresponds to the strategy of putting stress on the quantifying expression in intonation languages.

quantifying element forms (part of) the syntactic head of the construction and precedes an NP, which is often overtly marked for definiteness. In other words, the quantifying element appears to pick out a subset from a specific (contextually given) set of individuals (cf. Ladusaw 1982). The first construction looks like a standard partitive construction where quantifying element and NP are linked by the prepositional expression *dàgà cikin* 'from within, out of' (see also Keenan, this volume, for parallel partitive constructions in Malagasy):

(49) a. *biyu dàgà cikin ɗaalìbâ-n* su-nàa màganàa dà Màrgii
two from within students-DEF 3pl-PROG speech with Margi
'Two of the students speak Margi.'

b. mun ga *dà yawàa dàgà cikin yâarâ-n*
1pl.PERF see many from within children-DEF
'We saw many of the children.'

The second partitive construction is a complex N-N construction, where the quantifying element has nominal traits and is linked to the following definite NP by means of the nominal linker *–n*. This construction is often found with quantity expressions such as *dà yawàa* 'many' and *mafìi yawà* 'most', which have a nominal base, cf. (50ac), but it can also be used with numerals, as shown in (50bd):

(50) a. mun ga dà yawà-n yâarâ-n
1pl.PERF see with quantity-LINK children-DEF
'We saw many of the children.'

b. mun ga *biyu-n yâarâ-n*
1pl.PERF see two-LINK children-DEF
'We saw two of the children.'

c. *mafìi yawà-n mutàanee* sun san shì. [Jaggar 2001: 368]
more quantity-LINK people 3pl-PERF know him
'most of the people know him.'

d. *biyu-n mutàanê-n* sun san shì.
two-LINK people-DEF 3pl-PERF know him
'Two of the people know him.'

This construction seems to be found with all class-C quantifiers corresponding to English *most (of)*, and will be taken up again in section 3.3.

(i) [ɗaalìbai *biyu*]$_1$ nèe t_1 su-kèe màganàa dà Màrgii.
students two FOC 3pl-PROG.REL speech with Margi
'TWO students speak Margi.'

The use of a partitive construction typically implicates that there are other members in the denotation of the complement NP that do not satisfy the predicate in question. These elements can be referred to in a subsequent statement by means of the NP *sauraa* 'remainder':

(51) *biyu dàgà cikin dâalìbân* sunàa màganàa dà Màrgii … (=49a)
'Two of the students speak Margi …

… *saura-n* *dâalìbâ-n* su-nàa màganàa dà Hausa.
remainder-LINK students-DEF 2pl-PROG speech with Hausa
… the rest of the students speak Hausa.'

The following minimal pair brings out the semantic effect of the partitive construction quite clearly. Both sequences are identical except for the presence of a non-partitive DP in (52a) and the presence of a partitive construction in (52b).

(52) a. Audù yaa ci *jaɾ̃ɾ̃àbâawaa* *dà yawàa* kuma yaa gamà kàɾ̃àatu-nsa.
Audu 3sg.PERF eat exams many also 3sg.PERF finish studies-his
'Audu passed many exams, and (also) he finished his studies.'

b. Audu yaa ci *dà yawàa* *dàgà cikin* *jaɾ̃ɾ̃àbâawaa*,
Audu 3sg.PERF eat many from within exams

kuma yaa gamà kàɾ̃àatu-nsa
also 3sg.PERF finish studies-his

'Audu passed many of his exams, and / but he finished his studies.'

The non-partitive (52a) only states that Audu passed a lot of exams and does not give rise to additional implicatures. As a result of this, the subsequent statement is typically interpreted in such a way that Audu's successful graduation is the result of his passing many exams. The use of the partitive construction in (52b), in contrast, suggests that there were exams that Audu failed by way of a scalar implicature, and that consequently the passing of all the exams is not a precondition for graduating. As a result, (52b) should be inappropriate in a situation were all exams must be passed in order to graduate.

3.1.4. Cardinal vs. proportional readings

Just like English *many*, the modifying quantity expression *dà yawàa* 'many, much' can be interpreted either on a cardinal reading, or on a proportional reading (presumably, the same holds for its negative counterpart *kaɗan* '(a) few'). On the cardinal reading, *dà yawàa* simply specifies that the group referred to is rather large relative to a contextually fixed standard. On its proportional reading, it indicates that the ratio of individuals that satisfy the predicate is rather large compared to the ratio of individuals that do not (Partee 1989). According to my consultants, the proportional reading is preferably expressed by using the partitive

construction. Thus, (53a) will be preferred over the modifying construction (53b) in the following context:

(53) Context: Four out of a total of six students passed the exam:

a. *dà yawàa dàgà cikin dàalìbâ-n* sun ci jarràbâawaa.
many from within students-DEF 3pl-PERF eatexams
'MANY (of the) students passed the exam.'

b.? *dàalìbai dà yawàa* sun ci jarràbâawaa.
students many 3pl-PERF eatexams
'MANY students passed the exam.'

The unmarked reading of (53b) is the cardinal reading, according to which there is a very large group of students that passed the exam. Unfortunately, it is not quite clear whether the proportional interpretation is altogether excluded for (53b). At least for one of my consultants, (53b) may also be used felicitously in the given context, even if it is dispreferred. That postnominal quantity expressions like *dà yawàa* sometimes DO receive a proportional interpretation is also suggested by the felicity of (54) in the following context:

(54) *Context: 60% of all Hausa people, but only 20% of all Fulani people visit a school or university.*

Hàusàa-waa dà yawàa dàalìbai nèe, àmmaa *Filàanii kàdan* dàalìbai nèe.
Hausa-people many students COP but Fulani few students COP
'Many Hausa people are students, but few Fulani people ares students.'

When used in this context, (54) says that the proportion of Hausa people going to school or university is high when compared to the proportion of Fulani people receiving a formal education, irrespective of absolute numbers.

In light of this, we may conclude that there is no strict correlation between the interpretation of quantity expressions as cardinal or proportional, and their syntactic realization in the modifying construction or the partitive construction. At the same time, there seems to be a clear preference for proportional readings to be expressed by using the partitive construction. This issue requires more research.

3.1.5. Scope Interaction with Negation

Like their counterparts in other languages (Heim & Kratzer 1998), class-A quantifiers exhibit scope interactions with negation: The truth-conditions of clauses with negative markers and numerals or quantity expressions differ depending on structural factors, namely on whether the quantifying expression c-commands and precedes the negation, or vice versa. In the first case,

the quantifying expression takes semantic scope over negation (Q>Neg), in the second case it scopes under negation (Neg>Q), as illustrated in (55) and (56).

Judged against the context in (55), (55a), with negation c-commanding the numeral, is false (marked by '#'), as it asserts that Audu didn't eat two cashew fruit, contrary to fact. A different situation obtains in (55b). Here, the quantified NP *yàazaawaa biyu* 'two cashews' has focus-raised across the negation marker, taking syntactic and semantic scope over negation. The sentence correctly asserts that there are two cashew fruit (left) that Audu did not eat. Finally, the focused quantified NP is narrowly negated in (55c). The ensuing reading, with negation outscoping the numeral, makes the sentence false in the given context.

(55) *Context:* There were four cashew fruits of which Audu has eaten two.

a.#Audù **bà-i** ci yàazaawaa *biyu* **ba** → *false*
Audu NEG-3sg eat cashew two NEG
'Audu didn't eat two cashews.'

b. [yàazaawaa *biyu*]$_1$ nèe Audù **bà-i** ci t_1 **ba** → *true*
cashew two PRT Audu NEG-3sg eat NEG
'There are two cashew fruit that Audu didn't eat.'

c.#**bàa** yàazaawaa *biyu*$_1$ **ba** Audù ya t_1 ci → *false*
NEG cashew two NEG Audu 3sg.PERF.REL eat
'It is not two cashew fruit that Audu ate.'

(56) shows a similar truth-conditional interaction of quantifying expression and negation for the quantity expression *dà yawàa* 'many'. Again, the consultant was asked to specify whether the three conjunctive statements in (56a-c) are appropriate in a given contextual situation. Notice that the effects of the Q-Neg-interaction on the felicity of the three sentences in (56) differ slightly from those observed in (55):

(56) *Context:* Musa has read a hundred books, but there are another hundred books that he has not (yet) read.

a. Muusaa yaa kaɗànta lìttàttàafai dà yawàa,
Musa 3sg.PERF read books many

kuma **bà-i** kaɗànta lìttàttàafai *dà yawàa* **ba**
and NEG-3sg read books many NEG
'Musa has read many books, and he has not read many books.'

b. Muusaa yaa kaɗànta lìttàttàafai dà yawàa,
Musa 3sg.PERF read books many

àmmaa [lìttàttàafai *dà yawàa*]$_1$ nee **bà-i** kaɗàntaa t_1 **ba**
but books many PRT NEG-3sg read NEG
'Musa has read many books, but many books he didn't read.'

c.*Muusaa yaa kaɗànta lìttàttàafai dà yawàa,
Musa 3sg.PERF read books many

àmmaa **bàa** [lìttàttàafai *dà yawàa*]$_1$ **ba** nee ya kaɗàntaa t_1
but NEG books many read NEG PRT 3sg.PERF.REL read
'Musa has read many books, but there are not many books that he read.'

Both (56a) and (56b) are felicitous utterances in the given context. In both cases, the first clause asserts the positive fact that Musa has read many books, while the second clause acknowledges the fact that there are also many books that he has not so far read. (56c), in contrast, is contradictory, and therefore false, in any context as the negative second clause states the exact opposite of the first clause. Notice, in particular, that (56b) and (56c) only differ in the relative hierarchic order of quantity expression and negation, showing that it is this factor which must be responsible for the truth-conditional difference. Also notice that, somewhat unexpectedly, (56a) differs in acceptability from the structurally parallel (55a). The acceptability of (56a) may have to do with the greater degree of vagueness involved in the interpretation of many/much-expressions, but we will have to leave this issue unresolved here.

Summing up this section, class-A quantifiers show scope interactions with negation that resemble those found in European languages. The truth conditions of sentences with such quantifiers and negation differ depending on which of the two elements is located in a higher structural position relative to the other. This concludes our discussion of class-A-quantifiers.

3.2 Class-B quantifiers: Genuine quantifiers or indefinite expressions?

Apart from modifying quantifying expressions, Hausa has two quantifying expressions that are descriptively referred to as *indefinites*, and which differ from the former, both syntactically and semantically. The two expressions in question are *wani(m.)/ wata(f.)/ wa(ɗan)su(pl.)* 'some, a certain', which induces existential force, and *koowànè(m.)/ koowàcè(f.)/ koowàɗànnè(pl.)* 'each, every, any', which appears to induce universal force and takes on the character of a free choice (FC)-item in certain contexts. We will look at the syntactic properties of both expressions in 3.2.1, before discussing their semantic behaviour in more detail in 3.2.2 and 3.2.3. Notice that Hausa, like most or all of its Chadic relatives, and like Cuzco Quechua (Faller & Hastings, this volume), has no negative existential quantifiers, corresponding to *no NP*, *nobody*, *nothing*, etc. Instead, the relevant interpretations are expressed by combining either of the two expressions with negation (3.2.4). Section 3.2.5 briefly sketches three possible ways for analyzing these expressions.

3.2.1 Syntactic Properties

Unlike quantifying modifiers, the two indefinite quantifiers always occur in prenominal position. This is shown in (57ab) for the universal and the existential indefinite respectively:

(57) a. *wani / wata / wa(ɗan)su* 'some (other), a certain (m./ f./ pl.)' = ∃

i. wani mùtûm 'some man'

ii. wata màcè 'some woman'

iii. wa(ɗan)su mutàanee 'some men' = 'some people'

b. *koowànè / koowàcè / koowàɗànnè* 'each, every (m./f./pl.)' = ∀

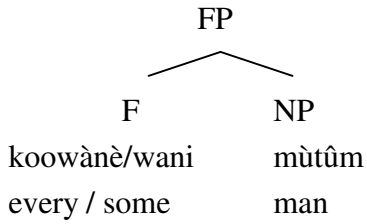
i. koowànè ɗaalìbii 'every student'

ii. koowàcè mootàa 'every car'

iii. koowàɗànne irìn kaayaa 'all kinds of clothes'

The prenominal occurrence of these expressions is comparable to that of other functional elements, e.g. the demonstrative *wannàn* in *wannàn dookìi* 'this horse' (cf. section 2.3). Like these, they exhibit gender and number agreement, and there is no genitive linker. As pointed out in section 2.4, one way to account for this is to assume that agreeing prenominal elements are functional heads, possibly in D, that take a set-denoting NP as their semantic argument, cf. (58). What remains to be shown is whether these functional elements are ultimately best treated as genuine quantifiers, i.e. as elements of type <et, <et,t>>, or whether a treatment in terms of choice-functions (Matthewson 1999) or indeterminate pronouns (Kratzer & Shimoyama 2002) will prove to be more adequate. (see section 3.2.5).

(58)



Both expressions can combine with singular NPs, but also with plural NPs, in which case the universal quantifier appears to quantify over groups of entities (cf. 57b.iii).[14]

[14] Another example for the group-distributing nature of plural *koowàɗànnè* is given in (i), where it distributes over the two distinct plural groups of people and animals, respectively.

(i) koowàɗànnè mutàanee dà dabboobii sun mutù
every.pl people and animals 3pl die
'All people and all animals have died.'

Both expressions can also occur on their own, with some minor morpho-phonological modifications, in which case they replace a full NP and function as indefinite pronouns (Jaggar 2001: 372)

(59) a. *koowànnee/ koowaa* ya-nàa saamù-n àlbâshi-n Nairàa bìyar
everyone 3sg-PROG getting-LINK salary-LINK Naira five
'Everyone gets a salary of five Naira.' [Cowan & Schuh 1976: 277]

b. *koomee* yaa yi daidai [Cowan & Schuh 1976: 277]
everything 3sg.PERFdo good
'Everything is all right.'

c. *wani* yaa zoo [Bargery –Online]
someone 3sg.PERFcome
'Somebody (sg.) came.'

Both expressions can occur in the first part of a partitive construction, with expressions of the existential *wani*-type occurring either alone or together with a full lexical NP. The possibility for universal expressions to co-occur with a lexical head noun remains to be established.

(60) a. koowànnee dàgà ciki-n-sù yaa sàyi mootàa [Jaggar 2001: 373]
each from inside-LINK-3pl 3sg.PERFbuy car
'Each of them bought a car.'

b. wani (mùtûm) dàgà ciki-n-sù yaa sàyi mootàa
some man from inside-LINK-3pl 3sg.PERFbuy car
'One (man) of them bought a car.'

Besides these similarities, the two expressions differ with respect to the status of their nominal complement as definite or indefinite. While universal *koowànè / koowàcè* is restricted to occur with indefinite count NPs only, cf. (61), existential *wani* / *wata* can also co-occur with the definite marker, as witnessed by (62b), where the presence of the definite marker triggers a specific interpretation.

(61) koowàcè mootàa / * mootà-ř taa ɓaacì
every car car-DEF 3sg.PERF break.down
'Every car broke down.'

(62) a. wata mootàa taa ɓaacì
Somecar 3sg.PERFbreak.down
'Some car broke down.'

b. wata mootà-ř taa ɓaacì
Somecar-DEF 3sg.PERFbreak.down
'A specific car (previously mentioned?) broke down.'

We will have to leave it open whether this different behaviour argues for a different syntactic status of the two elements. (62b) is interesting for another reason, however: If its specific intepretation is due to the presence of the definite determiner, one might wonder about the semantic contribution of *wata*. Given that singular NPs in Hausa denote sets containing both atomic and plural individuals (see section 3.1), the function of *wata* could consist in filtering out all plural sets from the NP-denotation, such that the entire DP will only contain individual cars in its denotations. Heycock & Zamparelli (2005: 230) locate this semantic effect in a DP-internal functional head $NUM_{[+/-LATT]}$. Now, if the quantifying elements *wani / wata / wa(ɗan)su* were located in NumP below DP, this would automatically account for the co-occurrence of *wata* and the definite determiner in (62b).

3.2.2 The interpretation of existential wani / wata / wa(ɗan)su

The indefinite determiner *wani / wata / wasu* is used in statements with existential force and corresponds to English *some, a, a certain*. As already mentioned in section 2.1.1, these existential indefinites alternate with bare indefinite expressions. As argued by Jaggar (1988), the choice between the two options is largely dependent on discourse-semantic considerations. Unlike bare indefinite NPs, *wani / wata / wasu* is preferably used for introducing new discourse referents that can be anaphorically referred to in subsequent discussion. According to Jaggar (1988), this accounts for their preferred occurrence with [+human] subject NPs. Semantically, this discourse-introducing function can be captured by endowing them with existential force: Their presence asserts the existence of an individual with a particular property indicated by the NP. The following examples may serve to illustrate the basic discourse-introducing function of *wani*-expressions in a narrative text. Example (63c) shows that these expressions can also occur embedded within larger nominal constituents:

(63) a. sai *wani yaaròo* yaa cêe … [Sauna Jac: 3]
then some boy 3sg.PERFsay
'then a/some boy said …'

b. yaa gàmu dà *wani mài jàakii* [Sauna Jac: 5]
3sg.PERF meet with some owner donkey
'He met a/some owner of a donkey.'

c. yaa isoo gida-n *wani mài ɗaukà-r hòotoo* [Sauna Jac: 7]
3sg.PERF reach house-LINK some owner taking-LINKphotograph
'He arrived at the house of a / some photographer.'

In addition to their basic use, existential indefinites can also take on a specific interpretation, in which case they are best translated as 'a certain, a specific'. Finally, the presence of *wani/ wata/ wasu* often gives rise to a partitive interpretation, as in (64):

(64) *wasu* sun zoo, *wasu* bà sù zoo ba. [Cowan & Schuh 1976: 152]
some 3pl.PERF come some NEG 3pl.SUBJ come NEG
'Some came, others didn't.'

While the partitive interpretation of (64) seems to follow from the parallel construal of the two clauses, it may also arise as the result of a scalar implicature in other cases. The scalar implicature excludes all stronger readings on which most or all individuals in the particular domain would satisfy the predication expressed.

While the quantificational force of indefinite *wani*-expressions is always existential in declaratives, they exhibit an interesting ambiguity in yes/no-questions. In this clause-type, the indefinite expression can either have an existential reading, cf. (65ab.i), or a more universal free-choice interpretation corresponding to *any-* or *anybody*, cf. (65ab.ii).[15]

(65) a. Wani yaa zoo? [Cowan & Schuh 1976: 278]
some/any 3sg.PERF come
i. 'Did someone come?'
ii. 'Did anyone come?'

b. wani àbù yaa fàaru? [Cowan & Schuh 1976: 278]
some/any thing 3sg.PERF happen
i. 'Did something happen?'
ii. 'Did anything happen?'

It seems as if the existential (i)-reading would correspond to a more specific interpretation of the indefinite expression. Interestingly, the same kind of ambiguity is observed with *wani*-expressions under negation (section 3.2.4).

3.2.3 The interpretation of the generic indefinite koowànè / koowàcè / koowàdànnè

Nominal expressions consisting of or containing the indefinite expression *koowànè/ koowàcè/ koowàdànnè* are traditionally referred to as *generic indefinites* (e.g. Cowan & Schuh 1976) or universals (Newman 2000, Jaggar 2001). They seem to owe this label to the fact that they are interpreted with universal force in episodic affirmative clauses and yes/no-questions, corresponding to *every* or *everyone* in English:

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[15] In case of subjects and preposed focused objects, the same readings can be alternatively expressed by means of a relative construction involving the existential predicate *àkwai* 'there is' (Cowan & Schuh 1976: 278):

(i) a. àkwai wân-dà ya zoo? b. àkwai àbî-n dà ya fàaru?
there.is someone-REL 3sg.PERF.REL come there.is thing-DEF REL 3sg.PERF.REL happen
'Did anyone / someone come?' 'Did anything / something happen?'

(66) a. *koo-waa* yaa ci jaɾ̃ɾàbâawaa [Newman 2000: 623]
DISJ-who 3sg.PERF eat exam
'*Everyone* passed the exam.'

b. yaa duubàa *koo-'ìnaa* àmmaa bà-i sàamee shì ba
3sg.PERF look DISJ-where but NEG-3sg find him NEG
'He looked *everywhere*, but he didn't find him.' [Newman 2000: 623]

(67) a. *koo-waa* yaa zoo ? [Cowan & Schuh 1976: 278]
DISJ-who 3sg.PERF come
'Did everyone come?'

b. yaa ci *koo-mee* ? [Cowan & Schuh 1976: 278]
3sg.PERF eat DISJ-what
'Did he eat everything?'

Notice that the expressions in question are all morphologically complex: They consist of the disjunction marker *koo*, which doubles as a (subordinating) complementizer in yes/no-questions ('whether') (Jaggar 2001: 370), and a wh-expression (Newman 2000, Jaggar 2001).[16] For this reason I will follow Jaggar (2001) in referring to them as *koo*+wh-expressions and gloss them as *DISJ-wh* in the following (Zimmermann 2005).

In addition to the plain universal reading of (66) and (67), a *free choice* (FC) *any*-interpretation is available in modal and in (inferred) intensional contexts: The generic indefinite is embedded under a verb of wishing or wanting in (68a), under a modal auxiliary expressing ability in (68b), it is found inside a (subjunctive) command clause in (68c), and in a generic conditional '*wh*…ever'-clause in (68d):

(68) a. ya-nàa *sôo* yà sàyi wannàn kuɗi-ntà *koo nawà*
3sg. PROG want 3sg.SUBJ buy this money-its DISJ how much
'He wants to buy this at *any* price.' [Newman 2000: 623]

b. à cân a-nàa iyà kòoyo-n *koo-wànè* harshèe.
there one-PROG can learning-LINK DISJ-which language
i. 'There one can learn any language.'
ii. 'There one can learn every language.'

c. kà buudɗè *koo-wàcè* ƙoofàa
2sg.SUBJ open DISJ-which door
i. '(You should) Open any door!'
ii. '(You should) Open every door!'

[16] The combination of disjunction marker and wh-expression in the formation of a universal quantifier is remarkable from a cross-linguistic perspective: Hausa differs from languages such as Japanese, Malayalam, and Kannada (Nishigauchi 1986, Jayaseelan 2001, Amritavalli 2003), where the quantificational force of the *wh*-DISJ-quantifier is not universal, but existential, while universal quantification is expressed by combining a *wh*-expression with the conjunction marker. Hausa is similar to Korean, however, where *wh*-DISJ-quantifiers likewise come with universal force (Gill et al. 2004). See Zimmermann (2005) for relevant data and discussion.

d. *koo-waa* ya yi hakà waawaa nèe.
DISJ-who 3sg.PERF.REL do so fool COP
'Whoever / Anyone who does this is a fool.' [Newman 2000: 624]

It is worth pointing out that there are no modal or intensional contexts in which a *koo*+wh expression would only have an FC-interpretation, as witnessed by the ambiguity of (68bc). Nor do the sentences exhibit *quantificational variability effects* (QVEs), which are identified as characteristic properties of FCIs by Giannakidou (2001). The simultaneous presence of two readings plus the absence of QV effects strongly argues against the existence of an FCI *koo*+wh restricted to modal contexts. Rather, the ambiguity between ∀-reading and FC-reading in (68bc) seems to follow from a scopal ambiguity between the universal quantifier *koo*+wh and the modal element, cf. Zimmermann (2005).[17]

Summing up, *koo*+wh-expressions appear to indicate the existence of alternatives, resulting in a plain universal or free choice interpretation depending on the context. Notice that this may ultimately provide a reason for the presence of the disjunction marker *koo* in the construction, as disjunction markers are frequently used for introducing alternatives (T.E. Zimmermann 2000, Simons 2005). In the next section, it will emerge that *koo*+wh-expressions give rise to yet another interpretation when embedded under VP-negation (but see Jaggar (2001: 371) for an alternative view on which this additional reading falls out naturally from the universal quantifier reading)

3.2.4 Interaction with negation

This section discusses the interaction of both kinds of class-B expressions with negation. A characteristic feature of both kinds of expressions is that they interact with negation, giving rise to negative existential readings corresponding to *no*, *nobody*, *nothing* etc. At the same time, indefinites of the *wani*-type differ from the generic or universal indefinites of the *koo*+*wh*-type in a number of syntactic and semantic respects.

Indefinites of the *wani*-type can occur embedded under VP-negation, e.g. in object position (69ab). In this case, the presence of the *wani*-expression embedded under negation leads to an ambiguity between the negative existential (¬∃) reading in (i), which corresponds to *no, no-one*, and a *some-not* (∃¬) reading in (ii), where the *wani*-expression takes semantic scope over

[17] The analysis gets additional support from the fact that *koo*+wh expressions are found in a range of environments from which FC-elements are banned (cf. Giannakidou 2001): They can occur in the c-command domain of the exclusive quantifier *only*, cf. (i), and they can occur embedded under factive predicates, cf. (ii):

(i) Muusaa (nee) kawài yaa mai dà amsàa gà *koo-wàcè* tàmbayàa dà maalàmii ya yi
Musa PRT only 3sg.PERF return with answer to DISJ-which question REL teacher 3sg.PERF.REL do
'Only Musa gave an answer to each / *any question that the teacher asked.'

(ii) Naa yii muɾ̃nàa dà *koo-waa* yaa zoo.
1sg.PERF do gladness with DISJ-who 3sg.PERF come
'I am glad that everybody / *anybody came.'

VP-negation. The *some-not* (∃¬) reading is one of the few instances where the semantic relationship between negation and quantifier is not exclusively determined by syntactic (surface) structure. Depending on lexical content and context, either one of the two readings may be preferred.

(69) a. **bà**-n ga *wani* **ba** [Bargery Online]
NEG-1sg.SUBJ see someone NEG
i. 'I didn't see anyone.' ⇔ 'I saw no-one' → *preferred*
ii. 'There is someone I didn't see (but I saw others).'

b. Muusaa **bà**-i kiraa *wani àbookii* lìyaafaa **ba**
Musa NEG-3sg.SUBJ invite some friend ceremony NEG
i. 'Musa did not invite any friends.' ⇔ 'Musa invited no friends.'
ii. 'There is some friend that Musa didn't invite (but he invited others).' → *preferred*

As indicated in the paraphrases, the ∃¬-reading typically gives rise to a partitive construal. According to Schuh (1998), who discusses a parallel phenomenon in Miya (West Chadic), this partitive interpretation in the context of VP-negation is possibly the result of an exhaustivity inference.

When the *wani*-expression is a subject, taking syntactic scope over VP-negation, the sentence is unambiguous and only allows for the ∃¬-interpretation:

(70) *wasu* **bà** sù zoo **ba**
some.pl NEG 3pl come NEG
'Some did not come.'
NOT: 'Nobody came.'

The interpretation of indefinite *wani*-expressions in subject position is thus opposite to that of bare indefinite NPs, which only have a negative existential reading, cf. (12a, 13a) in section 2.1.3. To express this reading with *wani*, one has to use the relative construction in (71):[18]

(71) **baabù / bâa** *wan* dà ya zoo
Not.exist someone REL 3sg.PERF.REL come
'Nobody came.'

Finally, structures in which a focused *wani*-NP_{OBJ} has moved overtly across VP-negation are not ambiguous either, allowing only for the surface reading with *wani* scoping over negation:

[18] According to Jaggar (2001: 528), the expression *wan* in (71) is not a short form of *wani*, but should be analyzed as *wa-`n* / *wa-`r* = wa-DEF. Notice, though, that on this analysis it remains mysterious why the head noun *wan* in (71) gets an indefinite interpretation.

(72) *wani àbookii*$_1$ nèe [Muusaa **bà**-i kiraa t_1 lìyaafàa **ba**]
some friend PRT Musa NEG-3sg.SUBJ invite ceremony NEG
'It was a certain friend that Musa did not invite to the ceremony.'
NOT: 'He didn't invite any friend.'

Expressions of the *koo*+wh-type share one of the two scopal possibilities with *wani*-expressions. They are interpreted as negative existentials under VP-negation, as shown in (73).

(73) **bà-**n ga *koo-waa* **ba**
NEG-1sg.SUBJ see DISJ-wh NEG
'I didn't see anyone.' ⇔ 'I saw no-one' = (69ai)
NOT: 'I did not see everyone.'

The two kinds of expressions differ in two respects, though. First, there is no semantic interpretation of (73) that would correspond to the surface relation of negation and *koo*+wh-expression. The expected ¬∀-interpretation, according to which the speaker did not see everyone (but some people), is unavailable for (73). Interestingly, this reading becomes available again, when the *koo*+wh-expression occurs in the scope of sentential negation, e.g. after focus fronting (Newman 2000, Green & Jaggar 2003, Zimmermann 2005):

(74) a. **bàa** [*koo-waa* [$_{VP}$ *kèe* sô-n wannàn jàřiidàa]] **ba**.[Newman 2000: 624]
NEG DISJ-who PROG.REL like-LINK this newspaper NEG
'Not *EVERYONE* likes this newspaper.'
NOT: '*NOBODY* likes this newspaper.'

b. [**bàa** *koo-waa*$_1$ **ba**] nèe [Audu [$_{VP}$ y*a* kiraa t_1]].
NEG DISJ-who NEG PRT Audu 3sg.PERF.REL call
'It is not *EVERYONE* that Audu called.'
NOT: 'Audu called NOBODY.'

Again, the structure is unambiguous and the ¬∀-interpretation is the only available reading.

The second difference concerns the impossibility for subject *koo*+wh-expressions to take syntactic scope over VP-negation. Sentence (75) is ungrammatical, according to Newman (2000: 623).

(75) **koo-waa* /*koo-wànè* *ɗaalìbii* **bà**-i ci jaɾ̃̃ràbâawaa **ba**.
DISJ-who DISJ-which student NEG-3sg.SUBJ eat exam NEG
intended: 'Everybody/ every student did not pass the test:'
= 'Nobody / no student passed the test.'

Instead, the intended reading must be expressed by means of a relative clause that is embedded under the negative existential expression *baabù, bâa* 'there is not', comparable to the relative construction in (71) (Newman 2000: 623)

(76) **bâa** *wân-dà /* **bâa** *dàalìbii* *dà* ya ci jaa̋ràbâawaa
not.exist someone-REL not.exist student REL 3sg.PERF.REL eat exam
'There is nobody/ no student that passed the exam.' ⇔ 'Nobody/ no student passed.'

At present, the reason for the ill-formedness of (75) remains unclear. According to one consultant, the deviant status of (75) may have to do with the fact that a *koo*+wh-expression in sentence-initial position raises a positive expectation, which is then contradicted by the negation. Correct or not, it is interesting to note that comparable restrictions blocking distributive universal quantifiers from taking scope over negation, either overtly or covertly, are observed cross-linguistically, cf. e.g. Beghelli & Stowell (1997), Hintikka (2002), Zeijlstra (2004: 184ff.).

(77) a. ??Every boy didn't leave. [Beghelli & Stowell 1997: 95]
b. ??Each boy didn't leave.

According to Beghelli & Stowell (1997), the acceptability of (77ab) improves when the universally quantified expression is focused. Similarly, *koo*+wh-subjects can take syntactic scope over VP-negation in Hausa, when focused:

(78) *koo-wànè dàalìbii* nèe bà-i ci jaa̋ràbâawaa ba.
DISJ-which student PRT NEG-3sg eat exam NEG
'EACH/EVERY student didn't pass the exam.'

(78) can be felicitously uttered in order to emphasize the degree of failure, or in order to contradict a preceding assertion to the effect that (at least) some students passed.

3.2.5 Possible analyses

In this section, we will briefly outline three possible approaches to the semantic analysis of class-B quantifiers in Hausa.

The first option consists in treating class-B quantifiers of the *wani-* and the *koo*+wh-type as genuine generalized quantifiers of type <et,t>, which come with existential and universal force, respectively. Such an account is put forward in Zimmermann (2005). On the quantifier account, the observed ambiguity of *wani*-expressions with negation in (69ab) and the ambiguity of *koo*+wh-expressions in intensional contexts in (68a-d), is reducible to scope ambiguities. What remains unaccounted for is the non-ambiguity of *koo*+wh expressions under VP-negation. Instead, the quantifier account will have to stipulate obligatory LF-movement of *koo*+wh-objects across VP-negation. Likewise, the ungrammaticality of *koo*+wh expressions in subject position of VP-negated clauses receives no principled explanation (though, admittedly,

quantifier analyses have nothing to say on the absence of similar constructions in other languages either).

A second possibility is to treat class-B quantifiers as indeterminate pronouns in terms of Kratzer & Shimoyama's (2002) analysis: *Wani*-NPs would be ordinary indefinites and denote a set of contextually relevant individuals: {x: x is an entity satisfying the NP-denotation in w ∧ x ∈ g(**D**)}, where *g(**D**)* is a contextually bound assignment function from the domain of discourse. *Koo*+wh expressions, in turn, would denote the entire set of all actual or potential individuals of a given kind in a particular world of utterance w, parallel to the treatment of the German indefinite expression *irgendein* in Kratzer & Shimoyama (2002: 15): {x: ∃g'[x is an NP-entity in w ∧ x ∈ g'(**D**)]} = {x: x is an NP-entity in w}, which is the set of all NP-entities. The indeterminate pronoun analysis would seem to account for the often observed FC-interpretation of these expressions. And it would seem to account for the fact that *koo*+wh expressions are interpreted as negative existentials under VP-negation, assuming that they are bound by the negative operator at the VP-level. At the same time, the indeterminate approach provides no principled explanation for the fact that both *wani*- and *koo*+wh-expressions are not necessarily bound by the next highest c-commanding operator, see e.g. the ambiguity of *wani*-expressions under VP-negation in (69), the absence of QV-effects with *koo*+wh- expressions in the scope of modal operators in (68), and the fact that *koo*+wh expressions are bound by VP-negation, but never by sentence negation, cf. (74ab). Finally, a treatment of *koo*+wh expressions as indeterminate expressions parallel to German *irgendein* does not account for their universal reading in affirmative episodic contexts without additional stipulations.

A third approach would analyse the class-B quantifiers *wani* and *koo*+wh as denoting choice function variables, cf. Reinhart (1997) and Matthewson (1999). The choice function associated with *wani*, CF_{wani}, would pick out an atomic individual or a plural group of individuals from a set of individuals. The observed ambiguities of *wani*-expressions in yes/no-questions and in negated clauses could then be made to follow from a difference in the locus of existential closure over the CF-variable, namely above or below Q and NEG respectively. The choice function associated with *koo*+wh expressions, CF_{koo+wh}, in contrast, would pick out the entire set of individuals in a given domain. Whichever way one wants to formally implement this, though, it would still not account for the difference in interpretation between *koo*+wh expressions under VP-negation (negative existential) and under sentence negation (negative universal). Additional factors seem to be required.

In section 4, we will see that universal *koo*+wh expressions are unequivocally interpreted distributively. This would suggest that universal force indeed forms part of their semantic contribution, where the universal force could be due to the denotation of the *koo*+wh expression itself, if it is universal generalized quantifier, or to the presence of a distributivity operator (Link 1983) whose insertion into the logical form is obligatorily triggered by the *koo*+wh expression. See Matthewson (2001) for parallel ideas concerning English *every*.

3.3 Class-C quantifiers: Quantifying nouns

The final class of adnominal quantifying expressions in Hausa corresponds to *most*-NPs in English and differs from the other two both syntactically and semantically. Syntactically, the quantifying expression is nominal: As already seen with the expression *mafìi yawà-n* 'more quantity of' in (50c) in section 3.1.3, the quantifying expression must be linked to the quantified NP by the nominal linker *-n/-r̃*. The quantifying effect is due to the lexical meaning of the noun, which seems to correspond to the English abstract noun *majority*, *greater part*. Apart from *mafìi yawàn*, there are a couple of (sometimes related) nouns that can be used for expressing the concept of majority. Notice that the aspectual markers in (79a-c) show plural agreement. We will return to this fact shortly.

(79) a. *yawanci-n* ɗàalìbai sun ci jar̃r̃àbâawaa [19]
majority-LINK students 3pl.PERF eat exam
'Most(of the) students passed the exams.'

b. *yawà-yawà-n* mutàanee su-nàa yî-n hakà
quantity-quantity-LINK people 3pl-PROG doing-LINK thus
'Most people are doing this. [Bargery Online]

c. *gaalìbi-n* mutàane-n gàri-n nán su-nàa dà kir̃kìi
majority-LINK people-LINK town-LINK this 3pl-PROG with kindness
'Most of the people in this town are kind.' [Hausa English Dictionary: 40]

In many instances, the presence of a class-C quantifier gives rise to a partitive interpretation relative to a contextually specified set denoted by the complement NP. In some such cases, the complement NP is marked overtly for definiteness, e.g. by means of the demonstrative element *nân* in (79c). Such marking is not obligatory, though, as witnessed by (79a). In certain cases, such as (79b), the quantifier can also combine with an unmarked NP in order to quantify over all instances of the kind denoted by the NP, cf. Matthewson (2001).[20]

Class-C expressions can occur as arguments on their own and combine with the definite article or a possessive suffix, underlining their nominal character:

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[19] The expression *yawancii* (< yawa-n-cii, lit.'quantity-LINK-eat') also functions as an adverbial quantifier, see section 6.1.

[20] The minimal pair in (iab) shows that class-C quantifiers with unmarked complement NPs range over instances of a kind in out-of-the-blue-contexts, cf. (ia), whereas class-C quantifiers with definite-marked NPs are preferably interpreted as ranging over a contextually specified subset of the NP-denotation, cf. (ib):

(i) a. mafìi yawàn ɗàalìbai sun ci jar̃r̃àbâawaa
most students 3pl.PERF eat exam
'Most students passed the exam.'

b. mafìi yawàn ɗàalìbâ-*n* sun ci jar̃r̃àbâawaa
most students-DEF 3pl.PERF eat exam
'Most of the students passed the exam.'

(80) yawanci-nsù / mafìi yawà-nsù sun yàr̃da dà shaawar̃à-r̃
majority-3pl more quantity-3pl 3pl.PERF approve with decision-DEF
'The majority of them was in favour of the decision.'

Class-C quantifiers have two striking syntactic properties having to do with their distribution and their number agreement. First, according to Ma Newman (1990: 172), class-C quantifiers meaning 'most of' are restricted to – what appears to be – the subject position. In other syntactic environments, quantitative superlative readings are typically expressed by means of a comparative construction involving the comparative verb *fi* 'exceed, surpass', cf. (81), or the comparative postnominal modifier *mafìi yawàa* 'more, most' (cf. (47b)).

(81) taa fi duk yawà-n kaayan adoo
3sg.PERF surpasses all quantity-LINK jewellery
'She has the most jewellery of all.' [Ma Newman 1990: 172]

Interestingly, the quantitative superlative constructions in (47b) and (81) differ from those in (79a-c) and (80) in that they only allow for the relative superlative reading, on which several entitites are compared with respect to the degree to which a predicate holds. The proportional *most-of* reading of (79) and (80), on which a predicate is asserted to hold for the greater part of the denotation of the NP-complement, seems unavailable for these constructions, see Hackl (2006) and reference therein for a discussion of the two readings which are exemplified by the minimal pair *John climbed most mountains* (proportional) vs. *John climbed the most mountains* (relative). From a typological point of view, it would be an interesting result if *most-of* readings could only obtain with class-C quantifiers in subject position in Hausa. This problem calls for more research.

The second striking property of class-C quantifiers concerns agreement facts. As already pointed out before (79), class-C quantifiers in subject position require plural agreement on the aspectual marker, although the subject NP appears to be grammatically singular. Compare the sentences in (79ab') with (82), where the subject pronoun agrees with a structurally identical singular subject *teacher of*.

(79) a'. * *yawanci-n* dàalìbai **yaa** ci jar̃r̃àbâawaa
majority-LINK students 3**sg**.PERF eat exam

b'. * *gaalìbi-n* mutàane-n gàri-n nán **ya**-nàa dà kir̃kì.
majority-LINK people-LINK town-LINK this 3**sg**-PROG with kindness

(82) maalàmi-n dàalìbâ-n yaa tàfi Jaamùs.
teacher-LINK students-DEF 3sg.PERF go Germany
'The teacher of the students went to Germany.'

It is possible to give a unified account for the peculiar agreement pattern of class-C quantifiers and their restriction to sentence-initial position in (79) and (80) by assuming that these expressions do not function as grammatical subjects, but as topics. Such an analysis is supported by the fact that topics in Hausa are realized in sentence-initial position (Newman: 615ff.), the unmarked position for topics cross-linguistically. The structure of (79a) would then be as shown in (83), with the structural subject position either left unfilled, or else filled by an empty pro-subject that is grammatically plural and co-indexed with the topicalised phrase. Please recall from (1) that subjects need not be overtly expressed in Hausa:

(83) [$_{TopP}$ yawanci-n ɗàalìbai$_i$ [$_{TP}$ (pro$_{pl,i}$) sun$_i$ ci jaɾ̃ɾ̃àbâawaa]]

In the case of (83), co-indexation of the topicalised phrase with the plural pro-subject and/or the person-aspect complex will result in the construal of a plurality, which can then serve as the plural subject for predication. By assumption, such co-indexation of plural *pro* and a lexical singular DP is possible if and only if the singular DP denotes a collection of individuals. Incidentally, this treatment of *most*-expressions in Hausa as topics neatly ties up with speculations in Krifka (1998), who argues for an inherent topic status of *most*-NPs in English, too, in order to account for their preference for wide scope interpretations.

The analysis in (83) is supported by an additional semantic fact. Unlike what is sometimes reported for *most*-NPs in English (see e.g. Partee 1995: 564), class-C quantifiers in Hausa need not be interpreted on a distributive construal and can therefore co-occur with collective predicates, such as *keewàyee* 'to surround' and *tàaru* 'to gather', cf. (84ab):

(84) a. mafii yawà-n / yawanci-n soojoojî-n sun /* yaa keewàyee gàrii
most-LINK / most-LINK soldiers-DEF 3pl.PERF 3sg.PERF surround town
'Most of the soldiers surrounded the city.'

b. mafii yawà-n soojoojî-n sun / * yaa tàaru à gàba-n makaɾ̃antaa
most-LINK soldiers-DEF 3pl. PERF 3sg. PERF gather in front-LINK school
'Most of the students gathered in front of the school.'

If the subjects of (84ab) denote plural groups that are construed on the basis of the denotation of the *most*-expression, the availability of a collective interpretation is predicted.

3.4 Summary

Hausa has three classes of quantifying elements with different syntactic behaviour: There are syntactic modifiers (class A), functional heads (class B), and genuine nominal heads occurring in complex N-N constructions (class C). The three classes of quantifying elements also differ semantically. While class-A quantifiers function as semantic modifiers, and while the

quantificational impact of class-C quantifiers is part of the lexical meaning of the noun, the exact semantic nature of the quantificational indefinites of class B remains unresolved: They could alternatively be analysed as genuine quantifiers, as indeterminate pronouns, or as denoting choice-functions, but none of these alternatives is entirely without problems.

Finally, the syntactic and semantic tri-partition in the inventory of quantificational elements seems to be typical of Chadic languages in general. In particular, universal class-B quantifiers of the every/any-type are not restricted to Hausa, but attested in many Chadic languages, see e.g. Hoffmann (1963) on Margi, Frajzyngier (1993) on Mupun, Frajzyngier (2002) on Hdi, Haruna (2003) on Gùrùntùm, and even in other languages in the region, such as the Northern Nigerian variety of Fulani (Atlantic, Niger-Congo) (Jungraithmayr & Abu-Manga 1989). The widespread occurrence of these expressions makes a principled theoretical account all the more pressing, so as to get a better understanding of how natural languages express the concept of universal quantification.

4. UNIVERSAL QUANTIFICATION

Hausa has two kinds of adnominal universal quantifiers. The first kind is instantiated by distributive *koo*+wh expressions, corresponding to 'each/ every/ any', which were introduced in section 3. The second kind is instantiated by the collective quantifying expression *duk(à)*, corresponding to English 'all'. This section compares the syntactic and semantic behaviour of the two kinds of universal quantifiers. It is shown that the differences between them mirror those observed with *each/every*-type expressions and *all*-type expressions in other languages (see also Wolff 1993, Newman 2000, and Jaggar 2001 for extensive discussion).

4.1 *Duk(à)* 'all' vs. *koo+wh* 'every, any': Syntactic Differences

The universal quantifying expression DUK has two allomorphs, *duk* and *dukà*, which differ from *koo*+wh expressions in a number of ways.

First, while *koo*+wh must precede the NP, *duk(à)* can occur before or after the head NP, apparently without a significant change in meaning, cf. (85a-c). Second, unlike *koo*+wh expressions, *duk(à)* shows no agreement with the head noun (Newman 2000: 388):

(85) a. *duk* faasinjoojî-*n* vs. faasinjoojî-*n* *dukà* [Newman 2000: 388]
all passengers-DEF passengers-DEF all
'all the passengers'

b. *duk(à)* Hàusàwaa vs. Hàusàawaa *dukà*
all Hausa people Hausa people all
'all Hausa people'

c. *duk* àbinci vs. àbinci *dukà*
all food food all
'all the food'

The variation in word order and the absence of agreement effects suggest that *duk(à)* is a modifying element, rather than a functional head in D. The data in (85a-c) also show that *duk(à)* must combine with a plural count NP or a mass NP. It cannot combine with singular NPs, as illustrated in (86):[21]

(86) * naa ga duk *dàalìbii* (OK with *dàalìbai* 'students')
1sg.PERF see all student
Intended: 'I saw all the students'

Third, (85a) shows that *duk(à)* can occur with definite expressions, whereas *koo*+wh expressions are restricted to occur with indefinite NPs. In particular, the ordering DEF < *duk(à)* in (85a) suggests that *duk(à)* modifies an entire definite DP, as shown in (87ab), rather than a bare NP:

(87) a. duk [$_{DP}$ NP-n/-ř] b. [$_{DP}$ NP-n/-ř] dukà

If the NP is overtly marked for definiteness, *duk(à)* universally quantifies over a contextually given set denoted by the definite DP, cf.(85a). If the NP is not overtly marked for definiteness, the universal quantification can either range over the entire kind, as in (85b), or – again – over a contextually specified subset of the NP denotation, as in (85c), see also Matthewson (2001).

Finally, unlike *koo*+wh expressions, prenominal *duk(à)* can be linked to a following NP by means of the nominal linker *-n* (plus gemination), thus forming a partitive construction meaning 'all of NP' (Newman 2000: 389).

(88) *dukkà-n* birai [Newman 2000: 389]
all-LINK monkeys
'all of the monkeys'

[21] In sentence-initial position, *duk* sometimes seems to combine with singular NPs, as in (i).

(i) duk (wani) faasinjà yaa fìta
all some passenger 3sg.PERF leave
'Each and every passenger left.'

Notice, though, that the reading changes from plain 'all' to the stronger distributive interpretation 'each and every'. Given the ungrammaticality of (86), I propose that *duk* in (i) does not form a constituent with the following singular NP. Rather, I take it to be an instance of the sentence-initial adverbial *duk*, which has a completive interpretation and will be discussed in section 4.4.

Summing up, the syntax of *koo*+wh expressions and *duk(à)* differs radically. As argued in section 3.2.1, *koo*+wh expressions are functional heads in D and combine with bare count NPs. *Duk(à)*, in contrast, seems to function as a modifying phrase, as has been proposed for English *all* in Brisson (1998). Like *all*, the universal modifier *duk(à)* typically operates on definite DPs, overtly marked or not, in which case it universally quantifies over a contextually-given set denoted by the DP (see also the data in Jaggar 2001: 376, for additional evidence). When combined with certain bare NPs, *duk(à)* appears to quantify over the entire kind denoted by the NP, again mirroring the behaviour of English *all* (Matthewson 2001). Further work is required to substantiate these claims.

4.2 *Dukà* 'all' vs. *koo+wh* 'every, any': Further Semantic Differences

Apart from the fact that *koo*+wh expressions combine with bare NPs, whereas *duk(à)* seems to combine with full DPs, the two expressions exhibit a number of semantic differences that support a separate treatment. These differences concern the interpretation of the two kinds of quantifying expressions as collective or distributive quantifiers, their behaviour under negation, and their behaviour with respect to binding.

4.2.1 Collective vs. distributive readings

As pointed out in Jaggar (2001: 370, 375), the interpretation of *koo*+wh expressions and *duk(à)* differs in that the former are inherently distributive, whereas the latter typically gives rise to collective readings. The distributive nature of *koo*+wh expressions is witnessed by their inability to co-occur with inherently collective predicates such as *tàaru dà* 'to gather' or *keewàyee* 'to surround':[22]

(89) a. * *koo-wànè dàalìbii* yáa tàaru à gàba-n makaɾ̃antaa.
DISJ-which student 3sg.PERF gather at front-LINK school
*'Each student gathered in front of the school.'

b. * *koo-wànè soojà* yáa keewàye gàrii.
DISJ-which soldier 3sg.PERF surround town
*'Each soldier surrounded the city.'

The inherently distributive nature of *koo*+wh expressions is further witnessed by their incompatibility with mass NPs.

Dukà-NPs, on the other hand, can freely co-occur with collective predicates, as in (90ab):

[22] When the singular distributive NP in (89a) is replaced by its plural variant *koo-wàdàannè* NP, the result is grammatical and gives rise to a distributive plural interpretation on which each *group* of students gathered in front of the school, cf. fn.14.

(90) a. *duk dȃalìbâ-n* sun tàaru à gàba-n makaɗantaa
all students-DEF 3pl.PERF gather at front-LINK school
'All the students gathered in front of the school.'

b. *duk soojoojî-n* sun keewàye gàrii
all soldiers-DEF 3pl.PERF surround town
'All the soldiers surrounded the city.'

Again, this difference in interpretation is in full parallel to the distinction between distributive *each/every* and collective *all*, already pointed out in Vendler (1967), which is also discussed from a more cross-linguistic perspective in Gil (1995). See also Krifka & Zerbian (this volume) for similar distinctions in Northern Sotho and Swahili (Bantu).

4.2.2 Different behaviour under negation

Jaggar (2001: 377) discusses a second difference between the two kinds of universal quantifiers. In section 3.2.4, it was shown that *koo*+wh expressions receive a negative existential interpretation (*no, nobody, …*) under VP-negation (cf.73), but a negative universal interpretation (*not every, not everybody, …*) under sentence negation (cf.74). This is unlike what we find with expressions modified by *duk(à)*, which always give rise to the negative universal surface interpretation *not all*. This is shown in (91a) for VP-negation, and in (91b) for sentence negation:

(91) a. bà-n kaɗàntà duk lìttàttàafâ-n ba [Jaggar 2001: 377]
NEG-1sg read all books-DEF NEG
'I didn't read all the books.'

b. bàa duk bàaƙii su-kà zoo ba
NEG all guests 3pl-PERF.REL come NEG
'Not all the guests have come.'

Again, the interpretive difference argues for a separate treatment of the two universally quantifying expressions.

4.2.3 Binding Differences

A third semantic difference between the two kinds of expressions concerns their behaviour with respect to binding: Grammatically singular distributive *koo*+wh expressions can only bind singular pronouns, cf. (92a), whereas grammatically plural *duka*-DPs must be anaphorically picked up by plural pronouns, cf. (92b):[23]

[23] As expected, all four possible combinations of the two universal quantifiers and the two possessive suffixes allow for additional interpretations on which the possessive suffix is free and refers to a contextually given (set of) individual(s).

(92) a. *koo-wànè*$_i$ mùtûm yaa sayaɾ̃ dà *gida-n-sà$_i$* / * gida-n-*sù$_i$*
DISJ-which man 3sg.PERF sell house-LINK-3sg house-LINK-3pl
'Every$_i$ man sold his$_i$ house.'

b. *duk mutàanê-n*$_i$ sun sayaɾ̃ dà * gida-n-*sà$_i$* / *gida-n-sù$_i$*
all men-DEF 3pl.PERF sell house-LINK-3sg house-LINK-3pl
'All the men$_i$ sold their$_i$ houses.'

With discourse binding across sentential boundaries, the difference is somewhat blurred. Not surprisingly, *duka*-expressions must be anaphorically referred to by plural pronouns, cf. (93a). *Koo*+wh expressions, however, can serve as antecedents for either singular or plural pronouns, even when occurring in object position. This is different from English where distributive universal quantifiers in object position do not make good antecedents for singular pronouns across sentence boundaries as can be seen from the infelicity of the following sequence: *I examined every$_i$ student. #He$_i$ was smart.*. In (93b), the choice of the singular form *ya* leads to a distributive construal, whereas the choice of the plural form *su* emphasizes the collectivity of the action. Here, the ability of the *koo*+wh expression to serve as the antecedent for a plural pronoun can be explained by means of Kamp & Reyle's (1993: 304) semantic operation of *abstraction*, which forms plural groups from the denoation of distributive universal expressions.

(93) a. *duk* ɗàalìbâ-n$_i$ sun yi muɾ̃nàa ƙwarai. su$_i$-nàa / #ya$_i$-nàa dàariyaa
all students-DEF 3pl.PERF do gladness extremely 3pl-PROG 3sg-PROG laughter
'All the students$_i$ were very happy. They$_i$ were laughing.'

b. Naa gaa *koo-wànè* ɗàalìbii. ya-nàa / su-naa matuƙa-ɾ̃ farin cikìi
1sg.PERF see DISJ-which student 3sg-PROG 3pl-PROG limit-LINK happiness
'I saw every$_i$ student. They$_i$ were each / all extremely happy.'

In sum, the discourse binding potential of *koo*+wh expressions in object position seems to be greater than that of English *each-/every*-NPs.

4.2.4 Conclusion

Hausa, as so many other languages (see e.g. Krifka & Zerbian, this volume), has two different adnominal expressions with universal quantifying force, namely *koo*+wh ('every') expressions and *dukà* ('all')- expressions. The two kinds of expressions differ semantically in their interpretation as distributive or collective, in their interaction with negation, and in their potential to serve as (discourse) antecedents for singular or plural pronouns.

4.3 *Dukà biyu* = 'Both'

A final interesting fact about the interpretation of *duk(à)* is that it can combine with the numeral *biyu* 'two' to express dual number 'both' quantification (Jaggar 2001: 378).

(94) a. màalàmâ-*n* *dukà gùdaa* *biyu* zaa sù bař aikì-nsù
teachers-DEF all unit two FUT 3pl leave work-their
'Both the teachers will leave their work.'

b. *dukà biyû-n* sun zoo
all two-DEF 3pl.PERF come
'Both have come.'

The semantic status of these *both*-phrases as definite is reflected by the usual occurrence of the definite marker either on the head noun, cf. (94a), or on the numeral expression in case of pronominal uses, cf. (94b). From a theoretical perspective, the use of the expression *duk(à)* 'all' for expressing the concept of 'both' is in line with analyses that treat such items as closely related, based on their syntactic and semantic behaviour in other languages (Barwise & Cooper 1981, Brisson 1998).

4.4 Other sources of universal quantification

Completing the picture, we will briefly list further means of expressing the concept of universal quantification in Hausa. These include: (i.) verbal (grade 4) morphology in form of a totality extension that indicates completeness or thoroughness of the action expressed by the verb (Newman 2000: 647), cf. (95ab); (ii.) adverbial occurrences of *duk* meaning 'completely, entirely' (Jaggar 2001: 380), cf. (96); and (iii.) numeral reduplication, giving rise to distance-distributive interpretations analogous to binominal *each* (Zimmermann 2002ab), cf. (97):

(95) a. Audù yaa ci àbinci
Audu 3sg.PERF eat food.
'Audu ate (the) food.'

b. Audù yaa cî-*nyee* àbinci
Audu 3sg.PERF eat.up food.
'Audu ate up the food (completely).'

(96) *duk* naa mântaa dà shii [Jaggar 2001: 380]
all 1sg.PERF forget with 3sg
'I completely forgot about it.'

(97) zaa sù baa kù fensìř *bìyař bìyař*.
FUT 3pl give 2pl pencil five five
'They will give you five pencils each.'

Closer scrutiny shows that the syntactic distribution and interpretation of reduplicated numerals as in (97) is much less restricted than that of English binominal *each* (Safir & Stowell 1988).

Instead, reduplicated numerals in Hausa are more similar to German *jeweils* (Zimmermann 2002ab), and to reduplicating numerals in Telugu, a Dravidian language (Balusu 2006). In particular, reduplicated numerals can occur in subject position of intransitive clauses, in which case they distribute over a plural event, cf. (98a). Second, when in object position, they do not require a clause-mate plural antecedent, because they allow for distribution over a contextually given plural event, cf. (98b).

(98) a. yâaraa *bìyař bìyař* sun zoo
children five five 3pl.PERF come
'The children came in groups of five.' / 'On each occasion, five children came.'

b. Audù yaa sàyi lèemoo *ukù ukù*
Audu 3sg.PERF buy orange three three
'Audu bought oranges in threes.'

Hausa reduplicated numerals differ slightly from German *jeweils* and Telugu reduplicated numerals when it comes to backwards distribution of a (reduplicated) subject denotation over an object denotation. In (99), the denotation of the reduplicated subject, i.e. groups of two boys, cannot be distributed over the atomic parts of the plural object denotation, a specific group of girls, without the addition of the expression *ƙungìyaa* 'group, union'. Without it, the sentence means that a specific group of girls was followed by different groups of two boys:

(99) yâaraa *biyu biyu* su-nàa bî-n (ƙungìya-ř) 'yammaataa
Boys two two 3pl-PROG following-LINK group-LINK girls
i. - : 'A group of three girls was being followed by several groups of two boys.'
ii. +: 'Each of the girls was followed by a group of two boys.'

It seems, then, as if the presence of *ƙungìyaa* in (99) effects the breaking up of the plural group into its atomic parts, but we will leave this issue for further research. In section 5, we briefly return to the role of reduplication with respect to relative scope.

The final means of expressing universal quantification in Hausa is the use of adverbial quantifiers with universal force ('always') or exhaustive focus particles ('only'). These expressions are the focus of section 6.

5. RELATIVE QUANTIFIER SCOPE

Evidence on relative quantifier scope in Hausa is scant so far. The following remarks are therefore based on scattered observations in the existing literature and on preliminary elicitations. Much more work is required in this area in order to see whether inverse readings

are freely available, or whether the surface sequence of quantifying elements determines their scopal relations at the level of semantic interpretation. Nonetheless, the following tendencies can be observed.

If a universal *koo*+wh expression takes scope over a bare or numeral NP, the universal quantifier takes semantic scope over the existential quantifier. This effects a distribution of pencils over children in (100a) and of donations of two Nairas over men in (100b).

(100) a. koo-wànè yaaròo yaa zoo dà fensĩ̃r [Ma Newman 1990: 78]
DISJ-which child 3sg.PERFcome with pencil
'Each child brought a pencil.'

b. naa bâa koo-wànè mùtûm naĩ̃ràa biyu [Ma Newman 1990: 78]
1sg.PERFgive DISJ-which men Naira two
'I gave each man two Nairas.'

If the *koo*+wh expressions in (100) are replaced by a definite plural expression the otherwise unaltered sentences become ambiguous. On the preferred reading, the bare indefinite NPs are interpreted specifically (i-reading), giving rise to a collective interpretation, but a distributive construal is also possible (ii-reading):[24]

(101) a. yâarâ-n sun zoo dà fensĩ̃r
children-DEF 3pl.PERF come with pencil
i. 'The children brought one (specific) pencil.' → *preferred*
ii. 'The children brought a pencil each.'

b. naa bâa mutàanê-n naĩ̃ràa biyu
1sg.PERFgive men-DEF Naira two
i. 'I gave the men two Nairas (in total).' → *preferred*
ii. 'I gave each man two Nairas.'

Presumably, the distributive interpretation is due to the same factor that licenses the availability of a distributive reading in comparable English sentences, namely the presence of a covert distributivity operator that is syntactically adjoined to VP (Link 1983).

As *koo*+wh expressions induce a distributive interpretation, they do not easily combine with reduplicated numeral NPs, which also induce distributivity, resulting in redundancy:

(102) ??naa bâa koo-wànè mùtûm naĩ̃ràa biyu biyu?
1sg.PERFgive DISJ-which man Naira two two
??'I gave each man two Nairas each.'

[24] The following example from Newman (2000: 381) confirms the availability of the specific interpretation:

(i) zaa sù baa kù fensĩ̃r bìyaĩ̃
FUT 3pl give 2pl pencil five
'They will give you five pencils in toto.'

As for differences in the scope-taking behaviour of bare indefinite NPs and *wani*-NPs, the following picture emerges: When occurring in the syntactic scope of a distributive universal *koo*+wh expression, both kinds of indefinite NPs can have narrow scope, but the *wani*-expression gets a more specific interpretation:

(103) a. naa bâ koo-wànè mùtûm *gidaa*
1sg.PERF give DISJ-which man house
'I gave each man a house.'

b. naa bâ koo-wànè mùtûm *wani gidaa*
1sg.PERF give DISJ-which man some house
'I gave each man a certain house.'

Unlike bare indefinite NPs, *wani*-NPs can also take wide scope over a syntactically higher *koo*+wh expression. Unlike in (104a), the first sentence of (104b) can be followed up by naming a specific individual, attesting the existence of a wide-scope reading for the *wani*-NP:

(104) a. koo-wànè mùtûm ya-nàa sô-n *màcè* , # wàatòo Claudia Schiffer
DISJ-which man 3sg-PROG liking-LINK woman that is C.S.
'Each man likes a (different) woman # namely Claudia Schiffer.' ∀ > ∃

b. koo-wànè mùtûm ya-nàa sô-n *wata màcè*, wàatòo Claudia Schiffer
DISJ-which man 3sg-PROG liking-LINK some woman that is C.S.
'Each man likes a certain woman, namely Claudia Schiffer.' ∃ > ∀

If the syntactic relation of existential *wani*-NP and universal *koo*+wh expression is reversed, the latter can likewise take inverse semantic scope over the former, as shown in (105):

(105) wani mùtûm ya-nàa sô-n koo-wàcè màcè.
some man 3sg-PROG liking-LINK DISJ-which woman
i. 'Some man loves every woman.' ∃ > ∀
ii. 'Each woman is loved by some man.' ∀ > ∃

The last observation concerning the relative scope of two quantifying expressions has to do with sentences containing two numeral expressions. The preferred reading for (106) is not the surface reading, according to which two children bought three chickens each, but a cumulative interpretation, according to which two children bought three chickens between them. This cumulative reading is sometimes also referred to as an *independent reading*, as none of the two quantifying expressions is interpreted in the scope of the other.

(106) yâaraa *biyu* sun sàyi kàajii *ukù*.
children two 3pl.PERF buy chicken.pl three
'Two children bought three chicken (between them).'

Similar empirical findings have been made for English and German cf. Scha (1981), Kempson & Cormack (1981), Zimmermann (1997), among others.

To conclude this section, let us take a brief look at the interaction of universal quantifiers with wh-expressions, which has found some attention in the semantic literature. Looking at the minimal pair in (107ab), it shows that a *koo*+wh expression in subject position can either be interpreted in the scope of a fronted *wh*-object, or – alternatively – it can take scope over the *wh*-object, giving rise to a distributive pair-list interpretation, cf. (107a). Similar effects have been observed for English (May 1985, Krifka 2001). Interestingly, though, and in contrast to English, such a pair-list interpretation also seems possible for (107b), where the *wh*-subject takes syntactic scope over the *koo*+wh expression in object position:

(107) a. mèenee nèe koowaa ya sàyaa?
what PRT DISJ-who 3sg.PERF.REL buy
i. 'What did everyone buy?'
possible answer: Everyone bought a book.
ii. 'For everybody, what did he buy?'
possible answer: Malte bought a book, Katharina bought flowers, …'

b. wàanee nèe ya sàyi koo-wànè àbù?
who PRT 3sg.PERF.REL buy DISJ-which thing
i. 'Who bought everything?'
possible answer: Malte bought everything.
ii. 'For every item, who bought it?'
possible answer: Malte bought the book, Katharina bought the flowers, …'

Clearly, this matter requires further research, cf. also Green & Jaggar (2003).

Summing up, even though a thorough semantic investigation of relative scope phenomena in Hausa is still lacking, a number of trends and tendencies emerge, which by and large mirror the English facts: (i.) bare indefinite NPs take narrow scope under distributive quantifiers; (ii.) indefinite NPs with *wani* can take either narrow or inverse wide scope with respect to a syntactically higher distributive quantifier; (iii.) distributive quantifiers can take inverse scope over a syntactically higher *wani*-NP; (iv.) distributive quantifiers and *wh*-expressions show scopal interaction.

6. ADVERBIAL QUANTIFICATION & EXHAUSTIVE FOCUS PARTICLES

This section concludes our investigation of quantification in Hausa by giving a brief overview over adverbial (A-) quantification (6.1) and focus particles with quantificational force (6.2). Particular attention will be paid to the interaction of these two kinds of expressions with the focus-background structure of their clauses.

6.1 Adverbial (A-) quantifiers

6.1.1 Basic Inventory

There are three ways of expressing adverbial quantification in Hausa. First, there are adverbial expressions with nominal traits, cf. (108a). Second, the habitual aspect marker *–kàn* in (108b) marks the event expressed by the clause as a customary event that usually takes place.[25] Third, the verb *taɓàa* '(not) ever do' is used in negative clauses to express negative event quantification corresponding to English 'never', cf. (108c).

(108) a. *kooyàushè* 'each time, always', *kullum* 'always', *yawancii* 'mostly', *gaalìbàn/ gaalìbii* 'mostly, usually', *wani lookàcii* 'sometimes', *sau dà yawàa* 'often (lit. 'times with quantity')', *bàa sàfài bà* 'seldom, rarely (lit. 'not times')'

b. mu-*kàn* ci tuwoo dà ƙarfèe shidà [Ma Newman 1990: 9]
1pl-HAB eat dinner at clock six
'We usually/ always eat dinner at six.'

c. *bà*-n *taɓà* hàɗuwaa dà shii *ba*
NEG-1sg do.ever meeting with 3sg NEG
'I have never met him before.'

A first observation to make is that A-quantifiers in Hausa range over event variables, as do their counterparts in English, see e.g. de Swart (1991) and von Fintel (1994). It follows that A-quantifiers cannot co-occur with individual-level predicates, such as *to know*, which do not introduce event variables into the semantic representation (Kratzer 1995):

(109) * kullum Audù ya-kàn san Jaamusancii
always Audu 3sg-HAB know German
'Audu always knows German.'

The inventory of Hausa A-quantifiers in (108a) is not significantly different from that of other languages, apart from the fact that Hausa has no lexicalised expressions corresponding to negative adverbial quantifiers, such as 'never' or 'seldom (= not often)', see Jaggar (2007) for more discussion of negated adverbial expressions. This lexical gap in the adverbial domain mirrors the absence of negative existential quantifiers in the adnominal domain, which was discussed in section 3.2. Just as with negative quantification over individuals, negative quantification over events must be expressed by the use of the periphrastic negation *bàa … ba*, e.g. in *bàa sàfài bà* 'seldom'.

[25] At least for some speakers, the habitual marker *–kàn* appears to be obligatory with certain A-quantifiers such as *kullum* 'always' and *yawancii* 'usually'.

As for the syntactic position of adverbial A-quantifiers, these tend to occur in sentence-initial position, preceding the position for focus constituents, cf. (110). This position is typical of topics and frame adverbials in Hausa.

(110) *yawancii* dà màgàřibàa$_F$ a-kèe gani-n-sù [Ma Newman 1990: 293]
usually at dusk 3imp-PROG.REL see-LINK-3pl
'Usually you see them at dusk.'

6.1.2 Interaction with focus-background structure

Just like A-quantifiers in English, their Hausa counterparts are sensitive to the focus-background structure of a clause: If a constituent is overtly marked for focus, i.e. by moving it to the focus position, cf. (2) from section 1, then it must be mapped to the nuclear scope of the quantifier (Zimmermann 2006). See Partee (1991), Herburger (2000), and many others for parallel facts in English. Focus marking on different constituents of otherwise identical clauses thus results in different truth-conditions for these sentences, cf. (111a) for object focus, and (111b) for subject focus:[26]

(111) a. yawancii *waakee*$_{F,1}$ (nèe) Hàwwa ta-kàn dafàa t_1
mostly beans PRT Hawwa 3sg-HAB cook
'Most times, Hawwa cooks *beans*.'

b. yawancii *Hàwwa*$_{F,1}$ cèe t_1 ta-kàn dafà waakee
mostly Hawwa PRT 3sg-HAB cook beans
'Most times, it is *Hawwa* who cooks beans.'

At the same time, the relation between A-quantifier and focus constituents is not quite as tight as the data in (111) might suggest, and what is assumed in *semantic* approaches to the interaction of focus and A-quantifiers, see e.g. Partee 1991. Zimmermann (2006) shows that A-quantifiers in Hausa do not need a grammatically focus-marked constituent in order to be interpretable. This happens with instances of non-subject focus, which need not be grammatically marked for focus, independent of the presence or absence of A-quantifiers (Hartmann & Zimmermann 2007). In such cases, the focus of the clause must be resolved pragmatically, leading to ambiguity in the presence of an A-quantifier. In (112), the focus constituents in the otherwise identical first conjuncts are pragmatically controlled for by the negative afterclause. As a result, the A-quantifier associates with the direct object in (112a), and with the VP in (112b):

(112) a. *Gaalìbii* Hàwwa ta-nàa dafà [*waakee*]$_F$, baa tàa dafà [*shìnkaafaa*]$_F$
usually Hawwa 3sg-PROG cook beans NEG 3sg cook rice
'Normally, Hawwa cooks beans, she does not cook rice.'

[26] Parallel facts obtain in Gùrùntùm, another West Chadic language, cf. Zimmermann (2006).

b. *Gaalìbii* Hàwwa ta-nàa [*dafà waakee*]$_F$, baa tàa [*shaarèe dàɓee*]$_F$
usually Hawwa 3sg-PROG cook beans NEG 3sg sweep floor
'Normally, Hawwa cooks beans, she does not sweep the floor.'

The data in (112) thus show that A-quantifiers in Hausa can associate with various constituents in the absence of grammatical focus marking. More generally, the fact that the focus associate of an A-quantifier in Hausa is often resolved pragmatically - in the absence of any grammatical clues - suggests that association of AQs with focus is a pragmatic phenomenon, rather than a grammatically hard-wired process in this language, and possibly universally so, see e.g. Beaver & Clark (2003).

6.2 Exclusive Focus Particles

The final class of quantifying expressions to be discussed are the focus particles *sai*, *kawài*, and *kaɗai*, corresponding to English 'just, only', which exhaustively quantify over the focus domain, thus giving rise to a sub-kind of universal quantification. Syntactically, these expressions differ from focus particles in English and German in that they only combine with nominal or PP-constituents, which both have a categorical specification as [-V].[27]

As for their interaction with focus, Zimmermann (2006) shows that the association of exhaustive focus particles with focus constituents is subject to strict licensing conditions in Hausa, just as it is in English (Beaver & Clark 2003). For instance, the exclusive focus particle *sai* can only combine with overtly focus-moved NPs (Kraft 1970), cf. (113a), and it never combines with *in situ* foci, cf. (113b):

(113) a. Bàashîr *sai* *ruwaa*$_F$ ya kaawoo
Bashir only water 3sg.PERF.REL fetch
'Bashir, he fetched only water.'

b.*Bàashîr yaa kaawoo *sai* *ruwaa*$_F$
Bashir 3sg.PERF fetch only water

Likewise, *kawài* 'just, only' occurs predominantly with focus-moved constituents. Where this is not the case, *kawài* must be at least right-adjacent to the in situ focus, cf. Zimmermann (2006) for relevant data. The fact that Hausa FPs are in need of a clearly identifiable focus

[27] An anonymous reviewer provides the following example of *sai* combining with a PP:

(i) sai dà rawaa na-kèe zuwàa
only with quivering 1sg-PROG.REL coming
'It is only with quivering that I am coming.'

Hartmann & Zimmermann (to appear) report analogous facts for Tangale (West Chadic). They show that the exclusive particle *núm*, corresponding to *only*, must occur adjacent to the object NP even if it semantically associates with narrow verb focus.

constituent thus argues for a syntactic and semantic specification as [+ focus-functional] in their lexical entry, cf. Beaver & Clark (2003). The difference in the syntactic and semantic behaviour of A-quantifiers and (exhaustive) focus particles thus suggests a categorical distinction between the two types of expressions: While FPs are [+ focus-functional], AQs can be analysed as [- focus-functional], following Beaver & Clark (2003).

7. CONCLUSION

The chapter has given an overview of the main quantificational phenomena in Hausa (West Chadic), such as the coding of indefiniteness and definiteness (section 2), the syntactic and semantic behaviour of numeral quantifiers and quantity expressions (*many*, *much, few*) (section 3.1), quantifying expressions with existential and universal force (section 3.2 and 4), relative scope (section 5), and, finally, adverbial quantifiers and exhaustive focus particles.

Empirically, we have seen robust positive and negative evidence, coming from the literature as well as from additional elicitations, which warrants the formulation of precise hypotheses about the formal analysis of most of the quantificational phenomena discussed. At the same time, a great number of phenomena are in need of additional research in order to put the findings so far on a more robust empirical footing. The phenomena in need of further semantic fieldwork include the interaction of quantifying expressions with negation, the range of readings available with quantitative superlative constructions, the exact status of generic indefinites and their interpretive ambivalence between universal, free choice, and negative existential interpretations, and the question of relative scope between two or more quantified expressions, among others.

Theoretically, we have established that Hausa has three kinds of adnominal quantifying expressions with different syntactic and semantic properties. Adnominal quantification can be expressed by means of modifying elements (numerals, quantitiy expressions), functional heads (in D?), and full lexical nouns selecting for an NP-complement (*most of*-expressions). Second, it has been established that Hausa has two kinds of adnominal quantifiers with universal force: *koo*+wh expressions, which are functional heads and must receive a distributive reading, and the modifying expression *duk(à)*, which typically gives rise to collective readings. Third, the discussion of adverbial quantifiers and focus particles showed that these elements do not behave very differently from their European counterparts when it comes to association with focus.

From a typological point of view, many of the quantificational phenomena in Hausa are found in other Chadic languages as well, pointing at the existence of a set of general quantificational traits of this language group. These include at least the existence of indefinite NPs, the postnominal placement of definite determiners, the parallels between numeral and

quantity expressions and other modifying elements, the existence of two expressions with universal force, the existence of an existential indefinite, and the absence of lexicalised negative existential quantifiers. It remains to be seen to what extent these quantificational phenomena are typical of the class of Afro-Asiatic as a whole.

Finally, it emerged that even though Hausa differs from European intonation languages such as German and English in a great number of typological parameters, the quantificational systems of the two language groups do not differ very much. For instance, both groups have modifying quantifiers, genuine quantifiers in functional head position, and adverbial quantifiers at their disposal. Both groups exhibit scope interactions between quantifying expressions and negation, or between two quantifying expressions. And both groups have two ways of expressing universal quantification in the nominal domain, i.e. distributive quantifiers and collective modifiers. All this suggests, then, that the degree of parametric variation in the domain of quantification is rather limited, in contrast to other grammatical modules.

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