The morphosyntax of Chinese adjectival reduplication: The role of RED*

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1.   Introduction

It goes without saying that the structural position of some abstract morpheme can only be established through indirect means. In one approach to reduplication, it is the insertion of a special kind of Vocabulary Item into the syntax (which we'll refer to as 'RED') which eventually yields reduplicated forms. That approach has been widely adopted in some recent studies on adjectival reduplication in Mandarin Chinese (see Zhang 2015; Lee-Kim 2016, among others). To start with, Chinese gradable adjectives are typically eligible for reduplication.

(1)   a.   kai.kai.xin.xin (< kai.xin)   'happy'
        b.   an.an.jing.jing (< an.jing)   'quiet'

The two forms in (1) exemplify what's known as the AABB pattern. A question that immediately arises, under the kind of approach to reduplication under discussion, is where exactly the RED morpheme should be placed. An interesting fact about reduplicated adjectives is that while their base counterparts famously require the presence of the degree morpheme *hen* in predicate position[1], the very presence of *hen* would instead lead to ungrammaticality in such cases (Huang 2006; Gu 2007; Liu 2010; Grano 2012).

(2)   zhe-jian chenyi *(hen) gan.jing
        this-CL shirt   very clean
        'This shirt is clean.'

(3)   zhe-jian chenyi (*hen) gan.gan.jing.jing de
        this-CL shirt   very clean-RED   DE
        'This shirt is clean.'

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[1]This is true of the positive interpretation only, which is what we'll be focusing on.

We might perhaps take the above contrast to be evidence that the RED morpheme occupies whatever position the degree morpheme *hen* occupies.[2] If *hen* heads DegP, an extended projection of AP—an not unreasonable assumption—then it follows that RED occupies Deg^0 as well. This, in fact, is what Zhang (2015) claims.

We will offer reasons for doubting such a view. Instead, we will advocate the view that the position of the RED morpheme is variable in Chinese. There are at least two positions which RED may occupy: a^0 and Emp^0, but crucially, not Deg^0. We will see how the current view, when coupled with further details, can handle a wider range of data, and also account for certain impossible patterns of reduplication in the language.

2.   A New Find: The Case of Orphan Adjectives

The most direct way of challenging the claim that RED instantiates the same head as *hen* is to look for cases where *hen* simply co-occurs with a reduplicated form. They do exist.[3]

(4)   zhe-ge nvhai hen da.da.lie.lie
       this-CL girl   very careless-RED
       'This girl is careless.'

(5)   zhe-wei lingdao hen feng.feng.huo.huo
       this-CL leader   very quick-RED
       'This leader is quick (e.g. at making decisions).'

(6)   zhe-ge xiaohuozi   hen xiu.xiu.da.da
       this-CL young_man very shy-RED
       'This young man is shy.'

In such cases, the occurrence of *hen* is optional.

(7)   zhe-ge nvhai da.da.lie.lie   de
       this-CL girl   careless-RED DE
       'This girl is careless.'

(8)   zhe-wei lingdao feng.feng.huo.huo de
       this-CL leader   quick-RED   DE
       'This leader is quick (e.g. at making decisions).'

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[2]We'll ignore the sentence-final *de* that typically accompanies a reduplicated form, following existing works on Chinese adjectival reduplication (Paul 2015; Zhang 2015). For further discussion on this sentence-final *de*, see Gu (2007:33); Paul (2015:179) among others.

[3]There is this interesting observation that the degree morpheme *hen* may not co-occur with the sentence-final *de* in Chinese, and hence the sentence-final *de* is absent in (4)–(6). For the same reason, the same *de* may not occur in (2). Regardless, this ill-understood fact in no way affects the present claim that RED and *hen* don't occupy the same position.

(9)   zhe-ge xiaohuozi xiu.xiu.da.da de
          this-CL young_man shy-RED   DE
          'This young man is shy.'

The grammaticality of (4)–(6), of course, raises the question of why some reduplicated adjectival forms may not co-occur with the degree morpheme, as we saw in (3), for example. The only relevant difference here seems to be the kind of adjective in question. (4)–(6) involve what we call *orphan* adjectives, which lack a corresponding base form.

(10)   a.   da.da.lie.lie   (< *da.lie)   'careless'
           b.   feng.feng.huo.huo (< *feng.huo) 'quick'
           c.   xiu.xiu.da.da   (< *xiu.da)   'shy'

The following examples are therefore ungrammatical.

(11)   *zhe-ge nvhai hen da.lie
        this-CL girl   very careless
        Intended: 'This girl is careless.'

(12)   *zhe-wei lingdao hen feng.huo
        this-CL leader   very quick
        Intended: 'This leader is quick (e.g. at making decisions).'

(13)   *zhe-ge xiaohuozi hen xiu.da
        this-CL young_man very shy
        Intended: 'This young man is shy.'

This stands in contrast with non-orphan adjectives (cf. (2)). We'll offer a way of reducing this difference between the two classes of adjective to a single property.

    Let us now turn to the proposed analysis, and see how that would shed light on the adjectival reduplication patterns that we find in Chinese.

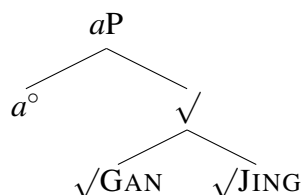## 3.   Towards a Morphosyntactic Account of Reduplication

We follow Zhang (2007) in assuming the existence of acategorial roots, which can be combined with one another to form complex roots, via an operation called *root merger*. A complex root remains acategorial, and its category is determined by a categoriser (Marantz 1997; Embick and Noyer 2007 a.m.o.). The complex root in (14), for example, is categorised as an adjective.

(14)

$$aP$$
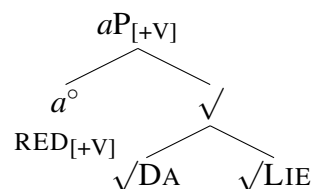$$a° \quad \sqrt{}_{1+2}$$
$$\sqrt{}_1 \quad \sqrt{}_2$$
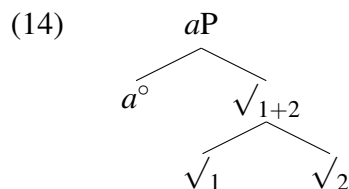
The reduplication morpheme RED is furthermore sensitive to the structure of its base (i.e. the target which RED operates on). Lee-Kim (2016) proposes that an AABB form obtains when its base involves a coordinate AB structure, whereas an ABAB form obtains when its base involves a non-coordinate[4]AB structure.

On any account, it is necessary to find a way that aptly distinguishes between non-orphan adjectives and orphan adjectives. We propose that the two classes of adjective have the following structures.
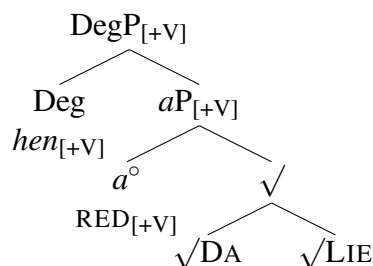
(15)   a.   NON-ORPHAN ADJECTIVES   b.   ORPHAN ADJECTIVES

$$aP$$ $$aP_{[+V]}$$
$$a° \quad \sqrt{}$$ $$a° \quad \sqrt{}$$
$$\sqrt{}\text{GAN} \quad \sqrt{}\text{JING}$$ $$\text{RED}_{[+V]} \quad \sqrt{}\text{DA} \quad \sqrt{}\text{LIE}$$

The sole difference between non-orphan adjectives and orphan adjectives lies in whether the RED morpheme occupies the structural position of the categoriser $a°$. This is possible only with orphan, but not non-orphan, adjectives. This should not be understood as a stipulation, however, since whether a certain adjective is classified as a non-orphan or an orphan adjective is independently determined by the existence of a non-reduplicated form (for a certain speaker). Placing the RED morpheme under $a°$ enforces the lack of non-reduplicated forms, and hence a structure like (15b) cannot be assigned to an adjective like *gan.jing* 'clean', for example.

Notice also that the RED morpheme always comes with it a [+V] feature, which renders it possible for a structure to directly serve as the predicate (cashing out an idea in Grano 2012). This explains why (7)–(9), without the mediation of *hen*, are grammatical. On the other hand, when the degree morpheme *hen* occurs in the case of orphan adjectives, the following structure obtains.

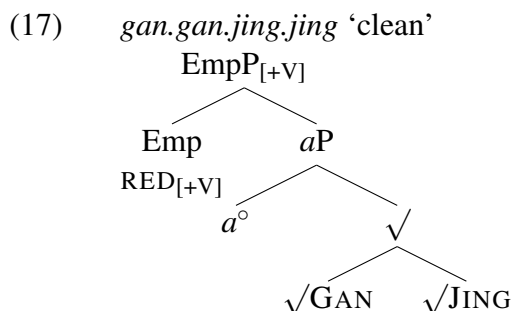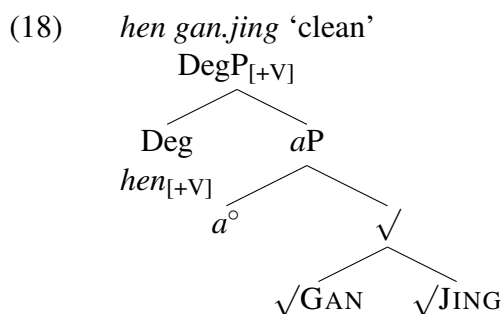(16)   *hen da.da.lie.lie* 'careless'

$$\text{DegP}_{[+V]}$$
$$\text{Deg} \quad aP_{[+V]}$$
$$hen_{[+V]}$$
$$a° \quad \sqrt{}$$
$$\text{RED}_{[+V]} \quad \sqrt{}\text{DA} \quad \sqrt{}\text{LIE}$$

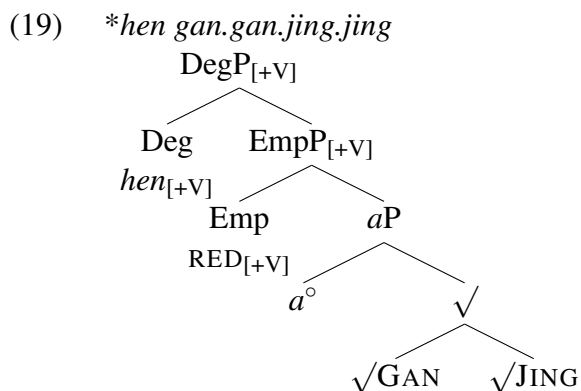[4]Lee-Kim (2016) uses the term 'subordinate'.

The single difference that we find between (15a) and (15b) has further repercussions. The fact that in such non-orphan cases $a°$ cannot possibly host the RED morpheme simply means that there's another position which RED may occupy. For concreteness, let's label that position 'Emp' (for 'emphasis'). A reduplicated non-orphan adjective then has the following structure.

(17)   *gan.gan.jing.jing* 'clean'

```
        EmpP[+V]
         /    \
      Emp      aP
    RED[+V]   /  \
      a°      √
             /  \
         √GAN   √JING
```

The puzzle now is why a reduplicated non-orphan adjective cannot co-occur with the degree morpheme *hen* (recall (3)). As we saw in (2), no problem arises when the non-orphan adjective is in its base form.

(18)   *hen gan.jing* 'clean'

```
        DegP[+V]
         /    \
      Deg      aP
    hen[+V]   /  \
      a°      √
             /  \
         √GAN   √JING
```
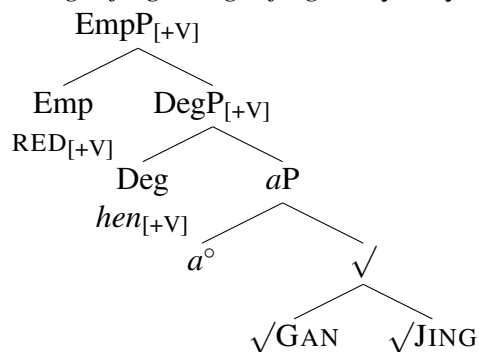
In the context of the current account, one might perhaps suggest that DegP and EmpP may not co-occur within the same structure. This is not the solution we'll offer, though, since it does not seem to deliver much. Instead, let's assume that the two functional projections come in a specific order, such that EmpP occurs at a higher position than DegP. (19) therefore constitutes a violation of that Hierarchy of projections.

(19)   **hen gan.gan.jing.jing*

```
          DegP[+V]
           /    \
        Deg      EmpP[+V]
      hen[+V]    /    \
             Emp      aP
           RED[+V]   /  \
             a°      √
                    /  \
                √GAN   √JING
```

On the other hand, (20) respects that Hierarchy, but the derivation now yields a different output, one in which the degree morpheme constitutes part of the base for RED.

(20)   *hen.ganjing.hen.ganjing* 'very very clean'

```
              EmpP[+V]
             /        \
         Emp          DegP[+V]
        RED[+V]       /      \
                   Deg        aP
                  hen[+V]    /    \
                          a°      √
                                 /    \
                             √GAN     √JING
```

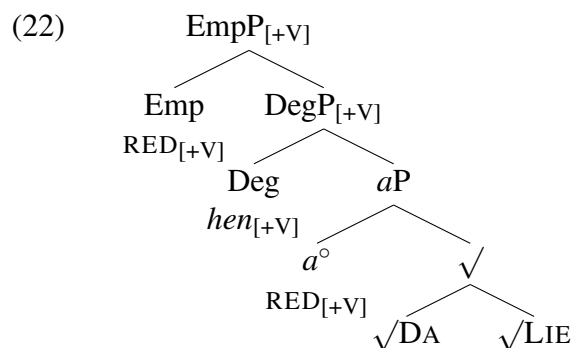The resulting ABAB form is judged by our consultants to be acceptable.

(21)   zhe-jian chenyi hen ganjing hen ganjing
        this-CL shirt   very clean   very clean
        'This shirt is very very clean.'

This lends further support to our analysis.

4.   Keeping EmpP in Check

Finally, there arises a need for checking whether the introduction of EmpP would wreak havoc in the realm of orphan adjectives. In particular, given the current claim that RED may occupy two distinct structural positions, we expect two RED morphemes occupying distinct positions to be able to co-occur. Very interestingly, this expectation is borne out. Consider a case where EmpP appears on top of the structure that we have in (16), as shown below.

(22)
```
             EmpP[+V]
            /        \
        Emp          DegP[+V]
       RED[+V]       /      \
                  Deg        aP
                 hen[+V]    /    \
                         a°      √
                      RED[+V]   /    \
                             √DA     √LIE
```

The derivation in (22) would yield the ABAB output *hen.dadalielie.hen.dadalielie*, which our consultants judge to be fine.[5]

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[5]The slight degradation may have to do with the length of the output.

(23) ?zhe-ge nvhai hen dadalielie   hen dadalielie
      this-CL girl   very careless-RED very careless-RED
      'This girl is very very careless.'

Things are trickier when the DegP is absent.

(24)

```
        EmpP[+V]
        /    \
     Emp      aP
   RED[+V]    /  \
        a°         √
      RED[+V]     /  \
              √DA    √LIE
```
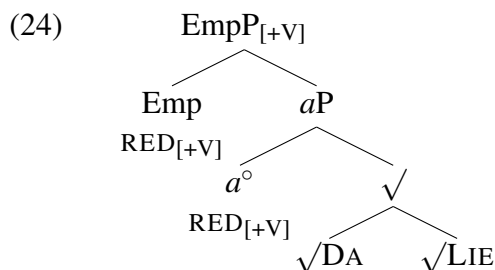
To see whether (24) needs to be blocked, we need to determine what its output is. That hinges on several details, including whether the higher RED morpheme in (24) may identify an AB structure to operate on, and whether a RED morpheme may itself constitute a base for another RED. If the answer to any of these is negative, the derivation may simply crash. But even on the assumption that (24) leads to a convergent derivation, the output which (24) most likely yields, the ABAB form *dada.lielie.dada.lielie*, is judged by our consultants to be much worse than the ABAB form outputted by (22).

(25) ?*zhe-ge nvhai dada.lielie   dada.lielie   de
       this-CL girl   careless-RED careless-RED DE

A prominent feature of (24) is that there are two instances of the RED morpheme which are structurally adjacent in some sense. The derivation of (24) may then be blocked by appealing to a generalised version of the Obligatory Contour Principle, which holds of not only phonology and morphology but also syntax (Mohanan 1994; Hiraiwa 2010; see Richards 2010 for a proposal that bans non-distinct elements in the syntax).

5.   Conclusion

The positioning of the RED morpheme in Mandarin Chinese is variable. That generalisation, more adequate in our view, was established based on the discovery of a class of adjectives in Chinese that show clearly that RED and the degree morpheme *hen* do not stand in a complementary relation. To the extent that it's basically right, the analysis we proposed illustrates how morphosyntax plays a major role in regulating the adjectival reduplication patterns that we actually find in Chinese.

Moreover, recognising what we call the 'EmpP' to be an extended projection of A has the further bonus of capturing one's intuitions about Chinese reduplicated adjectives, which, according to Liu (2013), denote a 'life-like' state, and the positive interpretation arises simply as 'the by-product of state realization'.

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