

Reduplication and doubling contrasted: implications for the structure of the DP and the AP

Artemis Alexiadou¹
artemis@ifla.uni-stuttgart.de
Universität Stuttgart (Germany)

ABSTRACT. This paper examines adjectival reduplication in Chinese which is contrasted with determiner doubling in Germanic. It shows that two superficially different phenomena in two genetically unrelated languages are sensitive to similar properties. Both environments support an analysis of adjectives in terms of restrictive relative clauses and strengthen the case for decomposing the adjective.

KEY-WORDS. reduplication, determiner doubling, boundedness, degree, scales

1 – Introduction

Reduplication phenomena are quite common across languages, see e.g. Moravcsik's (1978) overview. Reduplication involves the repetition of phonological material for grammatical or semantic purposes. We can distinguish two main types of reduplication, namely full and partial reduplication. Full reduplication is illustrated below with some examples of lexical reduplication, adjectival (1) and verbal (2) reduplication respectively. In this case, we have repetition of the entire word:

- | | | |
|--------|-----------------|-------------------------|
| (1) a. | kap-kara | <i>Turkish</i> |
| | pitch black | |
| b. | âbi-e-âbi | <i>Persian</i> |
| | completely blue | (Ghaniabadi & al. 2006) |

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- c. Ta gao gao **de** *Mandarin Chinese*
 he tall tall de
 He is very tall (Yang 2007)

It is generally agreed upon that reduplication of the type in (1) has an intensifying function. In general, intensification and iteration are said to be common characteristics of reduplication.

The examples in (2) show that intensification and iteration are not the only functions of lexical reduplication. While reduplication in e.g. Tzeltal signals iteration, in Sranan it is a word formation mechanism.

- (2) a. pikpik vs. pik *Tzeltal*
 touch it lightly repeatedly touch lightly
(Moravcsik 1978)
 b. fumfum vs. fumm *Sranan*
 beating beat

Partial reduplication involves repetition of only parts of the word, and it may come in a variety of forms (initial, final, and infixal). (3) is an example of initial reduplication, where the CV affix is repeated. This pattern is used to signal plurality. I will not discuss partial reduplication here.

- (3) Toó vs. totóo CV *Panganisan*
 man people

In the literature, the nature and the analysis of the phenomenon of reduplication have been controversially discussed. The few examples presented above suggest that reduplication is both a mechanism to derive new words as well as a device to introduce distribution, plurality, and intensity (as already pointed out in Sapir 1921). But how exactly does this come about? Although this is an intriguing question, I will have nothing to say about it.

Furthermore, there is a considerable amount of disagreement as to the component of grammar responsible for reduplication. For instance, it has been suggested that reduplication is phonological copying (see

e.g. Marantz 1982), or morphological doubling (see e.g. Inkelas & Zol 2005, who argue that reduplication takes place under semantic identity). A more recent analysis considers reduplication to be a case of syntactic doubling (i.e. a case of agreement, see e.g. Aboh 2007). While I will not directly address previous approaches, I will show that an analysis in terms of phonological copying, morphological doubling and agreement cannot be on the right track, as reduplication has a semantic import. Because of that, I will argue that reduplication has to take place within core syntax.

A third issue concerns the representation of the categories associated with reduplication. We saw that reduplication is related to plurality, and iteration. Current understanding of the representation of such categories suggests that these belong to the functional vocabulary of languages. Thus, the following question arises: what does reduplication tell us about the internal structure of the phrases we find it in within a language and across languages? I will address this question in some detail.

This paper pursues a different avenue to deal with the phenomenon of reduplication. Specifically, I will focus on examples of the type (1c), which involve adjectival reduplication, which I will compare to a particular example of syntactic doubling, namely determiner doubling in Germanic. Doubling involves a double occurrence of an element having superficially the same function, and is illustrated here with the so called *determiner doubling* construction:

- | | |
|---|-----------------|
| (4) Ein recht ein warmes Bier | <i>Bavarian</i> |
| a quite a warm beer | (Plank 2003) |

This phenomenon has also been controversially discussed. According to one view, (4) is an instantiation of agreement. According to a second view, which I will follow here, the extra determiner is a marker of special grammatical functions, e.g. quantification, specificity, suggesting an elaborate functional structure of phrases, i.e. in terms of a Split DP that involves two DP layers as in (5), see Kallulli & Rothmayr (2008) for details.

- (5) [_{DP} ein [_{DP} ein]]

In this paper, I will contrast adjectival reduplication in Chinese to determiner doubling in Germanic. While at first sight these two phenomena seem unrelated, a more detailed investigation shows that they have several properties in common. First, they are both instantiated in the context of modification. But this is not the only thing they have in common. Both constructions seem to be sensitive to the gradability and predicativity of the adjectives involved, i.e. they are only possible with gradable and predicative adjectives. In addition, they seem to have an intensifying function as to the adjectives they apply to. Reduplication and doubling both shift the interpretation of the adjective. Because of this, an analysis in terms of agreement and or phonological copying will not be able to offer a satisfactory explanation. I will argue that the first property is best accounted for in terms of de-composing the adjective, while the latter has its source in a relative clause input for the adjectives.

As is well known, gradability presupposes the existence of a scale, and can be seen as related to \pm boundedness. Clearly, \pm boundedness is a familiar category from the verbal and nominal domain. As Ramchand (to appear) argued in detail, we find a similar partition in the area of adjectives. I will build on her ideas for the internal structure of adjectives. The two constructions will be argued to instantiate two different ways to shift the \pm boundedness of the predicates involved.

The paper is structured as follows: in section 2, I will describe the properties of the phenomena at hand. In section 3, I turn to a discussion of degrees and scales and offer a syntactic analysis for reduplication and doubling. In section 4, I discuss some similarities and some differences between Chinese and English, and in section 5 I conclude my discussion.

2 – Reduplication and doubling contrasted

2.1 – Adjectival reduplication

A first point to be clarified here is that adjectival reduplication (AR) of the type to be investigated is a different phenomenon from what is called contrastive reduplication. Contrastive focus reduplication (CR) is also found in English/Romance/Slavic etc, and is illustrated in (6):

- (6)... you'll have to wear an off-white, what we call a hussy white.
So which will it be, WHITE-white
(Ghaniabadi & al. 2006)

As Ghaniabadi & al. point out, CR can target almost any lexical category and not just adjectives. Moreover, CR differs from AR in that it identifies the prototypical meaning of the lexical category it targets. On the other hand, AR of the type seen in e.g. Persian and Mandarin Chinese is used to intensify the meaning of an adjective, see Sybesma (1999), Paul (2008), Yang (2007) among others:

- (7) Zhengqi = neat
zhengzhengqiqi = very neat

What is, however, of importance is that there is a number of restrictions on reduplication. These are summarized below and the basis of the results of the aforementioned authors. First, AR is characterized by the obligatory presence of the particle *de*, (1c). Note here that a similar restriction is found in Persian where the *ezafe* morpheme appears obligatorily:

- (8) a. *Ta gao gao
he tall tall
b. âbi-e-âbi = completely black

In both languages *e/de* are found in modification structures and not in compound structures, see e.g. Larson (in press) for detailed discussion.

Second, the reduplicated adjectives cannot occur in the comparative:

- (9) Ta de yifu bi ni-de
3sg-sub clothes compared.to 2sg.sub
géng-bái/*báibáode
even white/white white

Third, the reduplicated adjectives are incompatible with certain degree words such as *very*:

- (10) Ta feicháng pang/*féicháng pángpángde
3sg-sub very fat/ very fat fat

However, other degree words such as *zhen*, *name* (so, such) are acceptable:

- (11) Ta-de kuabse weusgebne bane tonghong-
tonghongde
3sg-sub complexin why that way scarlet
Why is his face so red?

Forth, the reduplicated adjectives cannot be negated by *bú*:

- (12) Ta bu páng/*bu pangpangde
3sg neg fat/neg fat fat de

Fifth, the reduplicated adjectives are unacceptable in resultative compounds:

- (13) a. Ta ba zhuozi ca ganjing le
he BA table wipe clean part
b. * ta ba zhuozi ca ganjjiningjing le
he BA table wipe clean clean part

Finally, not all adjectives can reduplicate, e.g. absolute/non-gradable adjectives never reduplicate (Paris 1979), cited in Paul (2008):

- (14) *fangfang
square-square

Two questions arise from this distribution:

1. How can we make sense of the intensification function of reduplication and especially the restrictions on the type of adjectives involved?

2. How can we make sense of the role of *de*?

Related to these two questions is the observation, credited to Zhu (1956), that adjectives in Chinese can appear in predicative position only if they are contrasted, reduplicated or preceded by the degree modifier. This is clearly not the case in English:

(15) This apple is red

The cross-linguistic question then is why Chinese requires this extra marking of predicativity, while languages such as English do not.

2.2 Determiner doubling

Interestingly, determiner doubling has also been argued to function as an intensification or emphatic mechanism:

(16) A so a große Bua *Bavarian German*
a so/such a big boy

(Kallulli & Rothmayr 2008)

(17) At present, however, many people are absolutely riveted by what is happening, or could happen, in this country at **a such a** crucial moment in world history.

(Wood 2002)

At first sight, one could argue that the second determiner is simply a marker of agreement. Lindauer (1991), however, shows that in the doubling construction the adverb *ganz* has scope over the whole nominal group. This is not the case in (18a), where the scope is limited to the adjective, and neither in (18b), where *ganz* scopes over the simple DP. This raises questions as to the treatment of the second determiner as an inflectional element:

- (18) a. en ganz guete Wi
a totally good wine
b. ganz en guete Wi
totally a good wine

- c. en ganz en guete Wi *intensifying*
 a totally a good wine
 ,an exceptionally good wine'

Further support for not treating the second article as an inflectional morpheme comes from the observation that it does not need to carry inflection (Lindauer 1991):

- (19) mit einer so ein roten Brühe *Nürnberg dialect*
 with one-Dat such a red broth

Determiner doubling is subject to certain restrictions, which are rather similar to those of Chinese AR. Specifically, doubling is possible only with specific degree adverbs/quantificational elements, see Lindauer (1991), Kallulli & Rothmayr (2008):

- (20) ✓ genau 'exactly', denkbar 'imaginable', viel 'much',
 so 'such', ganz totally', recht 'quite', noch 'still',
 * enorm 'enormously', irrsinnig 'insanely',
 wirklich 'really', gnueg 'enough', sehr 'very'

(20) raises the question of the type of degree modifiers allowed. Second, the doubling pattern occurs only with gradable adjectives.

- (21) a. *ein so ein ehemaliger Präsident
 a such a former president
 b. *eine so eine italienische Invasion
 a such an Italian invasion
 c. *ein so ein hölzerner Tisch
 a such a wooden table

Turning to the restrictions on degree modifiers, Kallulli & Rothmayr (2008) have argued in detail that doubling is possible only with degree quantifiers and not with degree heads. Lindauer's list suggests that high degree adverbs in Doetjes's (1997) terms are out. A different

classification is offered in Paradis (2001), who distinguishes between scalar degree modifiers (*very, terribly, fairly*) and totality modifiers (*completely, absolutely, almost*). This classification suggests that scalar degree modifiers are out.

To conclude, the discussion in these two sections suggests that in both languages the constructions are somehow sensitive to gradation, as reduplication/doubling is possible with gradable adjectives but impossible with non-gradable ones. Since in the recent literature it has been argued that gradable adjectives can be sub-divided into different sub-types, the question is whether reduplication and doubling are sensitive to a particular sub-type of gradable adjectives.

3 – Degrees and scales

3.1 – Gradable adjectives

Gradable adjectives are assumed to fall into different sub-classes, see e.g. Rotsthein & Winter (2004), Paradis (2001), Kennedy & McNally (2005) among many others. (22) is based on Winter (2006):

(22)	Relative	Total/universal	Partial/existential
	tall	clean	dirty
	short	safe	dangerous
	wide	healthy	sick
	short	tall	
	clean	dirty	

Total and partial adjectives encode a salient transition in their meaning. Degree modifiers are sensitive to the type of adjective they modify, *very* vs. *completely*. Total adjectives have a closed scale, which can be tested by modifying them with *completely*, which picks the endpoint of a scale. Open scale adjectives (partial & relative ones) don't: *completely full* vs. **competely tall*. *So* is odd with relative adjectives, but has a shifting effect on total adjectives, see Umbach & Endriss (2007). In e.g. the string *so wet / so full*, the presence of *so* triggers a shift either to a maximum degree, as in the case *wet*, or to a minimum degree as in the case of *full*.

As there are three types of gradable adjectives, are all of them licit in reduplication and doubling? The answer is yes. The phenomena I

am looking at do not seem to be sensitive to the scale type (relative vs. partial vs. total) of the adjective, they are only sensitive to its gradability. In other words, in order for an adjective to be found in these constructions, it must be gradable. What happens is that the adjective is intensified in some sense to be made precise.

Paradis (2001) argues explicitly that gradability in adjectives is associated with the category of boundedness. On this view, open scale adjectives are unbounded, while closed scale ones are bounded.

In Mandarin Chinese, reduplication has been argued to be a mechanism of introducing unboundedness, see e.g. Yang (2007). This author claims that adjectival reduplication introduces pluractionality, i.e. an unbounded interpretation of an otherwise bounded adjective. This is reminiscent of the behavior of what is called outer Aspect, following Verkyul (1993), the locus of pluractional operators, which introduces aspectual shifts and is not sensitive to the type of aktionsart involved. The progressive assigns an interpretation in (23), albeit a non-culminating one.

(23) Kim is reaching the summit

(Borer 2005: 240)

How is unboundedness represented in the syntactic structure, and is the Germanic doubling pattern similar? I turn to these questions in the next sub-sections.

3. 2 – Boundedness in the AP

The concept of \pm boundedness is a cross-categorical one. It characterizes nouns (mass vs. count), verbs (telic vs. atelic) and adjectives (\pm gradable). In the recent literature, there is a certain amount of consensus that \pm boundedness is best represented by decomposing these categories into more primitive parts. Some categories that we primarily associate as the locus of introduction of \pm boundedness are: plural (inflectional plural, nominal structure) represented in NumberP in the syntax, grammatical Aspect (outer Aspect), the locus of aspect operators, represented by AspectP in the syntax, and importantly *Aktionsart*/lexical Aspect.

For lexical Aspect in particular, it has been argued that verbal predicates can be decomposed into several layers, as in e.g. (24).

- (24) a. [EP_{originator of process} [AspectQ aspect of quantity[LD]]]
 (Borer 2005)
- b. [VoiceP [vP = event [Stative Root]]]
 (Alexiadou, Anagnostopoulou & Schäfer 2006)
- c. [InitiatorP [ProcessP [ResultP]]]
 (Ramchand 2008)

The presence of AspectQ in (24a), a stative root in (24b) and of a ResultP in (24c) gives telic predicates, the absence thereof processes.

Concerning the opposition between mass vs. count nouns, Borer (2005) recently argued that this is also reflected in the syntax. In particular, all nouns are actually mass, and it is the presence of a classifier phrase in their extended projection that introduces individuation (division in her terms) and thus gives count nouns, the absence thereof gives mass ones.

- (25) [DP[Quantity #P [Classifier [LD]]]]
 (Borer 2005)

A similar path has recently been explored for adjectives, see e.g. Ramchand (to appear), who proposes the decomposition in (26):

- (26) [ScaleP [PropertyP]]

Open scale adjectives (i.e. relative and partial adjectives such as *tall* and *dirty*) instantiate only ScaleP, while total adjectives (*clean*, *dry*) instantiate both categories. Non-gradable adjectives are just PropertyP. On this view, open scale adjectives are like activity verbs, while closed scale adjectives are like accomplishments.

This offers a representation of unboundedness for adjectives at the lexical-syntax level. However, we have seen that there are functional categories that introduce unboundedness. In the verbal domain it is AspectP, in the nominal domain it is NumberP. In the adjectival domain, it has been argued to be DegP, see e.g. Corver

(1990), Doetjes (1997) and many others. Combining Ramchand's analysis with Corver's insights we arrive at the representation in (27):

(27) $[_{\text{DegP}} \text{scale [property]}$

Degree is realized as a functional projection in the extended projection of the adjective. It hosts the comparative morpheme and elements such as *very*.

3. 3 – The syntax of AR and doubling

I take it that the phenomena we are looking at suggest an interaction between unboundedness at the lexical-syntax level and at the functional level of the type familiar from the verbal domain. I noted above that the main role of reduplication is to render a +bounded adjective to -bounded. How does this happen? The +bounded adjective realizes the ScaleP in (27). But since all adjectives contain a degree layer, this has to be realized as well. I propose that there are two ways to realize Deg, familiar from the research in verbal syntax: merge or move. Reduplication is an instance of the *Move* option, where the adjective spells-out both Deg and Scale. If this is so, this correctly predicts the incompatibility of reduplicated adjectives with resultative constructions (no endpoint specification, even with former closed class adjectives) and the ungrammaticality of certain degree words.

Can we extend the same analysis to Germanic? As in Chinese, the doubling pattern is found with gradable adjectives. As in Chinese, it is not sensitive to the scale type of the adjective.

(28) en ganz en guete Wi
a totally a good wine
'an exceptionally good wine'

But importantly, unlike in Chinese, comparative forms are possible:

(29) ein noch ein wärmers Bier
a still a warmer beer

If comparatives are in, this suggests that the doubling does not operate at the level of the Degree phrase. In the doubling pattern, and especially with the degree modifier *so*, the adjective is interpreted as shifting towards the end/beginning of the scale, i.e. reminiscent of Aktionsart shifts that induce (a-)telicity effects within the VP.

- (30) a. John walked for an hour/*in an hour
 b. John walked a mile in an hour

Our current understanding of (30) suggests a difference in the structure of the VP in the two constructions. I believe that in (29) the second determiner assumes a similar role, i.e. it forces a shift similar to that of the introduction of a path or a result phrase in examples such as (30b). In particular it is related to the (non-)projection of property.

This suggests that the determiner must be part of the AP containing *big*, and it is not a real article. In fact, Delsing (1993) and Bennis & al. (1998) have argued that this is indeed the case, i.e. the article involved in the determiner doubling construction in Germanic is not a real article. Two pieces of evidence can be provided in favor of this view. First, Delsing (1993) observes that the article found in the doubling pattern is the same article that we find in post-copular position, see (31). Unlike the real indefinite article, such articles have plural forms:

- (31) Däm e som a toka
 hey are as a-PL fools

Second, Lindauer (1991) notes that the second article does not carry inflection in Bavarian German.

While Bennis & al. (1998) took the above as evidence that the article is a predicative marker, I will take it here as evidence for the view that the article realizes a sub-part of the adjectival meaning, i.e. it is related to the property layer.

Now consider the meaning of examples such as (32). In (32), following Bale (2006), we have a restriction of the comparison class to a subset of the denotation of the noun, namely *boys*, and second we have a restriction of the primary scale. This *relative for a scale*

interpretation is associated with a relative clause structure, in the spirit of Kayne (1994), see also Cinque (to appear), cf. den Dikken (1998, 2006).

- (32) Ein so ein großer Bub
so such a big boy

Our syntactic analysis of (32) should capture the predicative restriction on the adjective, as well as the aspectual shift restriction. The predicative restriction is captured by the structure in (33): the first determiner is external to the relative clause, and the AP is in the predicative position of the relative clause, the NP is the subject of that clause:

- (33) [_{DP} ein [_{CP} [_{NP} Bub [_{DegP} so [_{AP} ein groß]]]

Movement of the DegP to Spec,CP gives the correct word order.

4 – AR and reduced relatives

It has been argued that reduplicated adjectives describe the head noun with more temporary properties, unlike simple adjectives which assign permanent properties (Huang 2006 for some discussion and references). This is reminiscent of the following contrast in English:

- (34) The **visible** stars include Aldebaran and Sirius
The stars that are generally visible include
The stars that happen to be visible now
- (35) The stars **visible** include Aldebaran and Sirius
#The stars that are generally visible include...
The stars that happen to be visible now

Bolinger (1967) has argued that temporary interpretation is associated with predicative position even in English, and Cinque (to appear) proposes that the temporary property reading is associated with a relative clause structure:

- (36) [D [CP [IP NP AP]]] (Kayne 1994, Cinque to appear)

Note that this brings us closer to understanding the obligatoriness of *de* with reduplicated adjectives. The general consensus in the literature is that *de*-modification is indirect modification, which crucially involves a relative clause structure, see Cheng (1986), Sproat & Shih (1988) and subsequent work; cf. Alexiadou & Wilder (1998), den Dikken (2006).

Reduplicated adjectives are in fact reduced relative clauses, see Aboh (2007) for extensive argumentation.

(37) [de [NP DegP]]

The final question to be addressed is why adjectives need to be marked in a special way to appear in predicative position in Chinese. Liu (2005) argued that the difference between English and Chinese relates to the presence vs. absence of grammatical tense. Tense provides an anchor for the comparison to be made. As this is not possible in Chinese, which lacks Tense, we have obligatory spell-out/realization of the implicit degree in adjectives (Kennedy 1999), which can remain null in English.

5 – Conclusions

In this paper, I showed that two superficially different phenomena in two genetically unrelated languages seem to be sensitive to similar (\pm boundedness) but perhaps not identical properties. Both environments support an analysis of adjectives in terms of restrictive relative clauses and make a clear case for decomposing the adjective.

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