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List of abbreviations

Glosses

1 – first person	ERG – ergative	PASS – passive
2 – second person	F – female	PFV – perfective
3 – third person	HAB – habitual	PP – adpositional phrase
AL – attributive linker	IMP – imperative	PRES – present
APP – applicative	IMPF – imperfective	PROG – progressive
CL – classifier	INF – infinitive	PST – past
CONT – continuous	LOC – locative	REL – relative
COP – copula	M – male	SG – singular
COS – change of state	NEG – negation	SUB – subject agreement
DAT – dative	OBJ – object agreement	
DE – French <i>de</i>	OBL – oblique	

Corpora

LCMC – Lancaster Corpus of Mandarin Chinese. The first letter indicates the xml-file, the number refers to the ID of the sentence cited.

EMILLE – Corpus by the EMILLE project (Enabling Minority Language Engineering) and the Central Institute of Indian Languages (CIIL), Mysore, India. The letter-number sequences indicate the file from which the example was taken.

HCS – Helsinki Corpus of Swahili. The number refers to the first of the items in each example which corresponded to the search term.

CFILT: Corpus online available under: <http://www.cfilt.iitb.ac.in/~corpus/hindi/>

1 Introduction

1.1 Goal and Data

“None of the languages I know well has a linker, so I take it to be of marginal significance and ignore it here.”

Baker (2003: 193, footnote 3, referring to attributive linkers)

Hindi, Swahili and Mandarin Chinese are three typologically and genetically unrelated languages each of which makes use of a monosyllabic unbound morpheme to syntactically derive attributes from a number of different categories.

The first goal of my thesis is to give a detailed description of the morpho-syntactic properties of these morphemes, which I call attributive linkers (AL), in each language. Especially for Hindi and Swahili, these descriptions will go beyond any previous accounts of these items and will to a large part be based on my own research.

My second major objective is to propose a viable analysis of the attributive linker morphemes in the three languages under consideration and to integrate them into a cross-linguistically valid framework of categories. It shall become clear in the course of these considerations that attributive linkers are not a marginal phenomenon, as suggested by Baker (2003) in the initial quote, but are a fundamental

part of cross-linguistic constants of grammar. And they might yield valuable insights on the nature of attribution and of subordination.

The empirical basis of my research consists in four corpora as well as the judgments of native speaker informants. The corpora I used were my most important source of information as they allowed me not only to collect a large number of authentic examples, but also presented me with the complete range of applications of attributive linkers, many of which I would not have thought of by myself. They are listed on the previous page.

1.2 Structure of the thesis

The structure of this thesis will roughly follow a path from a more descriptive and language specific level to an abstract and more general perspective. Sections 2 through 4 are dedicated to a detailed account of the general morpho-syntactic and semantic properties of the attributive linker in each language. At the end of each section, I will discuss and reject previous attempts to classify them.

In section 5, I will conclude that, since language-specific accounts of ALs have largely failed and because of the striking similarities between the linker morphemes, a unified analysis would be desirable. I then turn to previous attempts in that direction and discuss their respective shortcomings. As it will turn out, the one fallacy all of the three approaches discussed have in common is the assumption that all linker attributes are derived from underlying predicates.

Therefore, I will further investigate in section 6 just how predicational linker attributes are and which relations other than predicative ones are possible between the head noun and its linker attribute.

Based on these observations, I will suggest that ALs are C heads and that the differences between languages can be explained in terms of two properties: Whether the linker selects finite or infinite complements and whether or not it assigns case. Furthermore, I will argue that coreference between the head noun and one of the arguments of an attributive clause is established by the empty operator OP.

In section 9, I will show that my classification of C heads is readily applicable to languages like English. In the second subsection, I will sketch out the variety of languages which seem to possess attributive linker elements to illustrate how widespread a phenomenon they are.

1.3 Definitions

Attributive linker: To find out exactly what attributive linkers are is, of course, the main objective of this thesis. As a working definition to start out with, I will take the following criteria:

- They transform their complements into attributes to a noun.
- They can take a variety of categories as complements.
- They are morphologically unbound.

Adjunct gap relative: This is an attributive clause where the head noun is not coreferential with any of the clause's arguments but corresponds to a hypo-

thetical adjunct to the clause. I will maintain this term throughout the paper regardless of its theoretical implications.

Gapless relative: If a head noun does not correspond to any conceivable argument or adjunct in an attributive clause and all the argument positions of the clause are overtly filled, it is called a “gapless relative”.

Complement clause: A complement clause is thought of as a complement to a noun which adds a necessary specification as in *the fact that I said it first*. As in the gapless relative, the head noun is not coreferential with any of the attributive clause’s arguments or conceivable adjuncts.

Complementizer: In contrast to traditional definitions, I will use the term *complementizer* here to refer only to items introducing an argument clause as in *I hope that I’m right*. C heads used to introduce relative clauses as in *the dress that you bought* are not going to be classified as complementizers.

2 Mandarin Chinese—the morpheme *de*

2.1 General properties

2.1.1 Overview

The Mandarin Chinese morpheme *de* is the most flexible of the three attributive linkers discussed here. It is present in the vast majority of attributes in general and can derive attributes from all categories except numbers and classifiers.

2.1.2 Adjectives

As Mandarin Chinese is often said to lack a category of adjectives distinct from verbs (see for example [Hengeveld, 2005](#), [McCawley, 1992](#)), I will first briefly discuss the categorial status of adjectives before turning to the question of how they combine with *de*. The main reason why adjectives have often been treated on a par with verbs is that they can serve as predicates without the need of a copula, in contrast to nouns:

- (1) a. Zhāngsān (chángcháng) kàn-shū.
Zhangsan often see-book
‘Zhangsan (often) reads.’
- b. Zhāngsān (hěn) cōngmíng.
Zhangsan very intelligent
‘Zhangsan is (very) intelligent.’
- c. Zhāngsān *(shì) xuésheng.
Zhangsan cop student
‘Zhangsan is a student.’

Also, according to some linguists such as [Bhat & Pustet \(2000\)](#), only lexemes which can modify a noun directly, that is by simple adposition, are to be classified as adjectives. But others argue that as long as there are clear morpho-syntactic distinctions between adjectives on the one hand and nouns and verbs on the other

hand, analyzing them as belonging to a distinct category is justified, even if they cannot modify nouns without the interference of a “*relative clause (or similar) marker*” (Dixon, 2004). For present purposes, I will adopt this second view and argue that the differences between adjectives and verbs in Chinese are clear enough to speak of two distinct categories.

The single most important difference between verbs and adjectives consists in their respective reduplication patterns. Bisyllabic adjectives reduplicate as AABB while a bisyllabic verb will reduplicate as ABAB. The semantic effects differ vastly as well: if an adjective is reduplicated, the result is intensification or augmentation of the original meaning. Reduplication in verbs, by contrast, means “to do sth. for a short time, try sth. out”. Thus, *gāoxìng*, “happy”, becomes *gāogāoxìngxìng*, “delighted, euphoric”; *xiūxi*, “to rest”, becomes *xiūxixiūxi*, “to have a short break”. With reduplicated monosyllabic verbs, you can always insert an *yī* “one” in between the two resulting syllables, which is never possible for adjectives. For example, *kàn*, “to see”, reduplicates as *kàn(yī)kàn*, “to take a look”; *hóng*, “red”, becomes *hóng*(yī)hóng*, “all red, bright red”.

A second important reason to assume that at least not all adjective-like elements in Chinese are verbs is the fact that some of them cannot possibly be used as predicates, only as attributes. This has been discussed in some detail by Paul (2005). One of the examples cited by Paul (2005: 761) is *běnlái* “original, initial”. Its syntactic behaviour is illustrated in (2):

- (2) a. *běnlái de yuányīn*
 original AL reason
 ‘the original reason’
 b. **yuányīn běnlái*
 reason original
 ‘the reason is original/initial.’

Assuming that adjectives thus constitute a category of their own in Mandarin Chinese, I will now turn to their usage as attributes. In general, adjectives are followed by *de* when they are used as attributes to a noun:

- (3) *Lǎnduò de rén dōu qǐ bù zǎo.*
 lazy AL people all rise NEG early
 ‘All lazy people are unable to get up early.’

Under certain circumstances, which have not yet been fully elucidated, adjectives can modify nouns directly, without intervening *de*. According to Sproat & Shih (1991) and Duanmu (1998), those cases have to be analysed as compounds, not as syntactically modified noun phrases. And indeed, there are many lexicalized adjective-noun compounds in Chinese as illustrated in the following example by Duanmu (1998: 141). Here, the fact that the meaning of the adjective *bái* “white” does not conflict with *hē* “black” indicates that the latter morpheme is part of a lexicalized compound.

- (4) *bái de hēi-bǎn*
 white AL black-board
 ‘white blackboard’

Also, most adjectives cannot productively be used in *de*-less modification. Nevertheless, it has to be said that for some of the most frequent monosyllabic adjectives such as *xiǎo* “small”, *lǎo* “old” and *dà* “big, great”, *de*-less modification is the norm rather than the exception: In a corpus query, the sequence of [*xiǎo*+NP] was about 16 times as frequent as the sequence [*xiǎo*+*de*+NP]. According to Paul (2005: 778), *de*-less attributes must provide a “*plausible, natural classification*” of the head noun. But the discussion is still ongoing and not likely to be resolved any time soon (cf. Xu & Duanmu, 2007). For our present purposes, it should suffice to say that in general, adjectives used as attributes are followed by *de* in Mandarin Chinese.

2.1.3 Genitives

Genitives, that is nominal attributes to nouns, are formed in Chinese by a sequence of [NP *de* NP]. Following the distinction by Lyons (1999), Chinese genitives are adjectival genitives as opposed to determiner genitives: The preceding [NP *de*] sequence does not have any influence on the definiteness of the head noun, as illustrated in the following example.

- (5) háizi de wán'rjù
 child DE toy
 ‘(a/the) toy(s) of (the/a) child(ren)’

2.1.4 Verbal or clausal attributes

Verbal attributes in Chinese are certainly the most complex and varied of all the cases under consideration here. I will classify them according to the following two parameters:

1. Whether or not all arguments of the attributive clause are overtly realized;
2. Whether the head noun is coreferential to any argument or adjunct of the attributive clause.

We will find that these two parameters are in fact partly independent from each other, but not completely: in order for the head noun to be coreferential with one of the attributive verb’s arguments, at least one of the verb’s argument positions has to be left overtly unoccupied. But even if all arguments are overtly filled, many researchers argue that the head noun can still correspond to a hypothetical adjunct within the attribute (cf. Cha, 1998). Thus, in example (9), the head noun *circumstances* could be integrated into the attributive sentence as in *the country met with disaster under these circumstances*. I will discuss these adjunct gap relatives in more detail in section 8.4.5.

Conversely, however, even if the subject position of the verbal attribute is not overtly filled, the head noun does not have to be coreferential with it.

Those cases, in which the attribute constitutes a complete sentence with all argument positions overtly filled and the head noun does not correspond to an adjunct within the attribute, can be further distinguished into complement clauses and gapless relatives (cf. again Cha, 1998).

The following list of examples outlines the range of applications of the structure [VP *de* NP]:

- (6) Head noun coreferential with subject:
zhè ge —_i yào zhǎngdà de háizi_i
this CL — want grow.up AL child
‘this child who wants to grow up’
(LCMC:A0037)
- (7) Head noun coreferential with object:
lǐngdǎo shuō —_i de huà_i
leader say — AL speech
‘what the leader said’ (‘lit. the speech the leader uttered’)
(LCMC:A0012)
- (8) Empty subject position and no coreference between head noun and subject:
PRO tǐ wèn de yìshù
PRO raise question AL art
‘the art of asking questions’
(LCMC:J0066)
- (9) Head noun corresponding to a hypothetical adjunct:
zhè ge guójiā zāo pòhuài de qíngkuàng
this CL country meet destruction AL circumstances
‘the circumstances under which this country met with disaster’
(LCMC:A0024)
- (10) Gapless relative:
cháng-fà chuí jiān de gūniang
long-hair hang.down shoulder AL girl
‘a girl whose long hair hangs down to her shoulder’
(LCMC:N0010)
- (11) Complement clauses:
hékǎ yīdài fāshēng dìzhèn de xiāoxi
Heka region occur earthquake AL news
‘the news that an earthquake occurred in the Heka region’
(LCMC:A0024)

Deciding whether a verb form in Mandarin Chinese is finite or not is no easy task, since there is no obligatory marking of tense. But as all TAM markers occurring in full sentences are also allowed in [VP *de*] attributes, it seems reasonable to assume that these attributes can constitute full finite TPs. An example for a verbal attribute containing an aspect marker is given in (12):

- (12) yī ge shuāisui le de pénzi
one CL smash PFV AL pot
‘a pot smashed to pieces’
(LCMC:B0028)

2.1.5 Postpositions and Adverbs

In contrast to languages like English or German, adpositional phrases in Chinese cannot serve as attributes to nouns. Like basically all other attributes, postpositional and adverbial phrases need to combine with *de* in order to modify a noun.

The reason why I group PPs and AdvPs together is that adpositional phrases generally seem more prone to be used as adverbs—and predicates—than as attributes. At least in Chinese, and, as will be seen, in Hindi, postpositional phrases behave very much like adverbial phrases in that they can directly modify verb phrases but not noun phrases. The example in (13) shows the use of the adverb *zher* ‘here’ as an attribute. (14) is an example of a PP in attributive function.

- (13) Zhèr de lǎo.bái.xìng sīxiǎng tài xiá'ài
 here AL old.hundred.names thought too narrow
 ‘The people around here are too narrow-minded.’ (lit. ‘As far as the
 people here are concerned, the thinking is too narrow.’)
 (LCMC:A0058)
- (14) nǎi lǐ de dàn báizhǐ
 milk in AL protein
 ‘the protein (contained) in milk’
 (LCMC:F0003)

2.1.6 Nominalization

In Mandarin Chinese, every lexeme modified by an attribute with *de* is immediately nominalized, no matter which category it originally belonged to. Even if there is no overt lexeme which the attributive phrase modifies, the phrase headed by *de* will be understood as an NP. The first NP in (15) constitutes a nominalized VP headed by *de* while the second NP is an example of a nominalized adjective:

- (15) [NP nǚrén suǒ qīngmú de] bù-jǐn shì [NP nánrén de piàoliàng]
 [NP women by admire AL] not-only COP [NP men AL pretty]
 ‘[What women admire] is not only the [NP prettiness of men].’
 (LCMC:E0066)

2.1.7 Predication

Phrases headed by *de* are regularly used as predicates, usually together with the copula *shì*. They generally lead to a focused reading of the predicate headed by *de*, comparable to the interpretation of cleft sentences in English:

- (16) a. Tā zuò fēijī qù Běijīng.
 she sit airplane go Beijing
 ‘She went to Beijing by plane.’
 b. Tā shì zuò fēijī qù Běijīng de.
 she COP sit airplane go Beijing AL
 ‘It was by plane that she went to Beijing.’

Phrases headed by *de* might also be used predicatively without a copula as in the following example from Li *et al.* (1998: 94) as repeated in Yuan (2003: 5):

- (17) wǒ qù gēn tā tán de.
 I go with he talk AL
 ‘I will (indeed) go to talk with him.’

There is quite a large body of research about this phenomenon, but I will not go into the details here. For the purposes of this thesis, may it suffice to say that phrases headed by *de* can serve as predicates. The fact that they can be used both with and without the copula hints at their ambiguity between nouns and adjectives.

2.2 Previous analyses

Chinese *de*, like most attributive linkers, has always caused trouble to grammarians. In earlier works on the Chinese language, such as Huang (1982) and Li

& Thompson (1981), no attempt was made to integrate the morpheme into the general framework of lexical and functional categories. Instead, it was treated as an element idiosyncratic to the Chinese language and given descriptive labels like “associative particle” or “possessive particle” (Li & Thompson, 1981).

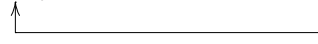

More recently, however, there have been attempts to identify *de* as the head of one of the established functional categories. The most prominent position of this kind suggests to treat *de* as a determiner. This proposal has been brought forward by Simpson (2001) and has been supported by Wu (2004), among others. I am going to concentrate on the paper by Simpson as his is probably the first and most influential attempt in that direction. In most cases, the crucial motivation for this rather awkward classification of *de* as D apparently stems from the fact that there simply seems to be no other category it could reasonably belong to. As Wu (2004: 64) puts it:

“[...] it seems that the only likely category that *de* could conceivably correspond to in such structures is D, which is initially somewhat surprising as *de* would not seem to exhibit the standard patterning of determiner elements, neither having any obvious inherent definiteness value nor co-occurring with NPs outside of relative clause and possessor modification environments.”

Here, Wu already summarizes the most obvious problems with the classification of *de* as D; basically, it does not match any of the criteria you would apply to decide if a given item belongs to the category D.

Nevertheless, Simpson (2001) argues that *de* is a D head which has entirely lost whatever definiteness value it might initially have had. Its only remaining function would then be to establish a predicate relation between the head noun and the attributive phrase. Following the Antisymmetry Hypothesis by Kayne (1994), he proposes to analyse a phrase like (18) as indicated in (19): The structure would start out as a normal complete sentence, dominated by a DP which is in turn headed by D. Then, the noun which is to become the head noun is moved out of the IP and into Spec, CP. In a third step, the rest of the sentence is moved around the noun and past *de* into Spec, DP.

(18) wǒ zuótiān mǎi de shū
 I yesterday buy AL book
 ‘a/the book(s) I bought yesterday’

(19) a. [DP [D de [CP shū_i [IP wǒ zuótiān mǎi t_i]]]

 b. [DP [IP wǒ zuótiān mǎi t_i]_m [D de [CP shū_i t_m]]]


Note that this process does not conform to the standards of the Minimalist Program if only because the complex movements are not at all motivated and movement out of components which have themselves been moved is strictly forbidden. But even apart from those more theory-specific concerns, there are at least four severe fundamental problems with this analysis, which will be elaborated in the following paragraphs.

1. The derivation violates the θ -criterion. If the head noun *books* already receives the role of a patient in the attributive clause *I bought yesterday*, then it

should not be able to take another role in a matrix clause like [*The books I bought yesterday*] *almost broke my back when I carried them home*.

2. While Simpson (2001) does not conclusively show that *de* has ever been used as a determiner, it is of course possible that D heads serve as diachronic sources for attributive linkers. However, as *de* has since lost basically all the characteristics of a determiner, one would expect that its syntactic and categorial status have equally changed. Simpson (2001: 139) himself suggests the comparison between *de* and the English complementizer *that*, which developed from the homophonous demonstrative. But the complementizer *that* is analysed as C, not as D like its demonstrative counterpart. So if the analogy is to be valid, *de* should likewise be analysed as a category different from D.

3. Both Wu (2004) and Simpson (2001) make the mistake to think that demonstratives are the only other likely contestants for a D head in Mandarin Chinese. The same mistake is reiterated by Sio (2006: 11):

“The only plausible candidate for the functional category D is the demonstrative.”

If demonstratives in Mandarin Chinese were indeed D heads, their cooccurrence with *de* as for example in (20) would of course provide strong evidence against the classification of *de* as D.

- (20) zhè ge hěn shuài de xiǎohuǒzi
this CL very handsome AL lad
“this very handsome lad”

Now, both Simpson (2001) and Wu (2004) cite Spanish data like in (21) to show that demonstratives are not always located in D but can in fact cooccur with articles:

- (21) el libro este
the book that
‘that book’

And indeed, given that Chinese demonstratives behave very much like numerals in that they must generally be followed by classifiers, it seems reasonable to assume they are not necessarily heads of the DP.

However, there is in fact another kind of element which to my knowledge has so far unanimously been analysed as D cross-linguistically—the pronouns. And there is good reason to assume that, in Chinese too, the pronouns can actually be used as determiners, given their frequent occurrence in structures like (22):

- (22) wǒmen sān ge yǔyánxuéjiā
we three CL linguists
‘we three linguists’

Pronouns can freely cooccur with *de*, as illustrated by the example in (23):

- (23) wǒmen de sān běn shū
we AL three CL book
‘our three books’

If both the pronouns and *de* were D heads, it would be hardly conceivable how they could occur together in a structure like (23).

4. Finally, there are some fundamental problems with the rather widespread assumption that all attributes are derived from predicational structures as indicated in (19). I will be dealing with this hypothesis in general in much more detail in sections 6 and 7. Here, I will discuss the specific claims made by Simpson (2001) about Mandarin Chinese.

The first difficulty arises in the context of nominal attributes, or genitive constructions. Simpson (2001: 150f.) follows Kayne in claiming that genitive constructions result “*from a predication relation established between the possessor and the possessee in either a small-clause structure or within an IP headed by a null verb expressing a possession relation*”. If a genitive construction was in fact derived from an underlyingly predicational NP structure, one would expect the relation expressed by it not to be possession, but rather identity. Thus, if the structure in (24) was indeed to be analysed as derived from (25), as Simpson (2001: 151) suggests, the most naturally available reading should be “the book which I am” instead of “the book which I have”:

(24) wǒ de shū
I AL book
'my book'

(25) [_{DP} de [_{CP} [_{IP} wo I⁰ [_{VP} e shu]]] (sic!)

If, on the other hand, there was in fact such a “*null verb expressing a possession relation*”, it seems at least bewildering that it can only occur within genitive constructions, never as a simple predicate, across any number of languages.

The second difficulty concerns adjectives and has already been mentioned in section 2.1.2: In Chinese, as in many other languages, certain adjectives can exclusively be used as attributes to nouns and can never serve as predicates. We have already seen an example for this in (2). As it is unconceivable how such cases could possibly be derived from underlying predicates, there must at least be one other way to generate attributes in Mandarin Chinese.

3 Hindi—the morpheme *ka*

3.1 General properties

3.1.1 Overview

The AL element in Hindi will be referred to as *ka*, although its final vowel depends on the gender, case and number of the head noun as will be shown in section 3.1.7. It is used to derive attributes from nouns, verb phrases and adverbs. In contrast to Chinese, Hindi has a rich system of linker-less attributes such as adjectives, participles and relative clauses. Note that Hindi is strictly right-headed. Like in Mandarin Chinese, the attribute will therefore always precede the noun.

3.1.2 Genitives

Genitives in Hindi all follow the general pattern of [NP *ka* NP]. The attributive noun is always in oblique case. As is the case with all ALs under consideration here, recursive use is very widespread.

- (26) laṛk-e kī kitāb
boy-OBL AL.F book(F)
'the boy's book'

Hindi Genitives are not necessarily definite, which is maybe most clearly reflected in examples involving the numeral one, which doubles as indefinite article:

- (27) Bāshā kā ek aur bhai bhī kuvait meṁ thā.
Basha AL.M one and brother(M) also Kuwait in was
'Another of Basha's brothers was in Kuwait too.'
(EMILLE:hin-w-dunia-news-02-04-09)

3.1.3 Verbal or clausal attributes

When KA takes a VP as a complement, the modified noun will usually not correspond to any of the verb's θ -roles. Among the most frequent uses of the structure are complements to abstract nouns as in *the attempt to do sth.*, *the decision to do sth.*, *the allegation of doing sth.*, as well as adjunct gap relatives with what Geisler (1995) refers to as "adverbial antecedents" such as *way (to do sth.)*, *time (to do sth.)*, *place (to do sth.)* or *reason (to do sth.)* etc. The verb cannot be specified for aspect or tense. The verb will always be infinitive and inflected for oblique case.

The sentence in (28) would be a typical example for a verbal attribute with *ka*:

- (28) PRO pākistānī mahilāoṁ kī sthiti meṁ sudhār karne
PRO pakistani.F women.OBL AL.F situation(F) in change do.OBL
kā vādā
KA.M promise(M)
'the promise to alter the situation of Pakistani women'
(EMILLE:hin-w-dunia-news-02-04-18)

The verbal linker attribute in Hindi cannot have an overt subject in nominative case. An additional AL can however be used to introduce a subject to the attribute:

- (29) unke choṭe bhai ke marne kā samācār
his/her.OBL little.OBL brother AL.OBL die.INF.OBL AL.M news(M)
'the news that his little brother has died' (lit. 'the news of his little brother's dying')
(CFILT)

In certain—apparently lexicalized—cases, the head noun could be argued to be coreferential with one of the attributive verb's arguments, such as in (30):

- (30) pīne kā pānī
drink.OBL AL.M water(M)
'drinking water, water for drinking'

However, even this example is not necessarily a clear case of object coreference, especially if seen in analogy to (31), where there is clearly no object coreference:

- (31) nahāne kā pānī
 wash.INF.OBL AL.M water(M)
 ‘water for washing’

The issue of coreference between head noun and the attribute’s arguments will be further explored in sections 7 and 8.4.

The fact that the verb form takes oblique case like a noun will turn out to play a crucial role in the way Hindi linker attributes work, as will be outlined in section 8.4.2.

3.1.4 Adverbs

As in Chinese and many other languages, adverbs cannot directly modify a Hindi noun. They too need to combine with the AL *ka*:

- (32) vahān̄ kā ām ādmī
 here AL ordinary man
 ‘an ordinary man from here’
 (EMILLE:hin-w-dunia-news-00-12-07)

Postpositional phrases cannot modify a noun either, but they also cannot function as complements to the linker to serve as attributes. I will discuss the relation between postpositions and the attributive linker in more detail in section 3.2.

3.1.5 Nominalization

The Hindi linker *ka* is not as important for nominalization as its Chinese counterpart. Crucially, it cannot by itself head a noun phrase, in contrast to Chinese *de*. It can, however, be used to introduce an agent noun to a nominalized (infinite) verb phrase:

- (33) Rām kā apne ko māf kar-nā bahut acchī bāt hai.
 Ram AL.M self.OBL DAT forgiven do-INF very good.F thing(F) is
 ‘Ram’s pardoning himself is a very good thing.’
 (Davison, 2000: 412)

We have already seen in section 3.1.3 that infinite verb forms in Hindi are noun-like in that they can receive case marking. Furthermore, they can be used in argument position even without a preceding [NP *ka*] phrase. The main reason for maintaining a difference between infinitives and nouns is of course that even infinite verb forms can still take at least their internal arguments.

3.1.6 Predication

Hindi *ka* phrases pattern exactly with adjectives in that they can also be used as predicates in combination with a copula as illustrated by the following examples:

- (34) a. Rādhā bahut sundar hai.
 Radha very beautiful is

- ‘Radha is very beautiful.’
 b. Rādhā bis sāl kī hai.
 Radha twenty year AL.F is
 ‘Radha is twenty years old.’

3.1.7 Inflection

Another feature *ka* attributes share with adjectives is their inflectional paradigm. They agree with the head noun in number, gender and case. Table 1 shows inflection of *ka* and the adjective *acchā* “good”.

Table 1. Inflection of the Hindi AL *ka* compared to the adjectival paradigm

	acchā		ka	
	direct case	oblique case	direct case	oblique case
SG.M.	acchā	acche	kā	ke
SG.F.	acchī	acchī	kī	kī
pl.m.	acche	acche	ke	ke
pl.f.	acchī	acchī	kī	kī

3.2 Previous Analyses

In all Hindi grammars available to me, from the late 19th century (Kellogg, 1893) to recent years (e. g. Kachru (2006)), authors unanimously and without any further discussion describe the morpheme *ka* as a postposition. But as Verma (1971: 146) remarks, a postpositional phrase cannot directly serve as an attribute to a noun:

- (35) *mez par kitāb
 table on book
 intended reading: ‘the book on the table’¹

At the same time, phrases headed by *ka* can never be used adverbially, in contrast to postpositional phrases as shown in (36):

- (36) a. Jaldī kā kām to shaitān kā hotā hai.
 speed AL.M work(M) indeed devil(M) AL.M be.HAB is
 ‘The work of haste is really (the work) of the devil.’
 b. Ab tum jaldī se/*kā ā jāo!
 now you speed from/*AL come go.IMP
 ‘Now come quickly!’

In fact, the only syntactic function in which both *ka*-attributes and PPs can occur is as predicates. Verma (1971) also states that the structure in (36) could be corrected by inserting *ka* between the postposition and the head noun, yielding *mez par kī kitāb*. My informants, however, firmly rejected this. When asked to produce a structure of a noun modified by a postpositional phrase, they invariably used participles or relative clauses as in “the book which is on the table”, “the book lying on the table” etc. The important fact to establish the syntactic difference between

¹Note that the mere sequence *mez par kitāb* is entirely possible, for example in predicational contexts such as in *mez par kitāb hai*, ‘there is a book on the table’.

ka and the postpositions is that, apart from their respective use as predicates, the postpositions can only serve as adverbial modifiers, whereas a *ka* phrase can only serve as an attribute to a noun.

A second fundamental difference between *ka* and the postpositions lies in the fact that *ka* has to be inflected for gender, number and case of the head noun according to the adjectival paradigm. The postpositions, by contrast, cannot be modified morphologically or otherwise.

Finally, *ka* does not make any semantic contribution to the phrase it heads, whereas postpositions do possess at least some, however bleached, semantic content. For example, the postposition *se* comprises the meanings of “from”, “out of”, “because of” etc., *par* corresponds closely to the English preposition *on* in both its concrete and abstract meanings.

So while Hindi postpositions, as adpositions in general, can stand for a wide range of often abstract meanings, they still do possess some semantic content of their own.

This can be seen from the fact that if one postposition is replaced by another one, a different meaning results. *Ka*, by contrast, cannot be replaced by another morpheme to yield a different meaning.²

4 Swahili—the morpheme *-a*

4.1 General properties

4.1.1 Overview

Swahili is a strictly left-headed language, so in a [NP *-a* XP] structure, the first noun is the head. The Swahili AL *-a* derives attributes from NPs, VPs, numbers and adverbs. Apart from *-a* attributes, Swahili has a large variety of relative clauses and participles, as well as adjectives. Each Swahili noun belongs to one of 18 classes, according to traditional classifications. Generally speaking, noun classes come in pairs of one singular and one plural class. The onset of *-a* signals agreement with the noun class of the head noun.

4.1.2 Genitives

Genitives in Swahili simply consist of [NP *-a* NP] structures:

- (37) mw-enyekiti w-a Ch-ama Ch-a Ma-pinduzi
 1-chairman 1-AL 7-party 7-AL 6-revolutions
 ‘chairman of the Party of the Revolution’
 (HCS:192661514)

As is the case in Chinese and Hindi, genitives in Swahili are not inherently definite. Again, this is most obvious from the fact that the numeral one, which also signals indefiniteness, can be used within genitive constructions:

²In certain cases, especially with adverbs, *ka* can in fact be replaced by the morpheme *vala*. Although *vala* might be a second candidate for an AL in Hindi, I will not discuss this morpheme here in any more detail as it can be assumed to be productive only in morphological, but not syntactic, derivations (cf. Mohanan, 1995: 98ff.)

- (38) tabia moja y-a lugha nyingi
 property(9) one 9-AL language many
 ‘a/one property of many languages’
 (HCS:184255811)

4.1.3 Verbal or clausal attributes

Verbs have to be in the infinitive form in order to combine with *-a*. One could argue that infinite verbs in Swahili are actually nouns. According to the descriptive tradition of the language, the infinitive form constitutes a noun class of its own and can function as an argument in a sentence. In fact, researchers like Mjachina (1981: 64) explicitly define the infinitive form of the verb with the prefix *ku-* as “verbal noun”. And it is traditionally defined to constitute noun class 15. This view is certainly substantiated by the fact that infinitive verbs in subject position trigger agreement in verbs and adjectives in exactly the same way as nouns as shown in (39).

- (39) Ku-imba ku-me-kwisha.
 INF-sing .SUB.INF(15)-PFV-finish
 ‘The singing has finished.’

Again, I will take it that the undiminished potential of infinite verb forms to take objects justifies their analysis as verbs instead of nouns.

As is the case in Hindi, the infinite verb form cannot take any tense or aspect morphology—but it is still open to other morphological operations such as object agreement and causative or applicative derivations; Typical applications of this structure often involve abstract nouns which take verbal complements, for example modal nouns such as *the ability, plan, permission to do sth*. Other frequent cases feature nouns which could correspond to adjuncts within the attribute like *the reason, method, means, time, age to do sth*.

The following example is representative of most of the [VP *-a*] attributes found in a random sample of well over one hundred instances of this type of attribute:

- (40) Njia pekee [ya PRO ku-jibu ma-swali ha-yo]
 way(9) lonely(9) 9-AL PRO INF-answer 6-question these-6
 ‘the only way to answer these questions’
 (HCS:195602247)

In contrast to Hindi but as in Chinese, verbal linker attributes in Swahili can host an overt subject. Instances of this configuration occur both for clausal complements to abstract nouns such as *habari* “news” or *uwezo* “ability”, for adjunct gap relatives with head nouns such as *wakati* “time” and for cases where head nouns are coreferential with the object of the attributive clause. Infinite T in Swahili does generally not allow overt subjects. Any theory of ALs should account for the fact that they are still licensed in attributive clauses with linkers and I will present an explanation for this phenomenon in section 8.

- (41) a. habari z-a wa-tu 45 ku-fa kwa njaa wilaya-ni
 news(10) 10-AL 2-people 45 INF-die for hunger district-in(18)
 mw-ake
 18-POSS.3SG

‘the news that 45 people died of hunger in its district’
(HCS:189435850)

- b. wakati w-a vi-ongozi ku-wa-eleza ukweli Wa-tanzania
time(11) 11-AL 8-leaders INF-OBJ.2-explain truth 2-Tanzanians
‘the time for the leaders to explain the truth to the Tanzanians’
(HCS:189985498)
- c. chumba ch-a maiti ku-fung(i)⟨w⟩a
room(7) 7-AL corpse(6) INF-lock⟨APP⟩⟨PASS⟩
‘a room for the corpse to be locked in’
(HCS:184180207)

In certain cases, the head noun is coreferential with one of the verb’s arguments. The following example is taken from [Hawkinson \(1976: 44\)](#). It shows a head noun apparently coreferential with the attributive verb’s object:

- (42) maziwa_i y-a PRO ku-chemsha —_i
6-milk 6-AL PRO INF-boil
‘boiled milk’

Note that the meaning of this phrase could be conveyed much more unambiguously by the following phrase:

- (43) ma-ziwa ya-li-yo-chemsh⟨w⟩a
6-milk 6-PST-6.REL-COOK⟨PASS⟩
‘boiled milk, milk which has been boiled’

My own sample contains three cases of concrete head nouns modified by infinite verbs with applicative derivations. The applicative or prepositional derivation is one way of increasing the verb’s valency. The additional argument typically receives the role of a benefactor, instrument or, sometimes, location (cf. [Ngonyani, 1995: 5](#)). In all three examples, the head noun can therefore be said to be coreferential with the argument licensed by the additional argument position created by the applicative derivation. Two of them are given below:

- (44) a. fedha_i y-a PRO ku-nunu⟨li⟩a —_i chakula
money(9) 9-AL PRO INF-buy⟨APP⟩ food
‘money to buy food with’
(HCS:184119007)
- b. ofisi_i y-a PRO ku-fany⟨i⟩a —_i kazi
office(9) 9-AL PRO INF-do⟨APP⟩ work
‘office to work in’
(HCS:195599309)

In a few cases of [VP -a] structures, the head noun appears to be coreferential with the verb’s subject:

- (45) a. usiku_i w-a —_i ku-amkia jana
night(11) 11-AL INF-come.before tomorrow
‘the night before tomorrow’ (lit. “the night to come before tomorrow”)
(HCS:195611957)

- b. vi-ongozi_i w-a —_i ku-chagu⟨li⟩⟨w⟩a
 8-leaders 2-AL INF-select⟨APP⟩⟨PASS⟩
 ‘elected leaders’ (lit. ‘leaders to be elected’)³
 (HCS:195595839)

Both these cases are probably lexicalized idioms. Among my one hundred sample sentences, (45-a) occurred six times, sometimes with *leo* “today” instead of *jana* “tomorrow”. The phrase in (45-b) occurred four times.

Furthermore, certain verbs denoting adjectival concepts are frequently used in linker attributes with the subject being coreferential to the head noun. Examples are *-toshā* “to be enough, to suffice” and *-aminika* “to be trustworthy”:

- (46) a. u-zoefu_i w-a —_i ku-toshā
 11-experience 11-AL INF-suffice
 ‘experience enough’ (lit. ‘experience to suffice’)
 (HCS:195589725)
- b. habari_i z-a —_i ku-aminika
 news(10) 10-AL INF-be.trustworthy
 ‘trustworthy news’
 (HCS:189799197)

I will come back to these issues in section 4.2, where I will discuss the observations by [Hawkinson \(1976\)](#) in more detail.

4.1.4 Ordinal numbers

Ordinal numbers, being attributes, are equally derived by *-a*. In these cases, the linker simply takes the uninflected number as a complement. Without the linker, (47) would mean “four steps”.

- (47) ki-dato ch-a nne
 7-step 7-AL four
 ‘the fourth step’
 (HCS:188586010)

4.1.5 Adverbs

In most cases, it is difficult to show that adverbs really constitute a distinct category in Swahili, as opposed to nouns—especially since adverbs do usually not form a homogeneous category in the first place. Nevertheless, traditional accounts such as [Ashton \(1956\)](#) usually list adverbs as one of the categories that can combine with *-a* to form attributes. [Hawkinson \(1976: 27\)](#) repeats several of Ashton’s examples for [*-a* ADV] structures such as the one below:

- (48) njia z-a mji-ni
 roads(10) 10-AL town-in
 ‘Town roads’

I will adopt the tradition of referring to certain Swahili items such as *mjini* in (48) as “adverbs” even though nothing really distinguishes them from nouns. For the

³The linker does in this case not agree with the noun class of the head noun but rather with its semantic property of referring to human beings.

further discussion, these distinctions will be of minor importance anyway.

4.1.6 Nominalization

The Swahili AL can head a noun phrase if it is inflected for one of the locality classes, yielding the meaning “place to do sth.”:

- (49) Ha-na p-a ku-m-peleka.
NEG.PRES-have LOC-AL INF-OBJ.3S-send
‘There is nowhere to send him/her.’
(HCS:195601990)

As is the case in Hindi, Swahili *-a* can also be used to introduce arguments of a nominalized verb:

- (50) ku-zuka kw-a moto huo
INF/INF-appear INF-AL heat this
‘the appearance of this heat’
(HCS:189355010)

4.1.7 Predication

Swahili linker attributes can be used as predicates. They are like adjectives in that they need to combine with the copula and to agree with the subject of the phrase (see section 4.1.9):

- (51) mwezi huu ni w-a ku-shiba
month(3) this(3) COP 3-AL INF-be.full
‘this moon is full’ (lit. ‘this moon is to be full’)
(HCS:195599974)

4.1.8 Adverbial Use

One form of the Swahili AL has been lexicalized as a preposition which can be used both for attributes and adverbs. We have already seen in section 4.1.3 that infinitive verb forms are like nouns in that they can be used as arguments and trigger agreement in their predicates. An AL agreeing with an infinite verb would take the form *kwa* as illustrated in (50).

Now, the same form *kwa* can be used without a verb as head to its left. It might then be translated as “for”, “with” or simply derive adverbs from nouns as in *kwa bahati mbaya* “unfortunately” (lit. “with/out of bad luck”) or *kwa hivyo* “therefore”.

4.1.9 Inflection

The Swahili AL *-a* has to agree with the class of its head noun. Its paradigm bears close resemblance to the verbal one. This makes it seem likely that *-a* has diachronically started out as a verb, although today it cannot take any of the otherwise obligatory verbal morphology. The following table shows the inflected forms of *-a* together with the prefixes on verbs for subject agreement (SA). The numbers indicate noun classes. To save space and avoid redundancy, I conflated the homophonous noun classes.

Table 2. Inflection of Swahili AL *-a* compared to the verbal paradigm. The locality classes (16-18) comprise the homophonous *ku*-class (15) of verbal nouns. For the first two classes, verbal subject agreement (SA) depends on the person.

	1	2	3	4	5	6	7	8	9	10	11-14	15-18		
<i>-a</i>		wa	wa	ya	la	ya	cha	vya	ya	za	wa	pa	kwa	ma
SA		various	u-	i-	li-	ya-	ki-	vi-	i-	zi-	u-	pa-	ku-	mu-

4.2 Previous analyses

Like its Chinese counterpart *de*, the Swahili linker candidate *-a* (consonantal onset + a) has been given a variety of different descriptive labels, such as “connective” (e.g. Moser (1974)), “associative particle” (Gil, 2005, Hawkinson, 1976), “possessive particle” (Mjachina, 1981), as “a-binder” or “kiungo” (Loogman, 1965) or, rather originally, as “the *-a* of relationship” (Ashton, 1956). But to my knowledge, there has never been any attempt to integrate this item into the general framework of word classes—in contrast to ALs in Hindi and Chinese.

Apart from the rather unhelpful dissertation by Kwon (1995), the only work available to me which is primarily dedicated to Swahili *-a* is the article by Hawkinson (1976). In this article (which, despite its title, has hardly anything to do with possession), the author is mainly concerned with the interaction and the contrast between the Swahili AL and the applicative derivation of the verb.

At first, she compares the following two structures:

- (52) a. A-li-andika barua y-a Hasan.
 3SG-PST-write letter(9) 9-AL Hasan
 ‘He wrote a letter to/on behalf of Hasan.’
 b. A-li-andik(i)a Hasan barua.
 3SG-PST-write<APP> Hasan letter
 ‘He wrote a letter to/on behalf of Hasan’.
 (cf. Hawkinson, 1976: 34)

She does not seem to realize that, structurally, the two sentences differ vastly, for all their similarities concerning their interpretation. Crucially, *ya Hasan* in (52-a) is an attribute to *barua*, whereas *Hasan* in (52-b) is a further argument to the verb. A true alternative of introducing an additional argument without an applicational derivation would be the use of a (complex) preposition as outlined in (53):

- (53) A-li-andika barua kwa ajili y-a Hasan.
 3SG-PST-write letter(9) for sake(9) 9-AL Hasan
 ‘He wrote a letter for Hasan/Hasan’s sake.’
 (cf. Ngonyani, 1995: 5)

Hawkinson’s discussion about whether *-a* is basically a means of introducing non-focus arguments is not viable in so far as *-a* does not introduce arguments to a verb phrase at all (unless this verb phrase has previously been nominalized as shown in section 4.1.6).

The greater merit of Hawkinson’s work lies in her partial insight into the semantic nature of *-a*. In contrast to her predecessors, she does not try to give a classification of all the different meanings *-a* could convey in different contexts, which would be an infinite task. Instead, she says that *-a* “signals that the two items

in construct with it are in some unspecified relation or association” (Hawkinson, 1976: 40). She also notes that the specific relation between the head noun and its linker attribute is not entirely determined by the formal and semantic properties of the elements involved, but is often a matter of convention.

Thus, the phrase in (42), repeated here as (54-a), contrasts in meaning with (54-b) despite their apparent structural equivalence:

- (54) a. maziwa y-a PRO ku-chemsha
 6-milk 6-AL PRO INF-boil
 ‘boiled milk’
- b. kazi y-a PRO ku-fanya
 work(9) 9-AL INF-do
 ‘work to do’ (*‘work completed’)
 (Hawkinson, 1976: 46)

What Hawkinson fails to acknowledge, however, is the fact that in most cases, the head noun of a [NP -a VP] construction is not coreferential with any of the verb’s arguments. At least, this is how I interpret her following statement:

“[...] –A signals some relationship between a thing and an event and, typically, we find things in the world as participants in events. Since there is no information in the verb about the presence of an additional participant in the (a) sentences [those without applicative derivation on the verb; my note], the messages which are inferred involve N₁ [the head noun; my note] as a participant which is being acted upon in the event described.” (Hawkinson, 1976: 45)

Presumably, this shortcoming is due to her choice of nouns for example phrases, which is exclusively restricted to nouns referring to concrete entities. These are, however, the exception rather than the rule. In my sample of well over one hundred sentences containing [NP -a VP] structures, only in fourteen instances is the head noun coreferential with one of the verb’s arguments; and out of those, ten belong to one of the two idioms described in 4.1.3. Furthermore, thirteen of the head nouns of these fourteen phrases refer to concrete entities, whereas the vast majority of the head nouns in my sample refer to abstract notions.

As to the meaning of -a, I will adopt the view that it merely establishes a relation between the head noun and its modifier. The exact nature of this relation depends heavily on the context of the utterance, the semantics of the items involved, as well as on certain conventionalized patterns.

5 Comparing the three languages

In all three languages, ALs can take NPs, VPs and adverbial phrases as complements.⁴ Major differences concern the nature of verbal linker attributes. In Hindi and Swahili, there are participles and relative clauses without linkers and verbal or clausal linker attributes are primarily used for cases in which the head noun is not coreferential with the verb’s arguments. In Chinese, by contrast, basically all

⁴At least under the assumption that Swahili does have a distinct class of adverbs.

attributes require an AL, regardless of the relation between the head noun and the attribute's arguments.

Only the Mandarin Chinese AL can take full finite clauses with TAM markers as complements, Hindi and Swahili are restricted to infinite clauses. Curiously, these attributive infinite clauses in Swahili can still take overt subjects although infinite T does not normally license subjects in Swahili. I will come back to this in section 8.4.2.

Both in Hindi and in Swahili, the attributive linker agrees with the head noun. The lack of agreement in Chinese is not surprising, since it does not have any kind of agreement morphology. Regarding the [NP AL NP] phrases, it is interesting to note that they can be recursive and are not specified for definiteness in all three languages. Regarding the distinction between Determiner Genitives and Adjectival Genitives by Lyons (1999), linker genitives are Adjectival Genitives.

In Hindi, the linker seems to govern oblique case of the complement if this is headed by either a noun or a verb. Despite these differences, it seems clear that the three morphemes have more in common with each other than with any of the established functional and lexical items. This leads me to suggest that a unified analysis of these morphemes is both possible and desirable.

I will briefly present and discuss the few previous endeavours towards such an analysis in the sections to follow.

6 Previous approaches to a unified description

6.1 Rubin 2002

In this draft, Rubin presents attributive linkers in Tagalog, Romanian and Mandarin Chinese. He shows that they should be analyzed as functional heads and argues that they can neither be identified with P nor C. Instead, he proposes to establish the Modifier Phrase as a functional category to take care of these items as well as a number of other aspects of adverbs and attributes.

While I will later adopt his proposal to classify attributive linkers as functional heads, I still see several problems with Rubin's approach. The most fundamental three are: firstly, his identification of adverbs and attributes as belonging to the same functional category; secondly, his assumption that the meaning of attributes can generally be derived by predicate intersection; and thirdly his statement that the linkers he describes are not identical with the ones involved with genitive constructions even though they have the same phonetic properties, spelling and distribution.

Furthermore, I will eventually disagree with his position that ALs represent a category different from C. But this discussion has to wait until section 8.2.

I will start with the claim that the same functional head is used for both attributes and adverbs. This cannot be corroborated by my data. Rubin produces examples from each of his three sample languages—Tagalog, Romanian and Mandarin Chinese—to show that the linker used for adverbs and for attributes is the same in each case. While I lack the expertise to assess the data from Tagalog and Romanian, I can show clearly that in the case of Mandarin Chinese, Rubin is mistaken.

He conflates two homophonous morphemes which are in fact strictly to be distinguished. This has never been a topic of discussion among Chinese linguists, if only because the two items are written with different characters. Attributive *de* (*de_A*) is represented by the character 的, whereas adverbial *de* (*de_{ADV}*) is written with the character 地.

But even without that potentially arbitrary difference in writing, it is clear that the two cannot be the same. Whenever *de_A* modifies a verb, the verb thereby immediately loses its verbhood and becomes a noun instead. Thus, in some cases, the exact same phonological sequence will be an NP or a VP, depending only on the choice between *de_A* and *de_{ADV}*:

- (55) a. ... yǐjīng yǒu le [zhújiàn *de_A* jìnbù]
 ... already there.is COS gradually AL progress
 ‘There has already been gradual progress.’
 b. Wǒ zài [zhújiàn *de_{ADV}* jìnbù]
 I CONT gradually *de_{ADV}* progress
 ‘I am gradually progressing.’

For Hindi, it has already been shown in section 3.2 that a defining feature of the attributive linker *ka* is exactly that it cannot be used adverbially, unlike the postpositions.

My second major objection to Rubin’s proposal concerns his claim that the meaning of attributes could generally be described as a result of predicate intersection. We will see that it is exactly the kinds of attributes which do not establish a predicational relation with the head noun which are the most likely to involve an AL. This point will be elaborated in more detail in section 7.

And last but not least, a quick glance at the summary in section 5 shows that among the languages under consideration here, genitives are one of the types of linker attributes equally represented in all three of them. Rubin (2002: 32) himself concedes that the fact that genitives in Chinese are recursive strongly indicates that they are adjuncts and not specifiers of DP. The same is suggested by the observation that Chinese genitives are “adjectival” rather than “determiner” genitives as mentioned above. Both facts are true for Swahili and Hindi as well.

Of course, a much larger sample of languages with attributive linkers would be necessary to decide the matter conclusively, but for the moment it would seem unwise to exclude noun phrases from the list of complements to ALs considering that they are rather among the most representative types of linker attributes here.

6.2 Den Dikken and Singhapreecha 2004

This paper titled “Complex Noun Phrases and Linkers” probably represents the first attempt published in print to give a unified analysis of attributive linking morphemes. It is also responsible for the term “linker” used in this thesis. Based on data from French and Thai, the authors argue that attributive linker morphemes are indicative of predicate inversion. According to this theory, the contrast between (56-a) and (56-b) arises because if the second NP of the small clause in (56-a) is moved to the front, the copula must be overt.

- (56) a. I consider John (to be) my best friend.

- b. I consider my best friend *(to be) John.
- (57) a. [to [be [SC [DP John] [DP my best friend]]]]
 ↑

 b. [my best friend_i to [be [SC [DP John][DP t_i]]]
 ↑

 (cf. den Dikken & Singhapreecha, 2004: 10)

The same process is said to take place within the DP in constructions such as *a jewel of an island*, where *of* would be the equivalent of the copula in the small clause example. This analysis is then extended to phrases such as French *une pizza de chaude* and is said to be applicable to Chinese *de* as well as a number of other unrelated languages.

This approach already runs into problems with the data it was designed for. Firstly, like the analysis of Chinese *de* by Simpson (2001), it violates the θ -criterion as the head noun would receive both the theme role of the predicational attribute and a second role in the matrix clause.

Furthermore, as the authors themselves concede, the word order facts in French do not at all correspond to what one would expect from their theory (2004:16):

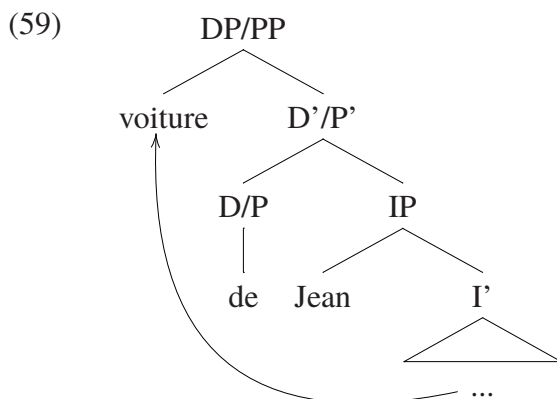
“In fact, the surface word order is much closer to what we would have had if we had not inverted *chaude* around its subject.” (den Dikken & Singhapreecha (2004: p. 16))

Their conclusion leaves the doubting reader unconvinced (ibid.):

“Apparently, the word-order effect of Predicate Inversion is undone later in the derivation.”

A third problem concerns genitives. It is common to many recent works on attributes and partly goes back to Kayne (1994) and his Antisymmetry Hypothesis. The discussion here largely parallels the one in section 6.1. According to Kayne (1994), prenominal genitives in English, such as *two pictures of John's*, and French genitives like (58) are to be analysed as derived from underlying IP structures. The tree structure below tries to illustrate the analysis in Kayne (1994: 102). The position of the definite article *la* remains unspecified in his account, as does the specific structure of the IP:

- (58) la voiture de Jean
 the car of Jean
 ‘Jean’s car’



If this was the correct derivation, one would expect the most natural interpretation of the sentence to be “the car that Jean is” instead of “the car that Jean has”. Now, Kayne suggests that the verb “have” is in fact the result of a null determiner being incorporated by an abstract copula “BE”. He does however not elaborate how this particular configuration is supposed to come about and does not motivate it independently. Then again, he cites examples like (60) to lend support to his analysis in (59). In such cases, the relation between the head noun and its genitive attribute is indeed one of equation as would be expected from a predication to the head noun.

- (60) cet idiot de Jean
 this idiot of Jean

But he does not give any explanation for the difference in meaning between cases like (58) and cases like (60). So, deriving genitives from predicative structures poses serious problems on several levels.

Now, genitives are not the only type of linker attributes which cannot be derived from underlying predicates to the head noun in any straightforward way. Among the structures discussed here, verbal attributes in which the head noun is coreferential with an argument other than the subject or not coreferential with any of the arguments as well as non-predicative attributes are at least as difficult to account for by the analysis of [den Dikken & Singhapreecha \(2004\)](#). I will elaborate on this more thoroughly in section 7.

Given the problems with den Dikken’s and Singhapreecha’s approach, it rather comes as a relief that it can lightly be refuted for the three languages under consideration, simply because none of the semantic criteria the authors propose to diagnose predicate inversion apply to attributive linkers in Hindi, Swahili or Chinese. Den Dikken & Singhapreecha (2004) define quantificational and interpretive restrictions which apply to attributes derived by predicate inversion. Thus, in French, the linker is obligatory in certain quantificational environments such as in (61):

- (61) Rien *(d’) extraordinaire n’est arrivé ce matin.
 nothing DE extraordinary not.is happened this morning
 ‘Nothing extraordinary happened this morning.’
 ([den Dikken & Singhapreecha, 2004: 4](#))

Furthermore, in contexts where the use of the linker is optional, it signals a contrastive reading and indicates that the attribute followed by the linker represents given information. The following sentence could be an answer to the question *Did you eat any hot pizzas/any hot things?*

- (62) Je n’ai mangé que DEUX pizzas ?(de) chaudes.
 I not.have eaten but two pizzas DE hot.pl
 ‘I have eaten only two hot pizzas’ (I might have eaten more cold pizzas
 or other cold things)
 (ibid.)

In Hindi and Swahili, attributive linkers are either obligatory or impossible to use in all contexts. They cannot be inserted or omitted to effect a change in focus

or for any other reason. In Mandarin Chinese, *de* can be left out with adjectives and sometimes nouns under certain conditions which have not yet been entirely elucidated (see Paul 2005 for a recent discussion). In any case, those conditions do not seem to have anything to do with the criteria for predicate inversion as defined by den Dikken & Singhapreecha (2004).⁵

6.3 Rebuschi 2005

Rebuschi (2005) takes up the data and analysis provided by Rubin (2002), and additionally considers the Kurdish AL *ezafe*. He argues that these linkers are in fact heads of a Conjunction Phrase. They are supposed to be two-place predicates with the attributive phrase and the modified noun as their arguments. Thus they fill the role of the conjunction operator which is supposed to establish the relation between the head noun and its attribute semantically, Rebuschi argues. Previously, this operator did not seem to be accounted for syntactically.

For example, the meaning of *the book on the table* would be analysed as in (63), even though there is no overt element which corresponds to the “^” operator:

$$(63) \quad \llbracket \text{book on the table} \rrbracket = [\lambda x \in D_{\langle e \rangle} . x \text{ is a book} \wedge x \text{ is on the table}]$$

In Chinese, by contrast, the AL *de* intervenes between the DP “the book” and the modifying PP “on the table” and Rebuschi takes this as an indication that *de* is in fact an instantiation of the semantic operator “^”:

$$(64) \quad \begin{array}{l} \text{(zài)} \quad \text{zhuōzi shàng de shū} \\ \text{be.located table on AL book} \\ \text{'book on the table'} \\ \text{(cf. Rebuschi, 2005: 451)} \end{array}$$

He defines the meaning of *de* as follows:

$$(65) \quad \llbracket de \rrbracket = \lambda P \lambda Q \lambda x [P(x) \wedge Q(x)]$$

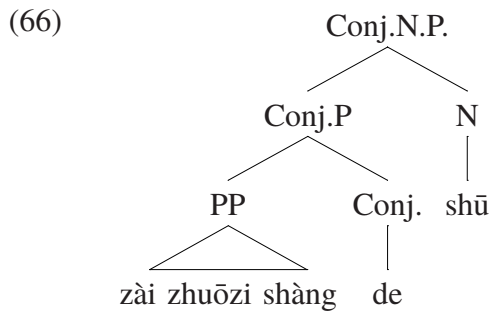
Syntactically, he suggests the following structure:

⁵If anything, the effect of *de* in Chinese is the reverse of what you would expect according to den Dikken & Singhapreecha (2004). In a sentence like (i), the use of *de* would be rather unorthodox because *rè* “hot” is monosyllabic and therefore does not normally combine with *de* to form an attribute. If *de* is still used, it would signal that the adjective *rè* introduces new instead of given information. In (i), the version with *de* could thus be an answer to the question *Did you eat any cold pizzas?* and would imply that no cold pizzas had been eaten:

$$(i) \quad \begin{array}{l} \text{Wǒ zhǐ chī le liǎng ge rè (de) pī sà} \\ \text{I only eat PFV two CL hot (AL pizza)} \\ \text{'I only ate two HOT pizzas' } \end{array}$$

A translation of (62) would rather correspond to a structure as in (ii):

$$(ii) \quad \begin{array}{ll} \text{a.} & \text{Rè (de) pī sà wǒ zhǐ chī le liǎng ge} \\ & \text{hot AL pizza I only eat PFV two CL} \\ & \text{'I ate only TWO hot pizzas.'} \\ \text{b.} & \text{Rè (de) dōngxi wǒ zhǐ chī le liǎng ge pī sà} \\ & \text{hot AL things I only eat two pizza} \\ & \text{'I ate only TWO hot PIZZAS.'} \end{array}$$



Rebuschi (2005: 451) concludes that there is no need for the establishment of a new functional category as proposed by Rubin (2002), since ALs could be analysed as conjunctions.

Rebuschi does notice the fact that genitives are formed with exactly the same “conjunction” morpheme as other attributes both in Chinese and in Kurdish and he acknowledges that this poses a problem to his theory (Rebuschi, 2005: 454). If one applies his definition of the AL as given in (65) to a genitive construction like (67), the resulting meaning would correspond to (68):

(67) zhǔrén de hòuyì
 host AL kindness
 ‘the kindness of the host’

(68) $[[zhǔrén\ de\ hòuyì]] = [\lambda x \in D_{\langle e \rangle} . x \text{ is a host and } x \text{ is kindness}]$

If anything, a variation of (65) applicable to genitives would have to correspond to something like (69):

(69) $[[de]] = \lambda P \lambda Q \lambda x [P(x) \wedge Q(y) \wedge y \text{ belongs to/is characterized by/associated with } x]$

But Rebuschi (2005) refuses to take the formal unity of genitives, relative clauses and other attributes in both languages as evidence for the general unity of attributive structures. Instead, he insists that genitives are fundamentally different and can only speculate as to why the AL morphemes are involved in their formation.

What Rebuschi (2005) does not take into consideration—presumably because he is ignorant of the relevant data—are verbal attributes where the head noun is not coreferential with any of the attribute’s arguments.

Since of the three languages under consideration in this thesis, Rebuschi (2005) only refers to Mandarin Chinese, the following examples are from Chinese as well. For these cases, again exemplified in (70) and (71), his definition of the linker would fail just as dramatically as in the case of genitives. As long as the subject position is occupied by PRO, the outcome depends on when in the derivation PRO gets assigned a value. If it does not get this assignment before the meaning of the whole phrase has been computed, the derivation will work, but PRO will then invariably be coreferential with the head noun. If the value is assigned before the derivation proceeds, the verbal attribute will no longer be of type $\langle e, t \rangle$ and will therefore not be applicable to the definition of AL. As a result, the structure should then be uninterpretable (cf. (70)).

In the case of gapless relatives and complement clauses, the attribute is of type $\langle t \rangle$ from the beginning so the derivation would crash given the definition of the linker in (65), see (71).

- (70) a. PRO huò xiàqù de yǒngqì
 PRO live continue AL courage
 ‘the courage to go on living’
 (LCMC:A0092)
- b. $\lambda P \lambda Q \lambda x [P(x) \wedge Q(x)] (\lambda z [z \text{ goes on living}]) (\lambda y [y \text{ is courage}]) = \lambda x [x \text{ is courage} \wedge x \text{ goes on living}]$ or:
 if PRO gets an assignment i , then: $\lambda P \lambda Q \lambda x [P(x) \wedge Q(x)] (i \text{ goes on living}) (\lambda y [y \text{ is courage}])$ is undefined, because $[i \text{ goes on living}] \in D_{\langle t \rangle}$.
- (71) a. miàn wú kuìsè de dáhuà
 face NEG.have shame AL reply
 ‘a reply given without an expression of shame’
 (LCMC:B0010)
- b. $\lambda P \lambda Q \lambda x [P(x) \wedge Q(x)] (\text{the face does not have shame}) (\lambda y [y \text{ is a reply}])$
 is undefined, because $[\text{the face does not have shame}] \in D_{\langle t \rangle}$.

The same problems arise with ordinal numbers in Swahili and with non-intersective adjectives in Mandarin Chinese as will be elaborated in 7.2.

On the other hand, Rebuschi’s approach would at least be able to deal with cases in which the head noun is coreferential with an argument or adjunct of the attribute other than the subject—in contrast to the [den Dikken & Singhapreecha \(2004\)](#): If the position coreferential with the head noun was assigned a variable value, the attribute would still be of type $\langle e, t \rangle$ and the derivation would yield the right interpretation.

6.4 Conclusion

I have shown that none of the three approaches aiming to find a unified analysis of ALs is without serious problems. [Rubin \(2002\)](#) maintains that adverbs and attributes are dominated by the same functional projection and I could show that this position was partially based on a lack of information about the morphemes involved. His second fallacy is to assume that the meaning of linker attributes was always a result of predicate intersection.

In the paper by [den Dikken & Singhapreecha \(2004\)](#), the assumption that there is a predicational relation with the head noun is even much more central. According to [den Dikken & Singhapreecha \(2004\)](#), all linker attributes are derived from an underlying small clause where the eventual attribute is a predicate to the head noun. I showed that their analysis can be rejected simply on the grounds that the semantic and quantificational effects which are said to be characteristic of predicate inversion cannot be observed in the data from Chinese, Swahili and Hindi.

In Rebuschi’s account, the linker is a conjunction between two predicates such that the subjects of both predicates are coreferential. Again, this approach cannot account for non-predicative attributes such as non-intersective adjectives, ordinal numbers and verbal attributes without coreference of any of their arguments to the head noun.

All three approaches share the fundamental assumption that attributes can be analysed as predicates to the head noun, or, in the semantic account of Rebuschi, that both the attribute and the head noun are predicates with coreferential subjects.

This position is in line with a long and still vibrant tradition of deriving attributes from predicates, which *Alexiadou et al.* (2007) refer to as “the clausal hypothesis” with respect to adjectives.

Both *den Dikken & Singhapreecha* (2004) and *Rebuschi* (2005) consider the problem of genitive clauses, but do not take into consideration equally problematic structures such as non-predicative attributes or verbal attributes without coreference to the head noun.

The fundamental assumptions regarding the predicational nature of attributes can be broken down to the following basic hypothesis:

1. All linker attributes are predicates (*Rubin, 2002, Rebuschi, 2005, den Dikken & Singhapreecha, 2004*). This is a necessary prerequisite to the following assumptions.
2. The head noun corresponds to the subject of the predicational attribute in one of two ways:
 - (a) The linker attribute is always a predicate to the head noun. The head noun is therefore always coreferential with the subject of the attribute (*den Dikken & Singhapreecha, 2004*).
 - (b) Both the linker attribute and the head noun are predicates. The (subject of the) head noun corresponds to one of the arguments (or adjuncts) of the attribute.⁶ (*Rebuschi, 2005*).

In the following sections, I will show in more detail that none of these assumptions is necessarily true for linker attributes and that, on the contrary, the most representative cases of linker attributes are counter-examples.

7 Relations between head noun and attribute

7.1 Overview

In contradiction to the assumptions common to previous analyses as discussed in the preceding section, I will now demonstrate that

1. Not all linker attributes are predicates.
2. In those linker attributes which are predicates, the head noun is not necessarily coreferential with any of the attribute’s arguments or adjuncts.
3. If the head noun is coreferential with one of the arguments (or adjuncts) of the attribute, this argument is not necessarily the subject.

7.2 Non-predicational linker attributes

Certain of the attributes mentioned in the preceding sections are not predicational at all and therefore have no argument or adjunct positions the head noun could correspond to. This holds in particular for genitives, for non-intersective adjectives in Mandarin Chinese⁷ and for ordinal numbers in Swahili.

For the non-intersective adjectives, we have seen example (2), repeated and expanded here as (72):

⁶Note that semantically, even a complete clause with an empty adjunct site would still count as a predicate.

⁷It would be interesting to know how non-intersective adjectives are dealt with in the other two languages. So far, however, I do not have definite results on this issue.

- (72) a. běnlái de yuányīn
 original AL reason
 ‘the original reason’
 b. *yuányīn (shi) běnlái (de)
 reason (COP) original (AL)
 ‘the reason is original/initial.’

As this and similar adjectives cannot possibly be used as predicates under any circumstances, it is highly implausible to assume that in their attributive function they are initially predicates in a small clause. Also, semantically, they belong to the class of intrinsically non-intersective adjectives like *former* or *alleged* in English.

A similar case can be made for Swahili ordinal numbers. The example in (47) is repeated here as (73):

- (73) ki-dato ch-a nne
 7-step 7-AL four
 ‘the fourth step’
 (HCS:188586010)

Without the interfering linker, the phrase would simply mean “four steps”. Numbers in Swahili are semantically restricted in their function as predicates just as they are in English, illustrated by the contrast between *the total number of apples in the basket is four* and **the apple is four*. [*the fourth step*] can clearly not be analysed as $\lambda x[x \text{ is four} \wedge x \text{ is a step}]$ as would follow from the proposal of Rebuschi (2005). A derivation from an underlying small clause as suggested by den Dikken & Singhapreecha (2004) would be equally misled.

The case of genitives is slightly different. Nouns can obviously function as predicates. However, the relation between a predicative noun and its subject differs crucially from that between a genitive noun and the head noun it modifies. As already discussed in section 6.2, if a genitive structure of the type [NP₁ AL NP_{2, head}] was indeed derived from an underlying small clause with the modifying NP as a predicate to the head noun, the expected interpretation would be one of equation or identification of the two noun phrases. Essentially the same would follow from a semantic analysis of both noun phrases as predicates with coreferential subjects as discussed in 6.3.

This is why, syntactically, the assumption that a genitive noun projects a whole VP or TP or any other predicational structure (such as the PredP suggested by Baker (2003)) does not yield any benefit. Semantically, both noun phrases will still be analysed as predicates, but the fact that their respective arguments are not coreferential should be accounted for.

7.3 Relations between head noun and attribute

7.3.1 No coreference

Cases where the attribute clearly contains a predicate but does not establish a coreferential relation between the head noun and one of its arguments exist in all three languages and are one of the most widespread type of linker attributes in both Hindi and Swahili.

In one type of such verbal attributes, the subject position is occupied by PRO. The head nouns of these structures are often abstract nouns with verbal complements, for example modal nouns like *possibility (to do sth.)*, *plan (to do sth.)*, *promise (to do sth.)*, *permission (to do sth.)* etc.

- (74) Mandarin Chinese:
 PRO kàn diànyǐng de xíguàn
 PRO watch movie AL habit
 ‘the habit of watching movies’
 (LCMC:G0039)
- (75) Hindi:
 PRO vidyut kendra sthāpit karne kā kharc
 PRO electricity center established do.OBL AL cost
 ‘the cost of establishing an electricity center’
 (EMILLE:hin-w-science-agriculture-lot17au)
- (76) Swahili:
 u-wezo w-a PRO ku-fanya kazi
 14-ability 14-AL PRO INF-do work
 ‘the ability to (do) work’
 (HCS:184104069)

Both in Mandarin Chinese and Swahili, linker attributes can complement an abstract noun and take clauses with overt subjects as complements, such as in *the fact that...*, *the news that...*:

- (77) a. hékǎ yīdài fāshēng dìzhèn de xiāoxi
 Heka region occur earthquake AL news
 ‘the news that an earthquake occurred in the Heka region’
 (LCMC:A0024)
- b. u-wezo w-a mapafu ku-ondoa hewa chafu y-a kaboni
 14-ability 14-AL lungs INF-remove gas(9) unclean 9-AL carbon
 dayoksaidi
 dioxide
 ‘the ability of the lungs to remove the unclean gas of carbon dioxide’
 (HCS:191722597)

Additionally, as we have seen in 2.1.4, there are clausal attributes which count as truly gapless, according to Cheng & Sybesma (2005), as they do not host any conceivable adjunction site corresponding to the head noun and, at the same time, are not complements to an abstract noun. The following phrase is an additional example for this type of structure:

- (78) yǔ qiāoda bōli de shēngyīn
 rain tap glass AL voice
 ‘the sound of the rain tapping at the glass’
 (LCMC:P0050)

7.3.2 Coreference between head noun and non-subject positions

For Mandarin Chinese, structures in which the head noun is coreferential with the object of the attribute are perfectly regular. The subject position might or might not be overtly filled.

- (79) nà liàng 50 niándài mǎi de zìxíngchē
 this CL 50 years buy AL bicycle
 ‘this bicycle bought in the 50s’
 (LCMC:A0025)

In Swahili, the head noun might be coreferential with the attributive verb’s direct object or, even more frequently, to an additional argument position which is created by an applicative infix to the verb and left overtly empty. The subject position might or might not be overtly filled.

- (80) ofisi y-a ku-fany⟨i⟩a kazi
 office(9) 9-AL INF-do⟨APP⟩ work
 ‘an office to work in’
 (HCS:195599309)

In Hindi, as mentioned before, I can attest to only one case of a head noun corresponding to the object of a verbal linker attribute, which is apparently lexicalized and not entirely unambiguous with regard to object coreference. It is repeated here as (81):

- (81) pīne kā pānī
 drink.OBL AL.M water(M)
 ‘drinking water, water to drink’

For the following cases, it would have been possible to treat them within the preceding section since the head noun is not coreferential with an object of the verb. However, both works on verbal attributes in European languages (Geisler, 1995) and on relative clauses in East Asian languages insist on the distinction between complement clauses and “adjunct gap relative clauses” (Cha, 1998).

For the time being, I will therefore group structures in which the head noun corresponds to a hypothetical adjunct into this section. I will however discuss and eventually reject this choice in section 8.4.5.

In all three languages, this type of verbal attribute is among the most frequent. In Swahili and Chinese, but not in Hindi, the subject position might be overtly occupied.

- (82) Hindi:
 PRO kahānī kahne kā yah raṅg
 PRO story tell.OBL KA.M this manner(M)
 ‘this manner of telling a story’
 (EMILLE:written/miscellaneous/hin-w-literature-essay-lot11pp)
- (83) Mandarin Chinese:
 piàoliang nǚrén xīyǐn nánrén de fāngfǎ
 pretty women attract men AL method
 ‘the ways in which pretty women attract men’
 (LCMC:P0059)
- (84) Swahili:
 sababu y-a ku-mw-umba Adamu
 reason(9) 9-AL INF-OBJ.1-create Adam(1)
 ‘the reason for creating Adam’
 (HCS:184130828; cf. example (41-b))

7.3.3 Coreference between head noun and subject

Of all the relations between the head noun and its attribute, coreference with the attribute's subject seems to be the least available. In Mandarin Chinese, the head noun can only correspond to the subject of a transitive verb if its object position is filled overtly or by *pro*. This observation will find an explanation in section 8.4.4.

In Swahili, cases with head noun–subject coreference are largely restricted to lexicalized cases and to certain verbs which express adjectival notions. The following two cases of lexicalized expressions are repeated here from section 4.1.3:

- (85) a. usiku_i w-a ____i ku-amkia jana
night(11) 11-AL INF-come.before tomorrow
'the night before tomorrow' (lit. "the night to come before tomorrow")
(HCS:195611957)
- b. vi-ongozi_i w-a ____i ku-chagu⟨li⟩⟨w⟩a
8-leaders 2-AL INF-select⟨APP⟩⟨PASS⟩
'elected leaders' (lit. 'leaders to be elected')⁸
(HCS:195595839)

Examples (46-a) and (46-b) are repeated here in (86). They are examples for verbs which almost exclusively establish subject coreference with the head noun when used as attributes.

- (86) a. u-zoefu_i w-a ____i ku-tosha
11-experience 11-AL INF-suffice
'experience enough' (lit. 'experience to suffice')
(HCS:195589725)
- b. habari_i z-a ____i ku-aminika
news(10) 10-AL INF-be.trustworthy
'trustworthy news'
(HCS:189799197)

As for Hindi, such cases were not attested at all and made-up examples were met with my native speaker informants' stern disapproval.

7.4 Conclusion

I showed that, in contrast to what the approaches by Rubin (2002), den Dikken & Singhapreecha (2004) and Rebuschi (2005) would predict, linker attributes are not always predicational. In those cases where the attribute is in fact a predicate, the head noun does not have to be coreferential with its subject, as would be predicted by den Dikken & Singhapreecha (2004), nor with any other argument or adjunct, as would follow from Rubin (2002). A look at table 3 reveals:

⁸The linker does in this case not agree with the noun class of the head noun but rather with its semantic property of referring to human beings.

1. Attributes which do not establish a predicative relation to the head noun seem to be the default case for linker attributes. All three languages use ALs to derive genitives and attributive verb phrases without overt subject and without a coreference relation between any of the attribute's arguments or potential adjuncts. Mandarin Chinese also uses them in connection with non-intersective adjectives and Swahili with cardinal numbers to derive ordinals.

2. Among those attributes which are in principle predicational, only complement clauses and adjunct gap relatives (HA) without overt subjects occur in all three languages without restrictions. Attributes whose object is coreferential with the head noun are less widespread, especially in Hindi, where only one lexicalized and ambiguous case is attested.

Table 3. Potential complements of ALs. HS: head noun coreferential with subject; HO: head noun coreferential with object; CC: complement clause; HA: head noun coreferential with adjunct; Gapl: gapless.

	NP	VP				VP+Subject				PP	NUM	Adv	AP
		HS	HO	HA	CC	HA	CC	HO	Gapl.				
Chinese	+	+	+	+	+	+	+	+	+	+	-	+	+
Swahili	+	+	+	+	+	+	+	+	-	-	+	+	-
Hindi	+	-	±	+	+	-	-	-	-	-	-	+	-

These findings directly contradict the predictions by previous approaches. Even more fundamentally, in as far as the data from the three languages under consideration are indicative of a markedness hierarchy, they are not what one would expect, given the Noun Phrase Accessibility Hierarchy assumed for relative clauses by Keenan & Comrie (1977):

- (87) Noun Phrase Accessibility Hierarchy for relative clauses:
 Subject > Direct Object > Indirect Object > Oblique > Genitive > Object of Comparative

A hierarchy reflecting the accessibility of argument or adjunct positions within verbal and clausal linker attributes would have to look like (88):

- (88) Suggested noun phrase accessibility hierarchy for linker attributes:
 Adjunct > Object > Subject

Note that this is not counter evidence against the Noun Phrase Accessibility Hierarchy. What Keenan & Comrie (1977) predict is that the primary relativization strategy of a language can always relativize subjects and that it can relativize all the positions higher than the lowest position to which it applies. Only in Mandarin Chinese does the attributive linker represent the primary relativization strategy, and there, the prediction is true. In Hindi and Swahili, there are many structures much more central to relativization than those involving the linkers under consideration, so they do not represent the primary relativization strategy in either language.

Nevertheless, the fact that subject coreference in Hindi linker attributes is impossible, while adjunct gap relatives with linkers seem perfectly normal, deserves an explanation. Furthermore, any unified account of attributive linkers should explain the specific differences between linker attributes in different languages. In the sections to come, especially in section 8.5, certain insights into the nature of

ALs and a better understanding of the language specific data shall shed some light on the findings of this section.

8 Attributive linkers and the theory of C heads

8.1 Overview

In the preceding sections, I have presented data from the three languages under consideration to show that previous language specific approaches to deal with them are not satisfactory and that they should be given a unified analysis. I further argued that recent attempts to do so are severely inadequate. Within this section, I will try to translate some of the observations into basic theoretical considerations about the morpho-syntactic nature of linker attributes.

I will argue that ALs are a special type of C heads and demonstrate how coreference between a head noun and one of the attribute's arguments is established. I will hypothesise that ALs can be classified according to whether they take finite or infinite complements and whether they assign case or not. I will then demonstrate how these assumptions can account for the specific behaviour of ALs in each language. Finally, I will show how the feature system developed for ALs can be extended to other C heads and I will give evidence of how widespread a phenomenon ALs might be.

8.2 Attributive linkers as functional heads

The most firmly established functional categories so far are C, D and T. According to [Adger \(2003: 165\)](#), what distinguishes them from lexical categories such as V, N, A and P is the fact that they do not assign θ -roles. Together with v , these three are what [Chomsky \(1995a, 2000\)](#) refers to as the “core functional categories”. Each of the three functional categories C, D and T have overt heads such as complementizers, articles and auxiliaries, respectively, and are therefore independently motivated—in contrast, for example, to Agr, whose motivation is purely theory-internal (cf. [Chomsky, 1995a: 349](#)).

[Rubin \(2002: ch. 2, p. 11\)](#) adopts the following criteria put forward by [Abney \(1987\)](#) to decide whether a given element constitutes a functional category:⁹

Functional elements

1. constitute closed lexical classes.
2. are generally phonologically and morphologically dependent. They are generally stressless, often clitics or affixes, and sometimes even phonologically null.
3. are usually inseparable from their complement.
4. lack “descriptive content”. Their semantic contribution is second-order, regulating or contributing to the interpretation of their complement. They mark grammatical or relational features, rather than picking out a class of objects.

All four of these points certainly hold for ALs in each of the three languages. Starting with the first criterion, in Hindi, the AL *ka* is the only one of its kind,

⁹The list is an almost literal reproduction of the list given by Rubin.

there is no other element with the same distribution (but see the footnote on page 16). In Mandarin Chinese, there is one other item which behaves exactly like *de*, the most important difference being one of stylistic level. The morpheme *zhī* is much less frequent than *de* and is used primarily in formal or poetic contexts with a slightly archaic connotation. In Swahili, *-a* cannot be replaced by any other morpheme, although there is one preposition with similar properties: *-enye* “with” has a wide range of applications remindful of *-a*. In any case, ALs in all three languages apparently belong to a lexical class consisting of one or at most two items and thereby satisfy the first criterion in Rubin’s list.

The second point applies only in parts. The three ALs under consideration here are not morphologically dependent. Prosodically, however, they do depend on larger units, none of them can be stressed, and Chinese *de* does not carry tone. Furthermore, they all are monosyllabic and phonologically simple. Compared to typical functional elements such as articles (*the*), complementizers (*that*) and auxiliaries (*do*), they can be said to be at least as phonologically inconspicuous.

As for being inseparable from their complements, again all three ALs meet the constraint. Other nominal modifiers such as numbers or general quantifiers cannot interfere between the linker and its complement, they can only occur in between the linker and the head noun or, in the case of Chinese, at the very beginning of the phrase. The following examples of Hindi, Swahili and Chinese (in this order) illustrate the point:

- (89) a. softveyar aur hārdveyar (*ek) kā ek aisā samanvay
software and hardware (*one) AL.M one such.M coordination
‘such a coordination of software and hardware’
(EMILLE:written/webdunia/hin-w-dunia-news-02-02-24.txt)
- b. kilo tatu z-a (*tatu) mchele
kilo(10) three 10-AL (*tatu) rice
‘three kilos of rice’
(HCS:184165366)
- c. (yī míng) bèi chēngwéi “wàiguó dǔwáng” (*yī míng) de
(one CL) PASS call foreign gamble.king (*one CL) AL
yī míng wàiguórén
one CL foreigner
‘a foreigner called “foreign gamble king”’
(LCMC:A0080)

Finally, the lack of descriptive content of attributive linkers should be apparent to anyone who has had a glance at the examples provided within this thesis. The linkers do not refer to concrete or abstract entities, events or properties. A semantic definition of an AL could only consist in the relation it establishes between its complement and the head noun, thereby restricting the head noun’s reference and even the nature of this relation is extremely vague. (a very tentative outline of such a definition is given in (69)).

All this suggests that a classification of ALs as heads of a functional category is justified. What remains to be seen is whether they are indeed distinct from the other, already established categories. For T and D, the differences are fairly obvious. ALs are neither associated with tense, nor with definiteness and since they do not occur outside attributive structures, their distribution is not at all what would be expected from either T or D heads. For Mandarin Chinese, a more

elaborate discussion of the identification of ALs with D can be found in section 2.2. With regards to C, the case is less straightforward and ALs have indeed received labels such as “subordinator” (e. g. Paul, 2005), which suggests their kinship with complementizers.

There are however clear differences between “typical” C heads such as English *that* and ALs in each of the three languages. Most fundamentally, ALs are never used to introduce argument clauses as in *I’m surprised (that) he left*. In Chinese, argument clauses are generally not headed by an overt complementizer. Argument clauses without overt complementizer are a frequent phenomenon in Swahili as well, although there are complementizers such as *kwamba* and *kuwa*. Additionally, there is a C head which introduces complex relative clauses, *amba-*, but which is also clearly distinct from the linker. In Hindi, the complementizer is *ki*, which is similar but not identical to any of the forms of *ka* and, furthermore, it is to the left of its complement, in contrast to the linker, which is to the right. Moreover, C traditionally only takes TPs as arguments, but not any of the other categories which can be complements to a linker, like NPs, numbers, adjectives etc.

These facts leave me with two choices: Either to assume that ALs belong to a functional category distinct from all other, established, categories; or to assume that they are in fact C heads, which would mean that C would have to be redefined with regard to some of its basic properties.

To summarize, the two major differences between complementizers like English *that* and the linkers under consideration are, firstly, that ALs can only modify noun phrases, they cannot head argument clauses as in *I know that you saw it*; and secondly, ALs can take not only finite TPs as arguments, but infinite TPs and a variety of other categories as well. But the fact that the C head *that* can both function as an AL and as a complementizer heading an argument clause indicates the close relation of these two functions.

In this thesis, I will therefore adopt the position that ALs are C heads with specific properties. In the following sections, I will use the expression *C head* as a hypernym comprising ALs and complementizers. I will use the term *complementizer* to refer to C heads which introduce argument clauses, whereas ALs will be defined as C heads modifying nouns (see the definition on page 3 and section 9.1 for a more detailed discussion).

8.3 Establishing coreference

So far, my major concern with coreference between the head noun and an argument or adjunct of the attribute has been to show that it does not always exist. For those cases in which the head noun is in fact coreferential with one of the attribute’s arguments, it remains to be explored just how this coreference comes about.¹⁰

As already indicated at several occasions, the proposal by some researchers, such as Simpson (2001) or den Dikken & Singhapreecha (2004), to establish the coreferential relation by movement, so that the head noun would be coreferential with its own trace, has several problems. Not only is it incompatible with general assumptions of the Minimalist framework with which I will try to comply here; for it would violate the principle Greed, here cited from Chomsky (1995b: 400):

¹⁰For the following discussion, cf. also Struckmeier & Kremers (n.d.)

(90) Greed:

Move raises α to a position β only if morphological properties of α itself would not otherwise be satisfied in the derivation.

More fundamentally, it would also violate the θ -criterion because the noun phrase would be assigned a role both within the attributive phrase and in the matrix clause. As I am reluctant to base my analysis on suppositions incompatible with some of the most fundamental and most widely acknowledged assumptions about the nature of syntactic structures, I do not consider movement of this kind an option.

Having ruled out NP-trace, the choice of possible null elements the head noun could correspond to quickly narrows. Let us first consider PRO. In cases in which the head noun corresponds to an object of the attributive phrase, this object cannot be represented by PRO, as PRO is banned from case marking positions. The case is less obvious for subjects. Within the VP and ν P, subjects are not licensed and infinite T does generally not assign subject case.

So from this point of view at least, PRO would be a possible candidate for the subject position. But if the element in question was indeed PRO, there would be no way to account for the fact that the head noun in (91) is coreferential with the subject of the first attributive clause but not with the subject of the second one:

(91) vi-faa_i vy-a ____i ku-tosha vy-a PRO_{j/*i} ku-fany⟨i⟩a ____i
 equipment(8) 8-AL INF-be.enough 8-AL PRO INF-do⟨APP⟩
 utafiti w-a kisayansi
 research(11) 11-AL science
 ‘sufficient equipment to do scientific research with’
 (HCS:184996489)

For finite, case-assigning T, the subject position could in principle be occupied by *pro*, at least in Mandarin Chinese, being a *pro*-drop language and allowing for finite TP complements. However, as *pro* is supposed to have the same referential properties as an overt pronoun and (92) is ungrammatical, *pro* can equally be excluded from the list of candidates for the null element we are looking for.

(92) *tā_i kàn le diànyǐng de xuésheng_i
 she watch PFV movie AL student
 intended: ‘the student who has watched the movie’

Concluding that PRO and *pro* are therefore ruled out for the subject position in attributes with subject coreference, what remains is the empty operator OP (also written Op or *op*). As Haegeman (1994) remarks, “the literature is not very explicit about its properties”. Basically, it is the covert equivalent to a *wh*-constituent and it is assumed, among other things, to function roughly like a relative pronoun in infinitival relatives as illustrated in (93) (example 71c, p. 469 in Haegeman, 1994):

(93) I_j need a man [CP OP_i [IP PRO_j to love t_i]]

Chomsky (1995c: 153) remarks that a variable bound by an empty operator (in the case of (93): the trace bound by OP) must have “a value fixed by an antecedent that meets certain structural properties”, but does not specify the nature of these properties. Thus, the sentence in (94) can not mean that Mary expected John to

be too clever to catch her, the object of catch can only be coreferential with John, not with Mary:

- (94) Mary expected John to be too clever to catch (example (37-d), p. 152 in [Chomsky, 1995c](#))

OP, then, seems to fulfill all the requirements for the null element which is coreferential to the head noun in linker attributes. OP, or rather, the trace variable it creates, occurs in argument positions, unlike PRO. And unlike both PRO and *pro*, it apparently has to be bound within a very narrow domain, or possibly by the closest N or D available.

This decision is not without relevant theoretical consequences: Whenever the attribute involves a verb phrase and one of its arguments or adjuncts is coreferential with the head noun, this argument or adjunct position will be occupied by a trace bound by an empty operator OP, which in turn occupies Spec, CP. The presumed trigger for this movement is a strong uninterpretable feature [μ Q*] on OP, OP being essentially a *wh*-element.

My decision to identify the functional category to which ALs belong as C is crucially motivated by this consequence. For otherwise, these types of verbal attributes would always be dominated by two functional layers, CP and ALP, of which the first would never be overtly headed—which seems to be redundant and inelegant. Especially in section 9.1, it will be seen that this identification of ALs as belonging to the category C allows certain predictions about the nature of C heads which can be shown to hold cross-linguistically.

8.4 Spelling out the details

8.4.1 Overview

Here be dragons. In what lies ahead, there are many unknowns and I am going to make several potentially controversial assumptions. But I will try to be as specific and bold as possible in my speculations. As it will turn out, the assumptions made so far will prove viable for making certain predictions and accounting for otherwise rather mysterious facts.

For the notation of features, I will follow the conventions as given in [Adger \(2003\)](#).

The main facts I will attempt to account for in this section are the following:

1. Exactly how the distribution of OP and PRO within linker attributes follows directly from the properties of ALs.
2. Swahili and Mandarin Chinese AL clauses allow for overt subjects—despite the fact that (non-attributive) infinite TPs in Swahili do not license overt subjects—while Hindi does not.
3. Swahili and Mandarin Chinese AL clauses allow for subject coreference with the head noun, while Hindi does not.
4. Verbal complements of ALs are case marked in Hindi.

8.4.2 Preliminary considerations and assumptions

So far, I have argued that ALs are heads of a functional category and that this category is C. In contrast to traditional accounts of C, ALs can take phrases belonging to a variety of categories as complements. At first glance, there is one problem with this analysis: If verbal linker attributes are always CPs, there is no a priori reason why they should always be infinite in languages like Swahili and Hindi. One way to deal with this would be to say that ALs in Swahili and Hindi carry an uninterpretable [*u*infinite] feature and that certain categories, especially nouns are [infinite] by default.

One major difference between Hindi and Swahili on the one hand and Chinese on the other would then be that the former two languages have only ALs taking infinite complements, whereas Chinese has a linker which takes finite complements as well.

This simultaneously allows to explain one difference to complementizers like *that*: These cannot take any complement but finite TPs, so they can be assumed to have an uninterpretable feature [finite], whereas ALs can take almost every category *but* finite TPs, because they carry a feature [*u*infinite]. I will summarize this assumption and its consequences as the first of three hypotheses to be made within this section:

(95) Hypothesis 1:

- a. C heads can be classified according to whether they carry a [*u*finite] feature or a [*u*infinite] feature. C heads with a [*u*finite] feature can only take finite TPs as complements. C heads with a [*u*infinite] feature can only take infinite phrases as complements.
- b. Depending on the language, certain categories, such as NPs, are [infinite] by default.

In a second step, I propose that C heads carrying a [*u*infinite] feature might also carry a [case] feature, although the specific case they assign may vary. This assumption is supported by the fact that, in all three languages, ALs license noun phrases in genitive constructions. In Swahili and Hindi, case is not marked morphologically on the noun, but for reasons that shall become clear shortly, I suggest that they are assigned subject case. In Hindi, an attributive NP is inflected for oblique case by the linker. This is my second hypothesis, summarized in (96):

(96) Hypothesis 2:

- C heads carrying a [*u*infinite] feature can assign case.

For convenience, I will characterize a C head which selects finite or infinite complements as [\pm finite] respectively. Additionally, C heads carrying a case feature will be defined as [+case], those without such a feature will be [-case].

I have remarked on the fact that Hindi verbal attributes also receive a case marking several times. I will briefly elaborate this observation here. Infinite TPs in Hindi behave like noun phrases in many ways. They can serve as arguments to verbs and postpositions. And they are inflected for case. The ending they take in a subject position is *-nā*; the long final vowel *-ā* corresponds to the masculine singular absolute ending of nouns. (97) shows an infinite TP as subject to a clause:

- (97) [TP PRO [VP hindī bolnā]] āsān hai.
 [TP PRO [VP Hindi speak.INF]] easy is
 ‘Speaking Hindi is easy.’

In oblique positions, they take the ending *-ne*, where the final vowel corresponds to the oblique case inflection in masculine singular nouns. To illustrate this, I repeat example (75) as (98). Here, the verb *karna* “do” is inflected for oblique case.

- (98) PRO vidyut kendra sthāpit karne kā kharc
 PRO electricity center established do.OBL AL COST
 ‘the cost of establishing an electricity center’
 (EMILLE:hin-w-science-agriculture-lot17au)

I take this to mean that infinite T in Hindi carries an unvalued [case:] feature, which must be checked. This is the third and last hypothesis I need to make here:

- (99) Hypothesis 3:
 Depending on the language, infinite T might carry a [case:] feature and therefore need to be licensed like a noun phrase. Hindi infinite T does carry such a feature.

I will work out the details of how these hypotheses account for the phenomena listed above in the next sections.

8.4.3 Overt subjects and subject coreference

In this section, I will show that (100) follows from the three hypothesis together with certain standard assumptions about syntactic structures and processes. These assumptions are:

1. infinite T cannot assign subject case,
2. PRO must not be governed,
3. overt noun phrases, *pro* and OP must be case licensed and
4. within a CP, there is no category but T and C which could assign subject case.

If these assumptions as well as my own hypothesis are correct, the following conditions should hold:

- (100) If and only if
- a. AL selects for infinite complement clauses and assigns case, and infinite T does NOT carry an unvalued case feature, OR
 - b. AL selects for finite complements, THEN
 - (i) the subject of the attributive clause must be overt or *pro* OR
 - (ii) the head noun is coreferential with an empty subject.

Overt subjects must receive case. In order to establish coreference with the head noun, the subject position of an attributive clause must be occupied by OP which equally requires a case feature. So both for situation (i) and (ii) in (100), a case feature must be available. If the AL conforms to condition (b), that is, if it selects finite TPs and does not itself assign case, the subject will receive case from finite T. If condition (a) holds, the subject will receive case from the linker.

If neither condition (a) nor (b) applies, there is no case feature available to license OP or an overt subject.

To demonstrate how this argument applies to the three languages in question, I will first determine which of the conditions in (100) hold for each language. Then I will show how the consequences in (100) follow from these conditions.

For Chinese, I will not go into much detail here. As discussed in section 2.1.4, attributive clauses can take any TAM marker which I take to be finite T heads. So condition (b) applies. Then, it is clear that finite complement clauses in Mandarin Chinese must have a subject in need of a case value, just like any finite clause. This subject can either be an overt DP or *pro* or the empty operator OP, which in turn must be coreferential with the head noun. Crucially, the subject position cannot be occupied by PRO, since PRO must not be governed.

Of course, not all Chinese attributes are finite clauses. This is why I suggest that Chinese *de* exists in fact in three homophonous varieties: The first variety is a complementizer with the properties [+finite, -case], that is, which selects finite TPs and does not assign case. Its existence should be uncontroversial for the reasons given above. In addition, there are also infinite clauses with overt subjects such as gapless relatives like (78), repeated here as (101).

- (101) yǔ qiāoda bōli de shēngyīn
rain tap glass AL voice
‘the sound of the rain tapping at the glass’
(LCMC:P0050)

See Cheng & Sybesma (2005) for a discussion of the absence of aspect and temporal reference in such clauses. Since the subjects in these structures cannot be licensed by T, I assume they have to be licensed by a second variety of *de* which is [-finite, +case]. The third type of linker necessary to account for attributive clauses with a PRO subject or object coreference has the properties [-finite, -case]. This last type of linker will be discussed in section 8.4.4.

Swahili and Hindi both do not allow finite TPs as attributive linker complements. Swahili, however, does allow overt subjects and coreference between subject and head noun. According to the argument above, this means that Swahili has an AL with the properties [-finite, +case].

Hindi linker attributes, by contrast, cannot have overt subjects and there can be no coreference between subject and head noun. This could mean that the Hindi AL has the properties [-finite, -case]. However, I have argued that infinite T must be case-licensed and the only plausible source of a case value is the linker itself. Therefore, it must be concluded that the Hindi linker is of type [-finite, +case] as well, but that due to the unvalued case feature on infinite T, the linker cannot license overt subjects or OP.

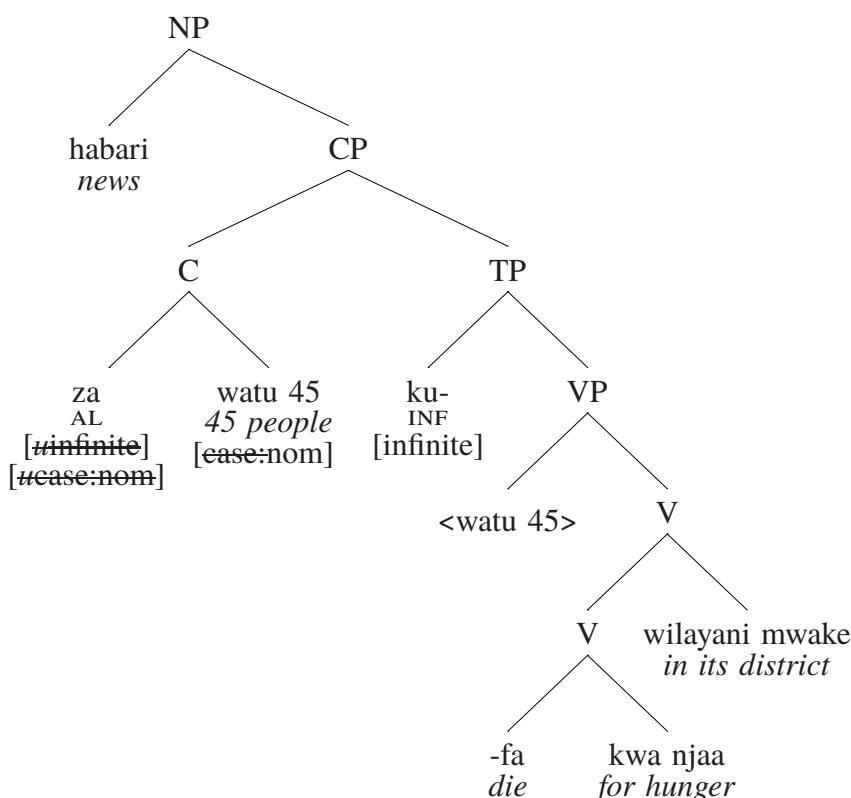
To show how this works out in practice, let me compare the Swahili example (41-a), here repeated as (102) with the Hindi example (29), repeated here as (103):

- (102) habari z-a wa-tu 45 ku-fa kwa njaa wilaya-ni
news(10) 10-AL 2-people 45 INF-die for hunger district-in(18)
mw-ake
18-POSS.3SG
‘the news that 45 people died of hunger in its district’

(HCS:189435850)

- (103) unke choṭe bhai *(ke) marne kā samācār
 his/her.OBL little.OBL brother AL.OBL die.INF.OBL AL.M news(M)
 ‘the news that his little brother has died’ (lit. ‘the news of his little
 brother’s dying’)
 (CFILT)

Now, the Swahili example can be analyzed as in the following tree diagram. I assume here a bare phrase structure and will label maximal projections as XPs out of convenience. The AL selects the infinite TP to delete its uninterpretable [*u*infinite] feature. The subject, *watu 45* ‘45 people’ raises to C to check its case feature under sisterhood with the linker.¹¹



The [*u*infinite] feature on AL makes sure that it does not take finite clauses as complements. The [*u*case:nom] feature licenses the overt subject, which explains why attributive clauses can have an overt subject although infinite T does not license them. Certain processes remain unexpressed in the structure above, such as the noun class agreement between the head noun and the linker, the raising of the verb root to T and the movement of the subject to Spec, TP.

In Hindi, the AL equally carries two features, [*u*infinite] and [*u*case:obl]. Again, the [*u*infinite] on the linker makes sure that it does not take finite clause complements. But this time, the [*u*case:obl] feature on the (first) linker does not license a subject noun phrase, because Hindi infinite T needs to be checked for

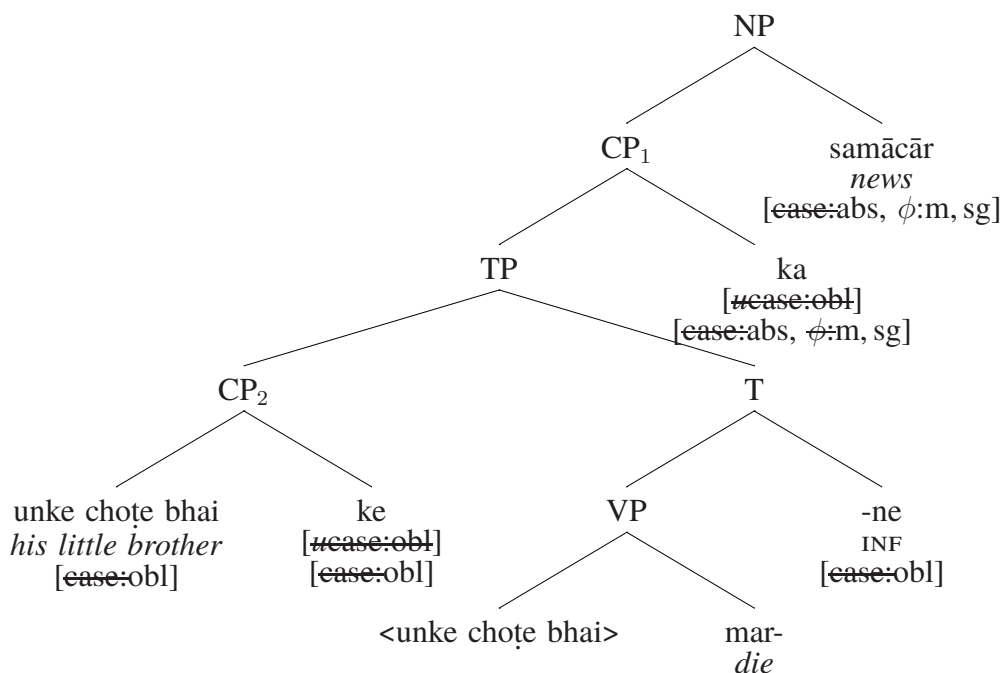
¹¹One word about the location of the attributive phrases: There have been a number of investigations into attributes, such as Cinque (2002), which suggest that the adjective phrase AP is a layer in between DP and NP. However, in the framework assumed here, if two items merge, the one that projects (the head) is the one which determines the distribution of the whole phrase. And a noun modified by an adjective still has the distribution of a noun, not of an adjective. The same is true for attributive CPs, which is why I assume that the head of a pair {C, N} is N.

case as well. So the [*ucase:obl*] feature checks the [*case:*] feature on T and cannot be used to license a subject. A noun phrase corresponding to the logical subject needs to be licensed by an additional linker, which adjoins to T.

The Hindi linker needs to agree with the head noun's ϕ -features and case. It might seem odd that Hindi ALs have both an uninterpretable [*ucase:obl*] feature and an interpretable, unvalued [*case:*] feature. But they do assign case and at the same time agree in case with their governing category, so this analysis seems justified. The first linker gets its interpretable ϕ - and case features checked by the head noun *samācār* “news”. The features of the second linker are checked by T, which receives oblique case from the first linker.

As for the ϕ -features, since the inflection of T is homophonous with the absolute and oblique endings of a masculine singular noun, and since the linker likewise takes its masculine singular inflection, it can be assumed that [*masculine, singular*] are the ϕ -features which are passed from T to the linker by default.

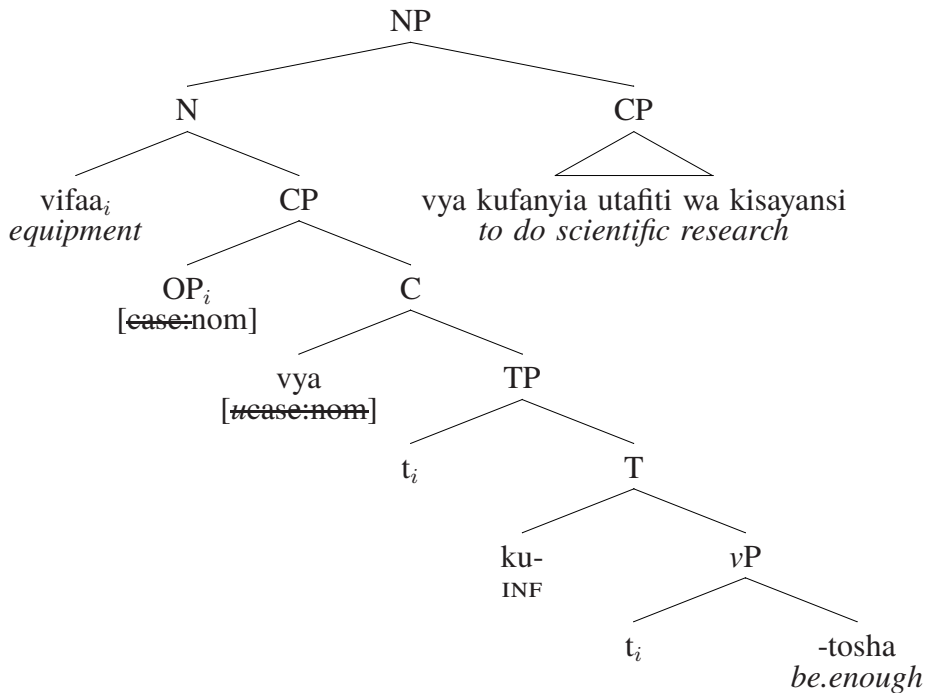
The checking of the [*uinfinitive*] feature on the linker with the [*infinitive*] feature on T works the same way as in Swahili and is left inexplicit in the diagram as are other processes not immediately relevant to the issues at hand.



The important difference between Hindi and Swahili, then, is that Hindi infinite T needs to be case marked as a consequence of which the [*ucase:obl*] feature on C cannot license a subject NP. The explanation for why only in Chinese and Swahili head nouns can be coreferential with the subject of a clausal linker attribute is now very straightforward. As I argued in section 8.3, the element the head noun is coreferential with is an empty operator OP. OP needs to be licensed like an NP, which is equivalent to saying it has an unvalued case feature [*case:*].

To give a brief demonstration of how licensing of OP in subject position works in Swahili, I will sketch out the tree diagram for part of the structure of example (91), repeated here as (104):

- (104) vi-faa_i vy-a —_i ku-tosha vy-a PRO_{j/*i} ku-fany⟨i⟩a —_i
 equipment(8) 8-AL INF-be.enough 8-AL PRO INF-do⟨APP⟩
 utafiti w-a kisayansi
 research(11) 11-AL science
 ‘sufficient equipment to do scientific research’
 (HCS:184996489)



As before, I do not bother to display processes and layers not immediately relevant to the questions that concern us here. OP is base-generated as subject in *vP*, and does not receive case in Spec, TP. Like regular *wh*-movement, its movement to Spec, CP can be assumed to be motivated by a strong [Q*] feature on OP, which is checked by an interpretable [Q] feature on C.

In Spec, CP, the case feature on OP is checked by the linker *vya*. For Hindi, this type of structure is ruled out because, again, infinite T needs a case feature as well, so either OP gets licensed or T, but never both and the derivation fails.

8.4.4 PRO subjects and object coreference

In the preceding section, I argued that Chinese, Swahili and Hindi all have a [-finite, +case] linker. But in Hindi, in contrast to Swahili and Chinese, infinite T needs to be case-licensed which is why the case feature on AL cannot license an overt subject or OP.

In this section I will argue that in Swahili and Chinese—languages in which infinite T does not carry an unvalued case feature—a linker with the properties [-finite, +case] cannot dominate a clause where the subject position is occupied by PRO and the head noun of a [-finite, +case] linker attribute can not be coreferential with its object.

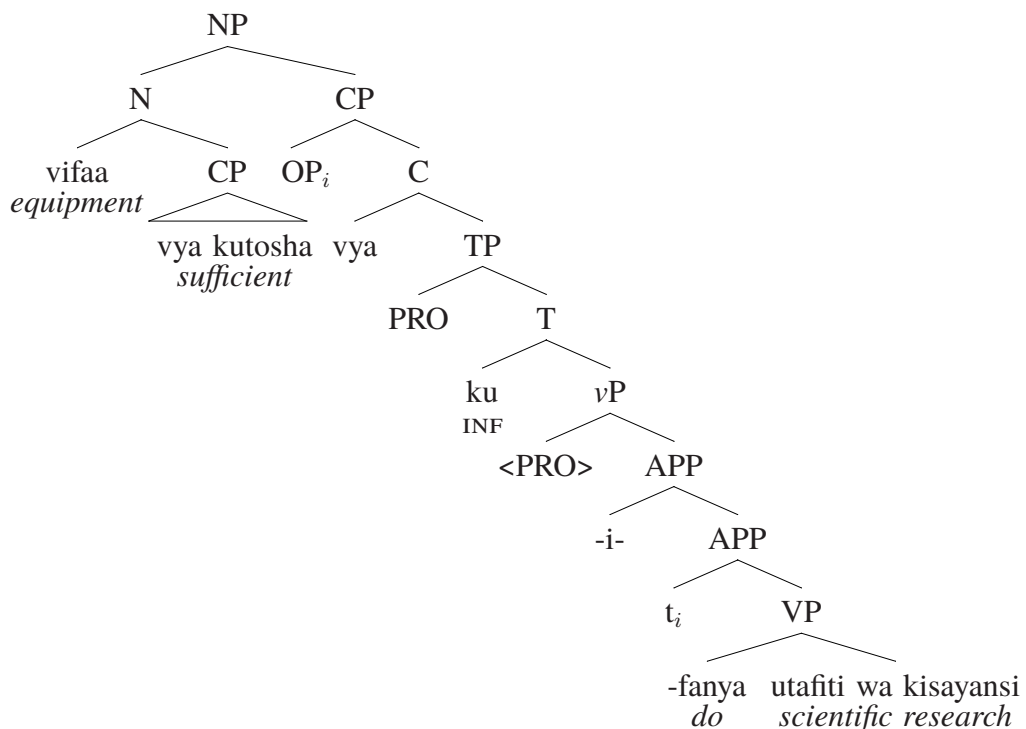
Again, I will try to show that this follows from the hypotheses made so far and the additional standard assumption that objects are case-licensed by the verb. I will summarize the predictions in (105):

- (105) If and only if
- a. AL selects for infinite complement clauses and does not assign case, OR
 - b. AL selects for infinite complement clauses and does assign case and infinite T carries an unvalued case feature, THEN
 - (i) the subject position is occupied by PRO AND
 - (ii) the head noun can be coreferential with an empty object.

Of all nominal elements, PRO is the only one which does not receive case. In an infinite clause dominated by a linker which does not assign case, there is no governor for the subject position, so it can only be filled by PRO. The same holds, of course, if the linker does carry a case feature but checks and deletes it with infinite T.

A similar case can be made for coreference between head noun and object. As shown in section 8.3, this coreference relation is established by an empty operator which creates a trace in the object position. This operator is already licensed as an argument of the verb and cannot receive a further case feature. While for Hindi, both scenarios (i) and (ii) are possible with the [-finite, +case] linker because the case feature is checked by T, for Swahili and Chinese I must assume a further linker with the properties [-finite, -case] and homophonous with the one discussed in the previous section.

To demonstrate how such a linker functions, I will again use the Swahili example (91), as repeated in (104), this time sketching out the structure of the second attributive CP. For the applicative, I will assume an additional functional layer assigning case to OP. Nothing hinges on this decision, however, as long as one concedes that the applicative derivation licenses a nominal element.



PRO is the single argument of the vP , whose head I left unexpressed in the diagram, and it might be motivated by an EPP feature to move to Spec, TP. There is no case to assign, neither by T nor by the AL *vya* and PRO cannot take case, so all is well. OP base-generates in the position of the applicative argument, where its case feature is valued. Again, its [Q*] feature motivates movement to Spec, CP.

This time it can not receive case there, as its case feature has already been checked within the TP. And since, this time, we are dealing with a [-finite, -case] linker, there is no additional case to be distributed anyway, so again, all is well and the derivation succeeds.

Under the assumption that the applicative is represented by a functional layer as indicated in the graph, its head would presumably have a strong [V*] feature, which would cause the verb stem to rise and merge with the APP head. This would naturally result in the least marked word order for such a configuration, with a sequence of verb – applicative object – direct object.

There is one more prediction which follows from the assumptions made so far:

- (106) The head noun can only be coreferential with the subject of an attributive linker clause if the object of the (transitive) verb is filled overtly or by *pro*.

The reasoning behind this is straightforward: The only element which could fill the argument position of the verb other than an overt NP or *pro*, in a language without overt relative pronouns, is OP. If the subject is to be coreferential with the head noun, it will be filled by OP as well. But two OPs in one clause do not yield an interpretable structure, presumably because they must both be bound within the same domain and therefore be coreferential with the same head noun, but at the same time they cannot be coreferential with each other. A similar effect would be seen with (identical) overt relative pronouns: **the thing which did which*.

Indeed, this prediction is borne out by the data. Of the three languages under consideration, this is mostly relevant for Chinese, as subject coreference and object coreference are otherwise equally frequent and unmarked. Thus, the phrase *dǎ de rén* can refer to people who are beaten or to people who beat someone specific in a given context but not to people who generally beat (someone, each other):

- (107) a. PRO *dǎ* OP_{*i*} *de rén_i*
 PRO beat OP AL people
 ‘people who are beaten’
 b. OP_{*i*} *dǎ pro de rén_i*
 PRO beat *pro* AL people
 ‘people who beat him/her/them’
 c. *OP_{*i*} *dǎ* — *de rén_i*
 OP beat AL people
 intended meaning: ‘people who beat (someone, everyone, each other)’

8.4.5 About adjunct gap relatives

Throughout the last few sections I have not discussed the type of structure previously referred to as “adjunct gap relatives”. I mentioned in section 7.3.2 that

traditionally, phrases in which the head noun could plausibly correspond to an adjunct in the attributive clause are classified as “adjunct gap relatives”. In this section, I will argue that the facts from the languages under consideration do not support this analysis and that so-called “adjunct gap relatives” pattern with complement clauses rather than with object coreference clauses.

To illustrate my arguments, I will concentrate on the following two examples from Swahili and Hindi (in that order):

(108) sababu z-a wanawake ku-hamia miji-ni
 reasons(10) 10-AL women INF-move.to cities-in
 ‘reasons for women to move to the cities’
 (HCS:185107000)

(109) PRO maun rah-ne kā kāraṅ
 PRO silent stay-INF.OBL AL.M. reason(M)
 ‘the reason for staying silent’
 (CFILT)

First of all, it is unclear exactly how this supposed coreference to an empty adjunct site should come about. PRO is largely restricted to animated referents, which makes it seem implausible that it should be coreferential with a word meaning “reason”. Moreover, if the head noun of such a clause could be coreferential with PRO, it would have to correspond to the subject of the clause in cases like (109), yielding “the reason which stays silent”.

On the other hand, the adjunct position cannot be occupied by an empty operator because there is no governor to delete its case feature. And even under the—rather far-fetched—assumption that the operator was governed by a covert adposition, it would appear awkward that no overt adposition is allowed in these structures.

The following examples show that although it is well possible to integrate the respective words for “reason” into the full clauses as adverbs, it is not possible to derive attributive clauses where the head noun is coreferential with an empty operator argument of the adposition:

(110) a. Wanawake wa-li-hamia miji-ni kwa sababu hiyo.
 women 3SG.SUB-PST-move.to cities-in for reason those
 ‘The women moved to the cities for those reasons.’
 b. *sababu_i za wanawake ku-hamia miji-ni kwa ____i
 reasons(10) 10-AL women INF-move.to cities-in for
 ‘reasons for women to move to the cities’

(111) a. Vah is kāraṅ se maun rahtā thā
 he this reason from silent stay.IMPV was
 ‘He stayed silent for this reason.’
 b. *PRO ____i se maun rah-ne kā kāraṅ_i
 PRO from silent stay-INF.OBL AL.M. reason(M)
 ‘the reason for staying silent’

Furthermore, the clausal complements in (108) and (109) can be replaced by noun phrases, which obviously cannot host an adjunction site for a “reason”:

- (112) Sababu y-a hali hii
 reason(9) 9-AL situation this
 ‘the reason for this situation’
 (HCS:184548488)
- (113) rogī kī maut kā kāraṇ
 patient AL.F death(F) AL.M reason(M)
 ‘the reason for the death of the patient’
 (CFILT)

While this observation might seem trivial, it nevertheless demonstrates that the relation between a head noun like *reason* and its attribute does not need to be specified by any sort of coreference.

I therefore suggest to treat these so-called adjunct gap relatives on a par with complement clauses, that is without a hypothetical null element in the attributive clause coreferential with the head noun. This analysis is further supported by the fact that in terms of their distribution among the three languages under consideration, they pattern with complement clauses rather than with object coreference clauses.

Thus, whereas Hindi adjunct gap relatives are at least as frequent as complement clauses, I found only one case of a possible object coreference clause and this was lexicalized and ambiguous.

In fact, I do not have a definite explanation for why object coreference clauses with linkers are apparently rare to non-existent in Hindi. One possible reason could be that the Hindi linker *ka* simply does not have a [Q] feature and can therefore not check the [Q*] feature on a *wh*-element or OP. This would mean that no coreference between a head noun and an argument is possible at all in Hindi linker attributes.

But whatever the true reason might be, the fact that adjunct gap relatives are so much more common than object coreference clauses indicates that they are structurally different. And my suggestion is that the difference is that no empty operator is present in adjunct gap relatives to move to Spec, CP.

Returning to the question of why adjuncts are apparently more accessible than objects in linker attributes (cf. section 7.4), the answer given here is that they are not actually relativized in the first place, that is, there is in fact no adjunct site in the attributive clause to be “accessed”. There is no syntactic relation between the head noun and an alleged “gap” in the attributive clause.

8.4.6 Non-clausal complements

It is now time to return to the non-clausal complements introduced in the language-specific sections and in section 7.2. In all three languages, NPs and Adverb phrases can be complements of linkers. Apart from that, numbers in Swahili, and postpositions and adjectives in Chinese can be AL complements as well.

In section 8.4.2, I noted that, apart from infinite T, certain other categories might bear an interpretable feature [infinite] by default and are therefore potential complements to [-finite] linkers. Whether or not a given category bears an [infinite] feature depends on the language. It seems however that NPs are the most likely to bear such a feature. For other items, the presence or absence of this feature might be due to their diachronic origin.

Table 4. The distribution of the feature [infinite]. The “+” symbol indicates that the feature is present on the respective category.

	NP	Adv	PP	NUM
Chinese	+	+	+	-
Swahili	+	+	-	+
Hindi	+	+	-	-

Thus, adverbs in all three languages have mostly developed from nouns. Postpositions in Chinese usually are of nominal origin as well, and they can be linker complements, in contrast to Swahili prepositions, which have developed from verbs.

If my previous assumptions are correct, the distribution of the feature [infinite] across categories and languages could be described as in table 4.¹²

8.5 Conclusion

For each language, I have shown how the properties of their ALs account for the nature of their clausal attributes. I have argued that there are in fact three homophonous linkers in Mandarin Chinese which are used for three different types of clausal attributes:

1. *de* [+finite] takes finite clauses as complements, which can trivially have a subject as well as an empty operator in subject or object position coreferential with the head noun.
2. *de* [-finite, +case] takes infinite clauses as complements, where the overt subject or the empty operator are licensed by the case feature on *de*. It also takes noun phrases as complements to produce genitive attributes.
3. *de* [-finite, -case] takes infinite clauses without overt subject and without subject coreference to the head noun. Instead, the subject position is occupied by PRO and the head noun might be coreferent with an object of the verb. It also takes categories which are presumably [-finite] and do not need case such as adpositional phrases or adverbs.

For Hindi, I assumed that there is an unvalued case feature on infinite T. I then argued that Hindi has a linker of type [-finite, +case] and that the case feature licenses T. The combination of these two conditions accounts for the fact that Hindi attributive clauses can have no overt subject and no subject coreference to the head noun, but must have PRO subjects and should allow for object coreference. In addition, it might have a homophonous linker of type [-finite, -case] to take care of adverbs in attributive function. The fact that object coreference seems hardly possible might be due to the lack of a [Q] feature on the linker to check the strong [Q*] on OP.

In the case of Swahili, I concluded that there must be two homophonous linkers, one of type [-finite, +case] and one of type [-finite, -case]. The first linker allows for attributive clauses with overt subject and subject coreference, the second one is used for clauses with PRO subjects and allows for object coreference.

¹²In fact, I implicitly made the additional assumption that categories other than T cannot have a feature [finite]. Otherwise, the data from Chinese, which has both a [-finite] and a [+finite] linker would be ambiguous in this respect.

I further argued that adjunct gap relatives are in fact gapless and that the head noun is not really coreferential with a covert adjunct to the attribute.

Finally, I suggested that the difference between the languages regarding non-clausal AL complements could be accounted for in terms of the feature [indefinite] which I assumed is present on NPs and certain other categories depending on the language.

This analysis accounts for most of the facts summarized in 7.4.

The reason why there is a greater variety of non-predicative linker complements is simply that a number of different categories, such as nouns, adverbs, Chinese non-intersective adjectives and adpositions, and Swahili numbers carry a feature [infinite] and do at the same time not establish a predicational relation to the head noun. Even for finite and infinite T where coreference between the subject or object and the head noun is possible, such coreference is not obligatory.

Adjunct gap relatives together with complement clauses are among the most frequent linker attributes because they do in fact not involve any real relativization. This means there is no syntactic mechanism that establishes coreference between the head noun and any position in the attributive clause.

As for the accessibility of subjects, we have seen that subject coreference is only possible if an empty operator OP is case-licensed. This can happen in two ways: Either the attributive TP is finite and can thus assign case, or the linker itself carries a case feature and can check it with OP. So, theoretically two types of linkers, that is [+finite] linkers and [-finite, +case] linkers, should be able to take subject coreference clauses as complements.

By contrast, object coreference is only possible with a [-finite, -case] linker. This means that, in theory, subjects should be more easily accessible than objects. One important reason why this is not properly reflected in the data is that Hindi infinite T has an unvalued case feature. As a consequence, a [-finite, +case] linker in Hindi does not license a subject OP. Furthermore, in Hindi a [+finite, -case] linker might be involved in the complex internally headed relatives, but even if there is, it is a null element, hence not homophonous with the linkers under investigation in this thesis.

So a general prediction would be that linker attributes without any coreference to the head noun, such as complement clauses and adjunct gap relatives, are the most frequent and that subject coreference is more frequent than object coreference. This is much more in line with the noun phrase accessibility hierarchy. I do not have an explanation for the fact that, in Swahili, indirect, applicative objects are so much more often coreferential with the head noun than direct objects.

At this point, I should comment on the initial definition of ALs and modify it. One of the criteria I gave at the beginning was that an AL takes complements from various categories. We can now see that this is not necessarily true. According to the theory developed here, any morpheme which syntactically derives attributes from one or more categories is a linker. If it has the properties [+finite, -case], it will only take finite TPs as complements. If it is of type [-finite, +case], it might take both infinite TPs with overt or *pro* subjects or subject coreference and noun phrases as complements. A [-finite, -case] linker might take infinite TPs with PRO subjects and other items such as adjectives or adverbs as complements. Of course, closely related linkers might always be homophonous.

9 Further perspectives

9.1 A typology of C heads

In section 8.2, I suggested that attributive linkers, together with complementizers, belong to the superordinate category C. I will now illustrate the relation between the different types of C heads, summarize which C heads can be found in which of the languages discussed here, and compare them with corresponding items in English.

First of all, the relevant difference between ALs and complementizers I wish to make here is whether they modify a noun phrase or introduce an argument clause. Thus, I suggest that the *that* in (114-a) and (114-b) are ALs, whereas the *that* in (114-c) is a complementizer.

- (114) a. I don't like [_{NP} the fact [_{CP} *that*_{AL} she's always late]].
b. My parents liked [_{NP} the book [_{CP} *that*_{AL} I gave them]].
c. I guess [_{CP} *that*_{COMP} she'll arrive after dinner].

Within the framework of generative syntax, there is—at least to my knowledge—no mechanism to account for the fact that certain categories can serve as attributes to a noun while others cannot. The usual process of selection by features fails, because an attribute is generally optional, so NPs cannot be said to “select” certain categories as attributes. For example, it is not obvious why postpositional phrases in Hindi and Chinese are not permitted as attributes—in contrast to English, where *on the table* is a perfectly acceptable attribute to *book*.

It is therefore unclear whether all the three instantiations of *that* in (114) are actually identical. It is at least conceivable that one and the same lexical item could do the work both of an AL and a complementizer. In Mandarin Chinese, Hindi and Swahili, however, these functions are strictly separated and carried out by different items.

Given the two binary properties [\pm finite] and [\pm case], there are four logically possible combinations. Of these, I observed only three: [+finite, -case], [-finite, +case] and [-finite, -case]. While the fourth combination [+finite, +case] cannot be entirely ruled out, it seems unlikely that such a C head exist since, in a finite TP, it is hardly conceivable how to delete the case feature on the C head. For the time being, I will therefore maintain that there is only one [+finite] type of linker, which is always also of type [-case].

Under the assumption that each type of C head can in principle both take the function of a complementizer and of an AL, we should get six possible variants altogether. Four of them have already been discussed: the three AL types have been given detailed accounts in the preceding sections and the English [+finite] complementizer has been introduced in example (114). It has also already been mentioned that in Swahili and Hindi, there are overt counterparts to English *that*, with the difference that they can exclusively be used as complementizers, never as linkers. In Mandarin Chinese, argument clauses are introduced by a null complementizer.

As for [-finite, +case] complementizers, while they are not attested in either of the three languages under consideration, there is one strong candidate in English (cf. Adger, 2003: 306): *For* in cases like the following has all the properties one

would expect from this type of complementizer:

(115) Her parents planned for her to become a doctor.

Accordingly, the null complementizer in example (116) can be analysed as a [-finite, -case] complementizer:

(116) She planned to become an artist.

This type is also attested in Swahili and Chinese, but not in Hindi. In Hindi, typical examples involving this type of complementizer like *planning to do sth.* generally translate as verb-object constructions as in *making a plan to do sth.* so that the [to do sth.] are no longer complements of a verb, but attributes to a noun, in this case *plan*.

In comparing the observations from Swahili, Hindi and Chinese with data from English, we have already seen that it has a [+finite] linker and complementizer, both being pronounced *that*, as well as a [-finite, +case] complementizer *for* and a null [-finite, -finite] complementizer. What remains to be seen, is whether it also has a [-finite, +case] linker and a [-finite, -case] linker. Although these questions cannot be treated here in any detail, I suggest that a candidate for both remaining linkers might be *of*.

The first two phrases in (117) illustrate how *of* functions as a [-finite, +case] linker, while c) shows it as a [-finite, -case] linker:

- (117) a. the house of my parents
b. the idea of him getting married
c. his plans of getting married

In all three cases, *of* introduces an infinite attribute to a head noun. In both a) and b) it additionally licenses a DP. A further piece of evidence that this analysis is on the right track is that *of* differs significantly from other English prepositions in that it cannot modify verb phrases—at least as long as one takes the orthographic difference between *of* and *off* seriously.

Table 5 summarizes the six different C head types and specifies their applications in each language.

Table 5. Six different types of C heads. Comp: complementizer; AL: Attributive linker;

	[+finite, -case]			[-finite, +case]			[-finite, -case]	
	Comp	AL	Comp	AL	Comp		AL	
Chinese	\emptyset : finite argument clauses	<i>de</i> : finite attributive clauses	—	<i>de</i> : infinite attributive clauses with overt subject or subject coreference; Genitives	\emptyset : infinite argument clauses with PRO subject			<i>de</i> : infinite attributive clauses with PRO subject and potential object coreference; adjectives; attributive adverbs; attributive adpositional phrases
Swahili	<i>kwamba</i> , <i>kuwa</i> , \emptyset : finite argument clauses	<i>amba-</i> : full finite relative clauses	—	<i>-a</i> : infinite attributive clauses with overt subject or subject coreference; Genitives	\emptyset : infinite argument clauses with PRO subject			<i>-a</i> : infinite attributive clauses with PRO subject and potential object coreference; ordinal numbers; attributive adverbs
Hindi	<i>ki</i> : finite argument clauses	\emptyset ?	—	<i>ka</i> : infinite attributive clauses with PRO subject; Genitives	—			<i>ka</i> : attributive adverbs
English	<i>that</i> : finite argument clauses	<i>that</i> , \emptyset : finite attributive clauses	<i>for</i> : infinite argument clauses with overt subject	<i>of</i> : infinite attributive clauses with overt subject; <i>of</i> -genitives	\emptyset : infinite argument clauses with PRO subject			<i>of</i> : infinite attributive clauses with PRO subject

What can be seen from the table is that, among other things, if two or more (non-empty) C heads are homophonous, it is always possible to form pairs of homophonous C heads where the two items differ only in one of three properties. For example, there are three C heads *de* in Mandarin Chinese with the respective properties [AL, +finite, -case], [AL, -finite, -case] and [AL, -finite, +case]. In English, there are two homophonous C heads *de*, one with the properties [Comp, +finite, -case], the other with the properties [AL, +finite, -case].

This is of course what one would expect. It would be a further prediction for investigations into other languages that homophonous C heads only differ by one of these three properties.

9.2 The distribution of linkers across languages

This final section now is meant primarily as a rebuttal to the statement by Mark C. Baker cited at the very beginning of this thesis, which basically says that linkers are too marginal a phenomenon to play a greater role in the theory of language universals.

I think the fact alone that three languages as remote as Hindi, Swahili and Chinese each possess these strikingly similar morphemes shows that we might be dealing with something rather fundamental. In the last section, it could be seen that the insights won by the analysis of these linkers translate easily to a language like English and might shed new light on even this so widely studied language.

But there is more. Morphemes whose sole apparent function is the introduction of attributes to a noun phrase abound in a great variety of languages. Den Dikken & Singhapreecha (2004:48) cite a list of 20 largely unrelated languages, among them Lahu and Burmese, Amharic, Persian and Kurdish with the *ezafe* morpheme, Arabic and Yucatec Mayan. The prevalence of linkers is well known among Austronesian languages as already noticed by Foley (1980). And I could further add to the list languages like Tok Pisin, with the morpheme *bilong* as illustrated in (118), which looks very much like a [-finite, +case] linker, allowing for noun complements and infinite TPs with subject coreference; and Basque with the clitic *ko*, exemplified in (119). I suggestively glossed the respective items of interest as AL.

- (118) a. ai bilong sospen
 lid AL pot
 ‘the lid of the pot’
 b. stik bilong wasim saksak
 stick AL wash sago
 ‘a stick for washing sago’
 (Woolford, 1979: 64)
- (119) a. gatzelaniatik ingelesara=ko itzulpenak
 Spanish.from English.to=AL translation
 ‘a translation from Spanish to English’
 b. atzoko amak ikusita=ko sagun
 yesterday mother.ERG seen=AL mouse
 ‘the mouse that mother saw yesterday’
 (Didier Bottineau, p. c.)

Because attributive linker are not yet an established part of the universal inventory of categories, they have usually been overlooked in descriptions of individual languages. They might either be classified as something else—as we have seen in the case of Hindi *ka*—or treated as a language specific phenomenon without an attempt to find a cross-linguistically valid label, as has happened in Swahili.

Therefore, it will often take an active investigation into specific languages to see whether there are ALs or not. I hope this thesis shows that it might be worth the effort.

10 Conclusion

In this thesis, I have given a detailed description of the properties and behaviour of attributive linkers in Mandarin Chinese, Hindi and Swahili. I have discussed both language specific and cross-linguistic approaches to these morphemes and shown why they are inadequate. Specifically, I could show that the fundamental assumption underlying all cross-linguistic accounts that linkers are indicative of a predicational relation between the head noun and its attribute are directly contradicted by my findings.

Instead, I proposed a classification of ALs as C heads and suggested that they might be further analysed as being of type [+finite], [-finite, +case] or [-finite, -case]. I demonstrated that most of the morpho-syntactic properties of ALs can be accounted for by these classifications and how the differences between the languages observed follow from them.

Finally, I discussed the relations between complementizers and ALs and showed how they could be integrated into one complete system of C heads. And I showed that linkers seem to be far too prevalent a phenomenon to be ignored in a theory of attributes.

Still, not all questions have been answered conclusively. For one thing, it is up to further research whether the near to total absence of object coreference in Hindi clausal linker attributes should be accounted for by the absence of a [Q] feature on the linker.

Most fundamentally, however, I perceive it as a serious deficit of current syntactic theories that there is no natural way to account for the fact that, depending on the language, certain items can modify others as attributes without any further ado, while others need to be dominated by a CP for the same purpose. While the approach I suggest here accounts for the kinds of complements an attributive linker can take, it seems not at all clear what restricts the ability of certain categories to adjoin to a noun and modify it directly.

Helping to clarify these issues might become one of the most fundamental contributions of the investigation of attributes with and without linkers.

References

Abney, S. 1987. *The English Noun Phrase in its Sentential Aspect*. Ph.D. thesis, dissertation, MIT.

- Adger, David. 2003. *Core Syntax. A Minimalist Approach*. Oxford: Oxford University Press.
- Alexiadou, Artemis, Haegeman, Liliane, & Stavrou, Melita. 2007. *Noun Phrase in the Generative Perspective*. Berlin [a. o]: Mouton de Gruyter.
- Ashton, E. O. 1956. *Swahili Grammar (Including Intonation)*. 2 edn. London [a.o.]: Longmans, Green & Co.
- Baker, Mark C. 2003. *Lexical Categories. Verbs Nouns and Adjectives*. Cambridge: Cambridge University Press.
- Bhat, D. N. S., & Pustet, Regina. 2000. Adjective. *Pages 757–769 of: Booi, Geert (ed), Morphology*. Berlin, New York: de Gruyter.
- Broekhuis, Hans, Corver, Norbert, Huybregts, Riny, Kleinhenz, Ursula, & Koster, Jan (eds). 2005. *Organizing Grammar. Linguistic Studies in Honor of Henk van Riemsdijk*. In: *Broekhuis et al. (2005)*.
- Cha, Jong-Yul. 1998. Relative Clause or Noun Complement Clause: Some Diagnoses. In: *11th meeting of the international circle of korean linguistics (ickl)*. Online available at: jycha.heyum.net/doc/ICKL11-Hawaii-1998.pdf.
- Cheng, Lisa Lai-Shen, & Sybesma, Rint. 2005. A Chinese relative. In: *Broekhuis et al. (2005)*.
- Chomsky, Noam. 1995a. A Minimalist Program for Linguistic Theory. In: *Chomsky (1995c)*.
- Chomsky, Noam. 1995b. Bare Phrase Structure. In: *Webelhuth, Gert (ed), Government and binding theory and the minimalist program*. Oxford: Blackwell.
- Chomsky, Noam. 1995c. *The Minimalist Program*. Cambridge, Massachusetts: MIT Press.
- Chomsky, Noam. 2000. Minimalist Inquiries. In: *Martin, Roger, Michaels, David, & Uriagereka, Juan (eds), Step by step. essays on minimalist syntax in honor of howard lasnik*. Cambridge, Massachusetts [a.o.]: MIT Press.
- Cinque, Guglielmo. 2002. *Functional Structure in DP and IP. The Cartography of Syntactic Structures*. Oxford: Oxford University Press.
- Davison, Alice. 2000. Lexical anaphors and pronouns in Hindi/Urdu. *Pages 397–470 of: Lust, Barbara C., Wali, Kashi, Gair, James W., & Subbarao, K. V. (eds), Lexical Anaphors and Pronouns in Selected South Asian Languages. A Principled Typology*. Berlin: Mouton de Gruyter.
- den Dikken, Marcel, & Singhapreecha, Pornsiri. 2004. Complex Noun Phrases and Linkers. *Syntax*, 7(1), 1–54.
- Dixon, Robert M. W. 2004. *Adjective Classes. A crosslinguistic typology*. Oxford: Oxford University Press.

- Duanmu, San. 1998. Wordhood in Chinese. *Pages 135–196 of: Packard, J.L. (ed), New approaches to chinese word formation*. Berlin [a.o.]: Mouton de Gruyter.
- Foley, William A. 1980. Towards a Universal Theory of the Noun Phrase. *Studies in language*, **4**, 177–199.
- Geisler, Christer. 1995. *Relative Infinitives in English*. Ph.D. thesis, Uppsala University.
- Gil, David. 2005. Genitives, Adjectives, and Relative Clauses. *In: Dryer, Matthew S., Haspelmath, Martin, Gil, David, & Comrie, Bernard (eds), The world atlas of language structures*. Oxford: Oxford University Press.
- Haegeman, Liliane. 1994. *Government and Binding Theory*. 2 edn. Oxford: Blackwell.
- Hawkinson, A. K. 1976. Nominal Possession in Swahili. *Kiswahili*, **46**(1), 26–48.
- Hengeveld, Kees. 2005. Parts of Speech. *Pages 79–106 of: Crucial Readings in Functional Grammar*. Walter de Gruyter.
- Huang, C.T.J. 1982. *Logical relations in Chinese and the theory of grammar*. Ph.D. thesis, Massachusetts Institute of Technology.
- Kachru, Y. 2006. *Hindi*. Amsterdam, Philadelphia: John Benjamins.
- Kayne, Richard. 1994. *The Antisymmetry of Syntax*. Cambridge: MIT Press.
- Keenan, E., & Comrie, B. 1977. Noun phrase accessibility and universal grammar. *Linguistic inquiry*, **8**(1), 63–99.
- Kellogg, Samuel Henry. 1893. *A grammar of the Hindi language*. London: K. Paul, Trench, Trübner & C.
- Kwon, Joung-Mi. 1995. *Possession in Swahili*. Ph.D. thesis, Institut für Afrikanistik, Universität zu Köln.
- Li, Charles N., & Thompson, Sandra A. 1981. *Mandarin Chinese. A functional reference grammar*. Berkeley [a.o.]: University of California Press.
- Li, Ne, An, Shadi, & Zhang, Baijiang. 1998. *Cong huayu jiaodu lunzheng yuqici "de". "discussing the modal particle 'de' from a discourse perspective"*. Zhongguo Yuwen.
- Loogman, Alfons. 1965. *Swahili grammar and syntax*. Pittsburgh [a.o.]: Duquesne University Press.
- Lyons, Christopher. 1999. *Definiteness*. Cambridge: Cambridge University Press.
- McCawley, James D. 1992. Justifying Part-of-Speech Assignments in Mandarin Chinese. *Journal of Chinese Linguistics*, **20**(2), 211–245.
- Mjachina, Ekaterina Nikolaevna. 1981. *The Swahili language: a descriptive grammar*. London [a.o.]: Routledge & Paul. Original title: Jazyk suahili.

- Mohanan, Tara. 1995. Wordhood and Lexicality: Noun Incorporation in Hindi. *Natural language and linguistic theory*, **13**, 75–134.
- Moser, Rupert R. 1974. *Swahili : Sprachgeographie u. -geschichte, grammatikal. Abriss, Chrestomathie*. Bern: Institut für Sprachwissenschaft.
- Ngonyani, Deo. 1995. *Towards a Typology of Applicatives in Bantu*. Paper presented at the Annual Conference on African Linguistics (26th, Los Angeles, CA, March 24-26).
- Paul, Waltraud. 2005. Adjectival modification in Mandarin Chinese and related issues. *Linguistics*, **43**(4), 757–793.
- Rebuschi, Georges. 2005. Generalizing the antisymmetric analysis of coordination to nominal modification. *Lingua*, **115**, 445–459.
- Rubin, Edward J. 2002. *The structure of modifiers*. Draft version (June 2002) of a book to appear with Oxford University Press. First five chapters available at: www.hum.utah.edu/linguistics/Faculty/Rubin.
- Simpson, Andrew. 2001. Definiteness Agreement and the Chinese DP. *Language and linguistics*, **2**(1), 125–156.
- Sio, Joanna Ut-seong. 2006. *Modification and reference in the Chinese nominal*. Ph.D. thesis, Netherlands Graduate School of Linguistics.
- Sproat, Richard, & Shih, Chilin. 1991. The Cross-Linguistic Distribution of Adjective Ordering Restrictions. In: Georgopoulos, Carol, & Ishihara, Roberta (eds), *Interdisciplinary Approaches to Language. Essays in Honor of S.-Y. Kuroda*. Dordrecht: Kluwer Academic Publishers.
- Struckmeier, Volker, & Kremers, Joost. *Attribution: Towards a typology of modifiers in the nominal domain*. submitted.
- Verma, Manindra K. 1971. *The Structure of the Noun Phrase in English and Hindi*. Delhi: Motilal Banarsidass.
- Woolford, Ellen B. 1979. *Aspects of Tok Pisin Grammar*. Canberra: Research School of Pacific Studies.
- Wu, Xiu-Zhi Zoe. 2004. *Grammaticalization and Language Change in Chinese – A formal view*. London, New York: RoutledgeCurzon.
- Xu, Zheng, & Duanmu, San. 2007. *Chinese [A N] and [N N] Revisited*. Talk at the Department of Chinese Studies, University of Singapore, 31.08.2007.
- Yuan, Yu Lin. 2003. Cong jiaodian lilun kan juwei "de" de jufa yuyi gong neng <looking at the semantic function of sentence final "de" using focus theory>. *Zhongguo yuwen*, **292**, 3–16.

Kurzzusammenfassung auf Deutsch

Hindi, Swahili und Mandarin Chinesisch sind drei typologisch und genetisch unverwandte Sprachen, von denen jede ein monosyllabisches, ungebundenes Morphem zur Bildung von Attributen aus einer großen Bandbreite an Kategorien aufweist.

Das erste Desiderat meiner Arbeit ist, eine detaillierte Beschreibung der morpho-syntaktischen Eigenschaften dieser Morpheme für jede der drei Sprachen zu geben. Besonders im Falle von Swahili und Hindi gehen diese Beschreibungen deutlich über bisherige Darstellungen hinaus und basieren zu einem großen Teil auf meinen eigenen Datenerhebungen.

Mein zweites wesentliches Ziel besteht darin, eine tragfähige Analyse der attributiven Linker-Morpheme in allen drei Sprachen vorzuschlagen und sie in ein sprachübergreifendes System funktionaler Kategorien einzuordnen.

Ich werde dazu eine Theorie entwerfen, nach es sich bei den fraglichen Morphemen um Köpfe der Kategorie C handelt und argumentieren, dass sie sich von klassischen Komplementierern dadurch unterscheiden, dass sie ausschließlich als Attribute fungieren, und nicht etwa Komplement-Sätzen als Kopf dienen können. Zusätzlich werde ich zeigen, dass die Linker sich weiter danach unterscheiden lassen, ob sie finite oder infinite Komplemente nehmen und ob sie Kasus zuweisen oder nicht.

Die empirische Basis meiner Forschung besteht in vier Korpora ebenso wie den Urteilen von Muttersprachlern.

Erklärung

Ich versichere, dass ich die vorliegende Schrift verfasst und die mit ihr unmittelbar verbundenen Arbeiten selbst durchgeführt habe. Die in der Schrift verwendete Literatur sowie das Ausmaß der mir im gesamten Arbeitsvorgang gewährten Unterstützung sind ausnahmslos angegeben. Die Schrift ist noch keiner anderen Prüfungsbehörde vorgelegt worden.

Ort, Datum

Kilu von Prince