Realizing End Points: The Syntax and Semantics of Dutch *ge* and Mandarin *le*

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0. Introduction

Sybesma (1997) and Vanden Wyngaerd (1996) independently make similar proposals concerning the structural positions of Mandarin Chinese *le*, generally referred to as a perfective particle, and the Dutch participial prefix *ge*, respectively.[1] Rather than occupying some head position in the functional domain dominating the VP (e.g. Tense, Asp), *ge* and *le* are argued to be inside the VP. However, Vanden Wyngaerd (1996) mainly approached *ge* from a syntactic angle, and remained agnostic on the semantic contribution made by *ge*. Sybesma (1997), on the other hand, approached *le* from a semantic angle, but still faced a number of problems because, as we shall argue, the semantics he proposed was not fine-grained enough. The present paper is an attempt at developing both a semantically fine-grained and a syntactically coherent unified analysis of *le* and *ge*.

1. The semantics of *le and* ge

Activity verbs do not have a built-in end point, i.e. they are a-telic (Vendler 1967, Dowty 1979). Activities can be made telic by providing them with an end point. The end point can take the form of a resultative small clause or a cardinally bounded direct object (Verkuyl 1972; Tenny 1987; Hoekstra 1988).

(1) a. Freddy will cry (the handkerchief wet)
    b.   Freddy is reading (books/the book about parenthood)

Consider (1a): used intransitively, the activity of crying could go on forever. However, with a resultative small clause added, the activity is provided with an end point—once the handkerchief is all wet, the crying event will terminate. Similarly in (1b): the activity of reading (books) has no pre-programmed end point, but the addition of a definite direct object provides it with such an end point: as soon as *the book* is finished, the reading will have reached its end point.

The examples in (2) and (3) illustrate this phenomenon for Mandarin, the end point in (2) being a resultative small clause, and a definite direct object in (3). The sentences in (2) and (3) also give us a handle on the semantic contribution made by the particle *le*, since Mandarin allows the construction of near-minimal pairs with *le* (the a-sentences) and without (the b and c-sentences). The proposal we wish to make here is that *le* indicates realization of the end point. That is, although in all sentences in (2) the activity of wiping has an end point (the moment the glass is dry), it is only in (2a) that it is explicitly stated that that end point has actually been reached. If we add an adverbial like *zhengzai* 'in the process of, just', as in the b-sentences, we set up the context in such a way that it implies non-realization of the end point: obviously, if Zhang San is still in the process of wiping the glass dry, he cannot have completed the dry-wiping event. Accordingly, *le*, which we argue to indicate realization, is excluded in such a context. Likewise, if the verb and its result complement are embedded under a verb like *yao* 'want', as in the c-sentences, the end point is available but not reached, so that *le* is again excluded.

(2) a   Zhang San ca-gan-le   boli
         Zhang San wipe-dry-LE glass
         'Zhang San has wiped the glass dry'
    b   Zhang San zhengzai   ca-gan-(*le) boli
         Zhang San in.process.of   wipe-dry-LE glass
         'Zhang San is wiping the glass dry'
    c   Zhang San yao   ca-gan-(*le) boli
         Zhang San want wipe-dry-LE glass
         'Zhang San wants to wipe the glass dry'

(3) a   Zhang San kan-le zhei-ben shu
         Zhang San read-LE   this-CL   book
         'Zhang San has read this book'
    b   Zhang San zhengzai   kan-(*le) zhei-ben shu
         Zhang San in.process.of   read-LE   this-CL book
         'Zhang San is reading this book'
    c   Zhang San yao   kan-(*le) zhei-ben shu
         Zhang San want read-LE   this-CL   book
         'Zhang San wants to read this book'

The same point can be illustrated with the following Dutch sentences, which are close translations of their Mandarin counterparts.

(4) a   Zhang San heeft het glas   droog-ge-wreven
         Zhang San has   the glass dry-GE-wiped
         'Zhang San has wiped the glass dry'

      b   Zhang San is het glas   aan het   droogwrijven
           Zhang San is the glass   at   the dry-wipe
           'Zhang San is wiping the glass dry'
      c   Zhang San wil   het glas   droogwrijven
           Zhang San wants the glass   dry-wipe
           'Zhang San wants to wipe the glass dry'

(5) a   Zhang San heeft dit boek ge-lezen
          Zhang San has   this book GE-read
          'Zhang San has read this book'
      b   Zhang San is dit   boek aan het lezen
           Zhang San is this   book at   the read
           'Zhang San is reading this book'
      c   Zhang San wil   dit   boek lezen
           Zhang San want this   book read
           'Zhang San wants to read this book'

Although there is an end point in all the sentences in (4) and (5), it is only in the a-examples that we are told that the end point has realized. In the same way this effect was attributed to *le* in the Mandarin examples, we would like to claim that the element *ge* that is prefixed to most past participles in Dutch is responsible for it in Dutch (for the similar etymology of *le* and *ge*, see Sybesma 1995).

    The semantic contribution made by *ge/le* can be summarized as in (6).

(6)   *Ge/le* indicate **realization**. Without *ge/le* the end point may be present (i.e. the event may be telic), but only with *ge/le* is it explicitly stated that the end point has actually realized.

2. Analysis

The proposal we are about to make for the structural representation of *ge/le* draws on the one made in Hoekstra (1988, 1993) to the effect that activity verbs, in contrast to state verbs, can be telicized by adding a result denoting small clause that is the complement of the matrix activity verb, as follows:

(7)   [$_{VP}$ V [$_{SC}$ NP X]]

While this structure is straightforwardly applicable to sentences involving a resultative small clause, such as those in (2) and (4), it does not appear to be correct for sentences like (3) and (5), where there is just an object, but no resultative predicate. However, Teun Hoekstra (class lectures 1990-1991) has suggested that in these cases the predicate is empty, thus allowing a unification of

these two cases. His claim receives empirical support from Dutch, where it is almost always possible to find a non-empty counterpart to the empty resultative predicate. For example, a sentence like *hij las het boek* 'he read the book' has a variant involving the resultative particle *uit* 'out', given in (8a), which we assume underlies all sentences in which *lezen* 'read' is telic. That *uit* can independently be used as a predicate is shown by (8b). This claim is important because it entails that activities can only be made telic by a small clause, never by an NP alone.

(8) a   Hij las [het boek (uit)]
        he   read [the book (out)]
        'He finished reading the book'
    b   Het   boek is uit
        the book is out
        'The book is finished'

In making a distinction between adding an end point and adding the semantic aspect of realization, as in (6), we need a more complex structure than Hoekstra's (7). We therefore propose a complication of Hoekstra's structure, as detailed in (9), for those sentences that have either *ge* or *le*:

(9)   VP   (10)   VP
        /\   /\
       V   XP   V   YP (SC)
          /\
       YP$_i$ X'
              /\
            X   t$_i$
          ge/le
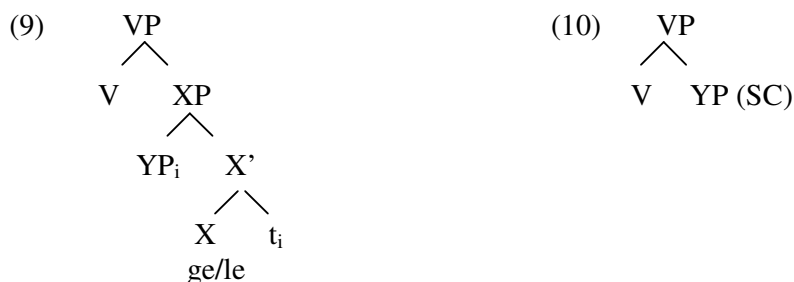
The verb is complemented by a small clause, XP, the head of which is *ge/le*, which means 'realized'. The head X (i.e. *ge/le*) is in turn complemented by a small clause YP, which contains [the glass dry] in cases like (2) and (4), and [the book *e*] in the cases (3) and (5). As a first step in the derivation, YP moves into SpecXP in order to enter into a qualification/predication relation with *ge/le* (Barbiers 1995). [2] As a result, the interpretation arises that YP 'has realized', e.g. '[the glass dry] has realized'. This is why sentences with *ge/le* express realization of the end point. Naturally, if there is no *ge/le* there is no XP, and YP is the sole complement of V: the end point is there, but the realization aspect is not; this possibility is represented in (10) above.

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[2]YP could also start out in the subject position of the XP so that the predication relation is there from the start. For the argument in this paper nothing hinges on this difference.

3. Problems of word order

The tree in (9) is the basic structure for both Mandarin phrases with *le* and Dutch phrases with *ge*. However, the surface order of phrases involving *le* and *ge* is entirely different. Taking into account the position of the surface object NP (*"Obj" NP* below), i.e., the subject of the resultative small clause YP, word order is as in (11a) in Dutch, whereas the Mandarin surface order is given in (11b).

(11) a "Obj" NP Y─X─V: het glas droog-ge-veegd
                                  the glass dry-GE-wiped
       b V─Y─X "Obj" NP: ca-gan-le   boli
                                  wipe-dry-LE glass

For Dutch the derivation from (9) to (11a) is quite straightforward. It involves the following steps: (a) *ge* head-raises to get prefixed to V; (b) the NP contained in YP (e.g., *het glas* 'the glass' in (4a), the "Obj" NP) raises to a specifier position to the left of V (possibly SpecAgrOP); (c) the predicate contained in YP (*droog* 'dry') raises to a position to the left of VP: we are not sure what exactly this position is; Koster (1993) argues that it is the head of a projection called PredP.

     The derivation for Mandarin is much more complicated. Sybesma (1992) argues that the sequence V─Y─X (i.e. *ca-gan-le* 'wipe-dry-LE') ends up as a complex head, both X and Y incorporating into V. However, it is hard to see how this can be implemented in (9) in a way that is permitted by current theories (it would involve movement out of a phrase in Spec, and rely on right-adjunction, which is incompatible with Kayne 1994). Sybesma (1992) derives the order in (11b) by adjoining the "Obj" NP to VP, and moving the complex head V─Y─X into the head of a projection (dubbed CAUSP) immediately dominating the VP.

4. be, ver *and* ont *in Dutch: the problem*

In (6) it is stated that *ge/le* indicates the realization of the pre-programmed end point of the event. However, there appear to be sentences in Dutch which, despite the absence of *ge*, do have the meaning aspect of realization. Consider the following examples, involving verbs that begin with the unstressed particle *be*.

(12) a Ik be-plant de   tuin   (met tulpen)
         I BE-plant   the garden (with tulips)
         'I plant the garden (with tulips)'
     b Ik heb   de tuin   be-plant   (met tulpen)
         I have the garden BE-planted(with tulips)
         'I have planted the garden (with tulips)'

Whereas (12a) seems well behaved in the sense that it is telic without realization, (12b) clearly implies realization, despite the absence of *ge*.

　　Let us have a brief look at the semantics and syntax of *be*. First, Hoekstra, Lansu and Westerduin (1987) have observed that distributionally *be* behaves like the unsuspected resultative predicate *vol* 'full'.

(13)　a *dat ik　de　tuin　　plant
　　　　　that　I　the garden plant
　　　b　dat ik　de　tuin　　vol plant (met narcissen)
　　　　　that　I　the　garden full plant (with daffodils)
　　　c　dat ik　de　tuin　　be-plant (met narcissen)
　　　　　that　I　the garden BE-plant (with daffodils)
　　　d *dat ik　de　tuin　　vol-be-plant　(met narcissen)
　　　　　that　　I　the garden full-BE-plant　(with daffodils)
　　　　　'that I plant the garden with daffodils'

On the basis of the fact that *be* and *vol* 'full' in (13) are in complementary distribution, Hoekstra et. al. conclude that *vol* 'full' and *be* are one and the same: both indicate that the garden is totally affected, and both provide an end point, thus making the planting activity telic. Consequently, both of these elements also occupy the same position, i.e., they are the head of a result denoting small clause. In terms of our tree in (9), they both would occupy the Y position.

　　But *be* has a number of properties which separate it from resultative predicates like *vol*, too. First, *be* is unstressable, whereas *vol* can bear stress. Second, *be* is inseparable from the verbal stem, whereas other result denoting predicates may be separated from the verb in verb second and verb raising contexts. Examples include *droog* 'dry' in (4), *uit* 'out' in (8a) and *vol* 'full' in (13b). The inseparability of *be* is illustrated in (14b), whose grammatical variant is (12a).

(14)　a　Ik　plant de　tuin　　vol　(met narcissen)
　　　　　I　plant the garden full (with daffodils)
　　　b　*Ik plant de　tuin　　be　(met narcissen)
　　　　　I　plant the garden BE　(with daffodils)

A third difference between *be* and resultative predicates like *vol* is that *be* is incompatible with *ge*:

(15)　a　*be-ge-plant, *ge-be-plant
　　　b　　vol-ge-plant

The case of *be* is not an isolated one, but exemplary for a whole class; other examples include *ver* in *verdrinken* 'drown' and *verdwijnen* 'disappear', *ont* in

onthouden 'remember' and *ontdekken* 'discover'; *ge* itself acts as inseparable particle in words like *gedenken* 'commemorate', *geloven* 'believe' and *gebeuren* 'happen'. The elements *ver*, *ont*, and *ge* share the three properties just listed for *be*. We return to this below, when we discuss alternations between certain particles and adjectival resultative predicates (also, see note 3 below).

The problem we have to address is that the distribution of *be* with respect to *vol* 'full' (i.e. (13)) suggests that, in reference to the tree in (9), *be* is in Y, whereas its distribution with respect to *ge* (i.e. (15a)) suggests that *be* is in X. The idea that *ge* and *be* occupy the same position (defended in Vanden Wyngaerd 1996) also faces the problem that *be*, unlike *ge*, does not necessarily express realization. This brings us back to (12b), which involved realization but no *ge*. We shall henceforth assume that *be* is in Y; given this assumption, the problem can be formulated as follows: why cannot we have *ge* in X when Y contains *be*, whereas we can have *ge* in X if elements like *vol* 'full' occupy Y? Before discussing this question any further, we turn to a similar problem in Mandarin.

5. The Mandarin hint at a solution

Consider the following sentences:

(16) a Zhang San mai-le ta-de zhu
        Zhang San sell-LE his   pigs
        'Zhang San sold his pigs'
     b Na ni   jiu ba   ta mai-le ba!
        then you then BA it sell-LE BA
        'If that's the case then sell it!'
     c $^?$Zhang San zhengzai   mai-le ta-de zhu
        Zhang San in.process.of sell-LE his   pigs
        'Zhang San is selling his pigs'
     d Zhang San yao   mai-le ta-de zhu
        Zhang San want sell-LE his   pigs
        'Zhang San wants to sell his pigs'

(17) a Zhang San wang-le wo-de mingzi
        Zhang San forget-LE my   name
        'Zhang San forgot my name'
     b Zhang San lao   wang-le wo-de mingzi
        Zhang San always forget-LE my   name
        'Zhang San always forgets my name'
     c Bu yao   wang-le wo-de mingzi!
        not want forget-LE my   name
        'Don't forget my name!'

In (6) we stated that with *ge/le* we explicitly express that the end point has realized. In (12b) we saw a Dutch example showing that in some cases, particularly in cases involving inseparable particles, we have realization without *ge*. What we see in the Mandarin examples in (16b,c,d) and (17b,c) is that we have no realization, despite the presence of *le*.

It turns out that Mandarin has two different *le*s: one *le* we may call 'realization *le*', the other 'end point *le*'. Realization *le* is the *le* we saw in (2a) and (3a), and which we assigned to the head position of XP in (9). End point *le*, on the other hand, is the *le* in (16b,c,d) and (17b,c); in the tree in (9) it would be the head of YP, on a par with *gan* 'dry' in (2). There are two reasons for believing that this analysis is correct. The first is that *le* in (16) and (17), just like *gan* 'dry', can occur in the complement of a modal verb like *yao* 'want', with adverbs like *zhengzai* 'in the process of' and *lao* 'always', whereas realization *le* cannot occur in such contexts (see (2) and (3) above). The second reason is that, unlike realization *le*, end point *le* is lexically selective: it only occurs with certain verbs but not others. For example, it is found with *mai* 'sell' and *wang* 'forget' in (16) and (17), but not with *kan* 'read' in (3). With *wang* 'forget', *le* (or another resultative particle) is even obligatory. It is probably no coincidence that some of the Mandarin verbs permitting end point *le* translate as prefixal verbs in Dutch (e.g. *ver-kopen* 'sell' and *ver-geten* 'forget').

When we look at the Mandarin sentences in (2a), (3a), (16) and (17) and label the different constituents according to the labels used in the tree in (9), we can make the following chart:

(18)   V   X   Y
    a   V   le   gan 'dry'   (2a)
    b   V   le   Ø   (3a)
    c   V   Ø   le   (16), (17)

This chart expresses that in (2a) both slots are filled: there is an 'end point element' in Y, *gan* 'dry', and there is the 'realization element', *le*. In (3a), the 'end point element' in Y is phonologically empty (see (8)) and the head X is filled with realization *le*. Finally, (16) and (17) involve end point *le*, rather than realization *le* (after all, in (16b,c,d) and (17b,c) we have *le* but no realization) and the X position for realization *le* is phonologically empty. The reason for the impossibility of two *le*s lies, we claim, in the phonology.

(19)   Unstressed suffixes must not be adjacent

Chao (1968:247) claims that the ban on *le le* is a case of haplology, i.e. avoidance of a repetition of identical syllables. This is presumably too simple a statement, as stress and tone can be shown to play a role in this, as well as the question

whether the elements involved have a comparable morphological status (e.g. as an affix, etc.), but reasons of space prevent us from discussing this issue here.

Let us now return to the Dutch sentences in (12). Taking (4a) and (5a) into consideration as well, we can draw up a chart similar to the one in (18).

```
(20)     V    X    Y
    a    V    ge   droog 'dry'  (4a)
    b    V    ge   Ø            (5a)
    c    V    Ø    "ge"         (12a)
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In (4a), both the end point element in Y and the realization element in X are present. Next, in (20b) the end point slot is phonologically empty, but the realization slot is not. Finally, what we see in (20c) is also similar to what we saw in (18c): the realization slot is empty, while the end point slot is not. The reason for this is similar to the reason why it must be empty in Mandarin.

(21)   Unstressed prefixes must not be adjacent

The end point slot Y in (20c) is filled by *"ge"*. This *"ge"* represents the class of morphemes like *be*, *ver*, and *ont*, as well as *ge* in *geloven* 'believe' and *gedenken* 'commemorate'. In fact, *"ge"* stands for all the elements that may contribute an end point, but that differ from *vol* 'full' with respect to the three properties discussed below (13), i.e. stresslessness, inseparability, and incompatibility with *ge*. These three properties are, in essence, phonological, we argue, and the latter of the three is accounted for by the rule in (21). Variants of this rule have in fact been proposed by Schultink (1973), De Haas (1990) and Don (1993). Schultink's rule is in turn an elaboration of a rule proposed by Kiparsky (1966) for German; Kiparsky shows that the distribution of *ge* in German in conditioned by phonological factors, to the effect that *ge* is absent if the first syllable of the verb is unstressed (e.g. *probiéren-probiért* 'try-tried'; the accent marks stress). In contrast to the German rule, the Dutch rule is sensitive to the morphological status of the first syllable.

An approach to the distribution of *ge* in phonological terms receives confirmation from the class of particle verbs in Dutch, i.e. verbs consisting of a verbal stem and a particle (mostly homophonous with prepositions), like *uit-lezen* 'finish reading' (see (8)), *af-slachten* 'slaughter off'. We assume that the particle invariably occupies the Y position in (9), just like *be* and *vol* 'full'. Particle verbs can be divided in two classes: in one class, the particle is stressed and can get separated from the verb in verb second environments (cf. *vol* 'full' in (14a)), and they are compatible with *ge* (cf. (15b)). In the other   class,   the   particle   is   like   *be*:   it   is   unstressed,   never gets separated from the verb, and is incompatible with *ge*.   This difference gives   rise   to   minimal   pairs   like   *voorkómen*   'prevent',   with   an

inseparable particle, vs. *vóórkomen* 'exist', where the particle is separable. Certain verbs vary according to the speaker, like *overhalen* 'convince' (also *doorstrepen* 'strike through', *aanzien* 'consider').

(22) a We overhalen ze   nog
     b We halen   ze   nog over
        we get   them yet over
        'We'll convince them yet'

The particle is unstressed and inseparable in the second author's speech (Southern Standard Dutch), but stressed and separable for the first author (Standard Dutch). The participle is *overhaald*, without *ge*, for the second author, whereas for the first author the past partciple has *ge*: *overgehaald*. Semantically, however, there is no discernible difference between *overhálen* and *óverhalen*. As a consequence, we would want to say that they have the same structure. The only difference between (22a) and (22b) is phonological, i.e., whether the particle is stressed or not. This difference affects the way in which the participle is formed. This case, then, supports our contention that phonological factors govern the distribution of *ge*.[3]
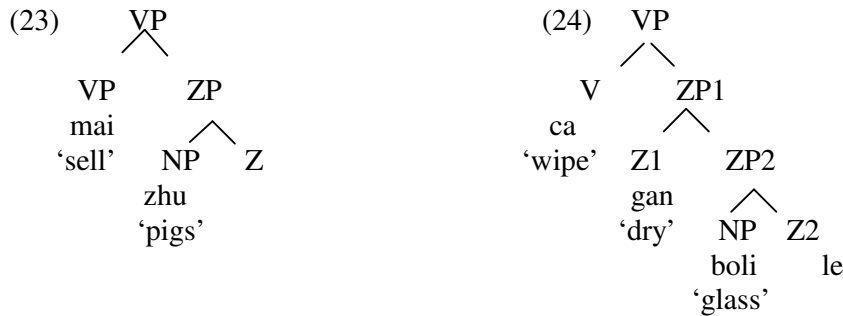
Rule (21) also reserves a role for morphology. As we saw above, unlike German, Dutch is sensitive to the status of the first syllable of a verb in case it is unstressed: *ge* is only banned if the verb is synchronically morphologically complex. A verb like *vernissen* 'varnish' has an unstressed *ver* as its first syllable, but because it is not a prefix, the past participle has *ge* (*ge-vernist* 'varnished'); etymological evidence supports this claim (German *firnissen*). Morphological sensitivity might also explain why nominalizations with *ge* are fine with verbs that do not get *ge* in their participle, e.g. *ge-be-taal* 'paying' vs. **ge-be-taald* 'paid' (see Don 1993:165 and De Haas 1990 for discussion of this problem).

6. Problems solved

The analysis of *ge* and *le* presented here solves certain problems we were left with in Vanden Wyngaerd (1996) and Sybesma (1997) and raises new ones.

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[3] Support for this claim comes from the fact that the distinction between bound and free morphemes cuts across the distinction between stressed and unstressed elements. *Ge* is always incompatible with unstressed prefixes (cf. (21)). This was shown for prepositions, which are free morphemes but can be stressless and incompatible with *ge*. In contrast, bound morphemes like *her* 're' and *ont* 'dis' can at times bear stress (*hérgroeperen* 're-group', *óntmythologiseren* 'de-mythologize'), in which case the participle is formed with *ge* (*ge-her-groepeerd* or *her-ge-groepeerd*; *ge-ont-mythologiseerd*; Schultink 1973; Van Haeringen 1965). With adjectival resultative particles the situation is the reverse, i.e., most are stressed, but sometimes they are not, as with *vol* 'full' in *voldoén* 'satisfy' (participle *vol-daan*), as opposed to *vóldoen* 'fill up' (participle *vol-ge-daan*).

One of the problems solved for Dutch is the status of *be* and its relation to *ge* and realization. As to Mandarin, the analysis of *le* in Sybesma (1997) stated that *le* is always the head of a resultative small clause, and that it is always the most deeply embedded one. Thus, the structure underlying (16a) was argued to be the one in (23), whereas the underlying structure for (2a) proposed there is given in (24)

(23)
```
          VP
         /  \
       VP    ZP
      mai    /\
     'sell' NP  Z
           zhu
          'pigs'
```

(24)
```
          VP
         /  \
        V    ZP1
       ca    /\
     'wipe' Z1  ZP2
           gan  /\
          'dry' NP  Z2
              boli    le
             'glass'
```

In this analysis, *le* is a resultative predicate on a par with *gan* 'dry'; (25) is interpreted as follows: there is a wiping event, which results in a drying event. The latter, however, is itself atelic, adjectives being dynamic in Mandarin, so that yet another resultative predicate can be added, *boli le* 'the glass finished/complete'. A problem associated with this approach is that there is no reason why the embedding in (24) could not be recursive indefinitely. Given that *le* is a resultative predicate, and given that combinations of two resultative predicates as in (24) are possible, there appears to be no reason why a combination of three resultative predicates should not be possible as well. The problem is illustrated in (25).

(25) a   Zhang San ku-shi-le   shoujuan
         Zhang San cry-wet-LE handkerchief
         'Zhang San cried the handkerchief wet'
     b   Zhang San qi-ku-le   Li Si
         Zhang San anger-cry-LE   Li Si
         'Zhang San angered Li Si to tears'
     c   *Zhang San qi-ku-shi-le   shoujuan
         Zhang San   anger-cry-wet-LE handkerchief

Although it may be possible to rule (25c) out using Case or theta theory, a more principled solution would be welcome. The structure in (9) is useful here, in that it makes a principled distinction between an end point and the realization thereof.

Another problem for Sybesma's (1997) analysis of *le* is that all instances of *le* are treated the same: there is no principled difference between the *le* in (23) and the one in (24), except for the depth of embedding. This analysis cannot explain the fact that *le* cannot occur in (2b,c) while it is allowed in (16b,c,d). Also, the

difference between the sentences in (3) and those in (16) is hard to explain: all would have the structure in (23). The structure argued for here at least makes a difference between the *le* in (3a) and the one in (16a).

7. Conclusion

We have attempted to show that Dutch *ge* and Mandarin *le* are semantically identical, indicating the realisation of an end point. A problem for this analysis involved the fact that both *le* and *ge* may have a second function shared by other resultative predicates, viz. that of providing an end point. Once these cases are factored out, it becomes possible to develop both a coherent and unified semantic and syntactic analysis of *le/ge*. Evidence was provided lending credence to the claim that existing co-occurrence restrictions on *le/ge* on the one hand and other unstressed particles on the other are to be attributed to constraints of a phonological nature.

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