Plural events and the progressive particle in Dalad Chinese, and the final-over-final condition

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Abstract

This paper examines a special progressive marker *təʔ* in Dalad Chinese, which can appear either in the postverbal position or in the post VP position, corresponding to cumulative reading and collective reading respectively. Drawing on the spirit of constructivist approaches to argument structure, especially Borer (Structuring sense, Volume I: In Name only, Oxford University Press, Oxford 2005a, Structuring sense, Volume II: The normal course of events, Oxford University Press, Oxford 2005b), we propose a functional structure of events that involves a Quan(tity)P above *v*P, which pluralises the event denoted by *v*P, giving rise to the cumulative reading. Following Biberauer's (in: Sheehan, Biberauer, Roberts, and Holmberg (eds) The final-over-final condition: a syntactic universal, MIT Press, Cambridge, 2017b) 'acategorial-particle hypothesis', we provide an account for the positions of *təʔ* and explain why the Final-over-Final-Condition (FOFC) (Holmberg, in: Svenonius (ed) The derivation of VO and OV, Linguistik Aktuell, John Benjamins, Amsterdam, 2000; Biberauer et al. in Linguist Inquiry 45(2):169–225, 2014; Sheehan et al. The final-over-final condition: a syntactic universal, MIT Press, Cambridge, 2017) is not violated. We argue that *təʔ* is an acategorial particle that lacks formal feature, only bearing a semantic feature denoting progressive aspectual information. When the event structure involves only a single event, *təʔ* is adjoined to *v*P, and is placed in the *v*P final position due to its acategorial status: not being a head in the extended projection, it has to be placed in the final position in order to be consistent with head-initiality in Dalad Chinese. When QuanP is projected, *təʔ* cannot be adjoined to the QuanP: being an acategorial particle, it cannot see into QuanP, hence it is not able to Agree with the verbal head. In order to provide its progressive aspectual information, *təʔ* is adjoined to the verb as a last resort. This analysis explains the correlation between the postverbal position of *təʔ* and the cumulative reading, and is extended to the account of other issues such as the quantity restriction on the object and the exclusion of the negator in the V-*təʔ* construction.

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1 Introduction

The starting point of this paper is a special progressive marker *təʔ* in Dalad Chinese[1], which has two positions, the postverbal position and VP final position (following the object):

(1) a. Li lausʅ   ʧiau təʔ u-kəʔ ʃyəʔsəŋ ləʔ.
         Li professor teach PROG five-CL student SFP.
         Professor Li is teaching five students.

     b. Li lausʅ   ʧiau u-kəʔ ʃyəʔsəŋ təʔ   ləʔ.
         Li professor teach five-CL student PROG SFP.
         Professor Li is teaching five students.

In these examples, the marker *təʔ* provides progressive reading, and it can be attached to the verb (1a) or follow the object (1b).[2] While so far these examples simply show that a progressive particle for some reason has flexible positions, what makes the situation more interesting is that the difference in positions results in an interpretational difference. For (1a), when *təʔ* is attached to the verb, the reading is that for a period of time, Professor Li has been teaching five students. More strikingly, it gives the explicit reading that during any sub-interval of the teaching event, Professor Li does not have to teach five students altogether. This proposition is true as long as five students are involved in Professor Li's teaching within the total temporal span of the event, regardless of how many students were taught in a certain sub-interval within this span. Therefore, if the specific temporal span is last month, this proposition is true if Professor Li taught one student in the first week, and then another four students were involved in different sub-intervals in the following three weeks. In the rest of this paper, this interpretation is referred to as cumulative reading.

In (1b), when *təʔ* is placed in the position following the object, however, the cumulative reading is banned. Only a collective reading is available: this proposition is true if and only if Professor Li is teaching five students altogether simultaneously.

The above examples raise two issues. The first issue is about the word order: if the *təʔ*s are the same lexical item, why do they appear in different positions? The second issue concerns syntax-semantics interface: why do the two constructions with *təʔ* in

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[1] Dalad Chinese is a dialect of Chinese spoken in Dalad Banner, Inner Mongolia Autonomous Region, belonging to the Jin variety, which is one of the ten major Chinese language varieties (or "groups" / "dialects") according to the *Language Atlas of China (Version 2)*. Dalad Chinese is spoken by around 370,000 people living there. One co-author is a native speaker of Dalad Chinese, who also consulted several native speakers in her family.

[2] This might remind readers of the particle *le* in Mandarin, which can also occur in the postverbal or post object position. However, there is evidence that these two particles are different, cf. Soh and Gao (2007), Soh (2008, 2009). In Hu (2020a) it is shown that these two *le*s have different phonological forms in Yixing Chinese with different semantic and grammatical functions.

different positions have different readings (cumulative vs. collective)? In this article, we will develop a syntactic structure of events that can derive pluralised events. We take this hypothesis as an expansion of the ongoing research on the syntax of events within constructivist approaches (cf. Borer 2005a, b; MacDonald 2008; Ramchand 2008b; Hu 2018), which share the common theme that argument structure is not projected by the predicate but is derived from the functional structure. These previous studies, despite differences in details, all provide a universal functional structure of a single event, while in the present research we argue that a more fine-grained event structure is required which can encode the pluralising of a single event. Dalad provides us with a specific situation when only the plural events are involved in the functional structure, thanks to the special property of the progressive marker *təʔ*, as we will explain in detail in this paper. We will show that the different interpretations presented by the above examples are not given by two different *təʔ*s staying in different positions. Instead, the two *təʔ*s appearing in the two positions are the same lexical item, responsible for progressive aspectual information. The different interpretations arise because different event structures are projected: in particular, in the verbal *təʔ* marked sentence, a functional structure that encodes plural events is projected, while in the VP *təʔ* marked sentence, only a single event is encoded in the functional structure.

The data to be discussed in this paper also provide important empirical evidence for the Final-over-Final Condition (FOFC) (Holmberg 2000; Biberauer et al. 2008, 2009, 2014; Sheehan et al. 2017). According to FOFC, if a phrase is head initial, it cannot be dominated by a head final projection. Chinese sentence final particles therefore seem to present cases that violate this condition, considering that these particles are often taken as heads that select head initial complements like *v*P or TP. Studies on this issue are abundant (cf. Biberauer 2017b; Biberauer et al. 2008, 2009, 2014; Bailey 2010; Paul 2014, 2015; Erlewine 2017; Pan and Paul 2016; Liao 2019; Pan 2019). Abstracting away from technical details, such studies focus on the nature of these sentence final particles and the domain to which FOFC should apply. None of these studies, though, considers a specific situation in Chinese where a single particle can be either attached to a phrase or a head, a phenomenon that does exist in other languages as considered in Biberauer (2017b). By adopting and slightly revising Biberauer's (2017b) acategorial-particle hypothesis, we show that the positional variation of the progressive marker in Dalad does not violate FOFC, and hence provides further evidence to the study that takes FOFC as a syntactic constraint that also functions in particle languages like Chinese.

The rest of this article is organised as follows. In Sect. 2, we provide a detailed description of the relevant data concerning the progressive marker *təʔ* in Dalad, from which we summarize the major issues to be accounted for. In Sect. 3, we provide diagnostics to argue that the verbal and the post object *təʔ*s are the same. Section 4 presents our theoretical framework on the functional structure that encodes plural events that is applied in Sect. 5 to analyse the syntactic structures of the verbal and VP *təʔ* marked sentences, which are shown to be the underlying reason for their cumulative and collective reading respectively. In this section we also explain the different positions of *təʔ* by drawing on insights from the acategorial-particle hypothesis proposed in Biberauer (2017a, b) and show that the behaviors of *təʔ* do not constitute any violation of FOFC. Section 6 concludes the paper.

2 Progressive tə? in Dalad: positions, interpretations, and restrictions

2.1 Collective and cumulative reading with tə?

As mentioned in the introduction, in Dalad, *tə?* has two positions: the postverbal position and the post object position. In the rest of this article, we term the former 'verbal *tə?*' and the latter 'VP *tə?*'. The most remarkable difference between the sentences involving these two *tə?*s concerns the interpretation, in particular the collective and cumulative reading. In a VP *tə?* marked sentence, only collective reading is possible, while a verbal *tə?* marked sentence can have both collective and cumulative readings:

(2) a. Li lausʅ   ʧiau u-kə? ʃyə?səŋ tə?   lai-lai.
         Li professor teach five-CL student PROG PAST.

         Collective reading-possible: *Professor Li was teaching/had been teaching five students together (In each sub-interval of the total temporal span, five students were taught by Professor Li).*

         Cumulative reading-impossible: *Professor Li was teaching/had been teaching five students in total (This proposition is still true if not all the five students were taught in one of the sub-intervals in the total temporal span).*

   b. Li lausʅ   ʧiau tə?   u-kə? ʃyə?səŋ lai-lai.
       Li professor teach PROG five-CL student PAST.

       Collective reading-possible: *Professor Li was teaching/had been teaching five students together (In each sub-interval of the total temporal span, five students were taught by Professor Li).*

       Cumulative reading-possible: *Professor Li was teaching/had been teaching five students in total (This proposition is still true if not all the five students are taught in one of the sub-intervals in the total temporal span).*

With the above sentences as examples, we define cumulative reading and collective readings as follows:[3]

(3) a. Cumulative Reading
         There is a teaching event e with sub-events $e_1 \dots e_n$, and the sum of the themes of the sub-events is 'five students'.
   b. Collective Reading
       There is a teaching event e where the theme is 'five students', and all five students are involved together in each sub-interval of the whole temporal span of e.

It is clear that the cumulative reading includes the possibility of the collective reading, but not vice versa: for the above example with the cumulative reading, as long as five students are involved in the teaching event, the proposition will be true,

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[3] We thank one reviewer for providing clarification with the definition of cumulative reading.

whether the five students are involved in every interval of the whole temporal span of *e* or they are just 'scattered' in different intervals. A natural question, then, is what enables the verbal *təʔ* to be associated with the cumulative reading.

2.2 Restriction on the object

In addition to the aforementioned difference in interpretation, another difference between verbal *təʔ* and VP *təʔ* is that the former requires a quantity DP object while the latter does not have this restriction.

(4) a. ʃɔ   ʃyəʔʧʰi Li lausɿ   ʧiau (u-kəʔ) ʃyəʔsəŋ təʔ   lai-lai.
Last semester Li professor teach (five-CL) student PROG PAST.

Professor Li was teaching/had been teaching (five) students last semester.

b. ʃɔ   ʃyəʔʧʰi Li lausɿ   ʧiau təʔ   *(u-kəʔ) ʃyəʔsəŋ lai-lai.
Last semester Li professor teach PROG *(five-CL) student PAST.

*Professor Li was teaching/had been teaching *(five) students last semester.*

Note that the quantity object does not have to be plural in the verbal *təʔ* marked sentence:

(5) Li lausɿ   ʧiau təʔ   iəʔ-kəʔ ʃyəʔsəŋ.
Li professor teach PROG one-CL student.

Professor Li is teaching/has been teaching one student.

The requirement on the quantity object naturally reminds us of the situation of telic events. It is well known that telic events involving an accomplishment verb also require the object to be a quantity DP (Borer 2005b):

(6) a. John ate three cakes in five minutes.
b. *John ate cakes in five minutes.

In these examples, the *in X time* adverbial is a standard diagnostic of telicity, which shows that if the predicate *eat* is to denote a telic event, the object has to be a quantity DP, hence the ungrammaticality of (6b) where the object is a bare plural.

It is very clear, though, that the requirement of a quantity DP object imposed by the verbal *təʔ* in Dalad is not related to telicity. As the following examples show, stative verbs are natural with verbal *təʔ*.

(7) a. maumau tsai-ʃiɔ ʃixue təʔ   iəʔ-kəʔ nyny.
Maumau this-time like PROG one-CL girl.

Maumau likes a girl these days. (Literally *Maumau is liking a girl these days.*)

b. Li lausɿ   sɿmu   təʔ   ʧi-kəʔ   ʃyəʔsəŋ.
Li professor think of PROG several-CL students.

Professor Li is thinking of several students.

If a telic sentence involves a stative verb, the lexical meaning of the verb is coerced into a dynamic one:

(8)   John loved Mary in three minutes.

In the above sentence, *love* has a dynamic meaning of *fall in love with*. In the Dalad examples, however, we do not have a coerced meaning: both verbs retain the stative meaning, showing that the two sentences are not telic. This fact is important as it tells us that in analyzing the correlation between the quantity DP and the verbal *təʔ*, we should not go in the direction of exploring how telicity licenses objects, which is widely studied in Ritter and Rosen (2001), Ramchand (2008a), Borer (2005b), Richardson (2007), among many others.

2.3 (In)compatibility with a negator

Another difference between verbal and VP *təʔ* marked sentences is that while the latter is compatible with the negator *pəʔ*(not), the former resists it.

(9)   a.   * Li lausɹ   pəʔ ʧiau təʔ   u-kəʔ   ʃyəʔsəŋ.
           Li professor not teach PROG five-CL student.

           Intended Meaning: *Professor Li is not teaching five students.*

       b.   Li lausɹ   pəʔ ʧiau u-kəʔ   ʃyəʔsəŋ təʔ.
           Li professor not teach five-CL student PROG.

           Professor Li is not teaching five students.

In order to express negation for the verbal *təʔ* marked sentence, one has to use the metalinguistic negator *pəʔsɹ* (not-be) (Li and Thompson 1981; Yeh 1995; Wible and Chen 2000), which is also compatible with the VP *təʔ*.

(10) a.   Li lausɹ   pəʔsɹ ʧiau təʔ   u-kəʔ   ʃyəʔsəŋ.
           Li professor not-is teach PROG five-CL student.

           It is not that Professor Li is teaching five students.

       b.   Li lausɹ   pəʔsɹ ʧiau u-kəʔ   ʃyəʔsəŋ təʔ   lai-lai.
           Li professor not-is teach five-CL student PROG PAST.

           It is not that Professor Li was teaching five students.

3 There is only one təʔ

In this article, we argue that the verbal and VP *təʔ*s are the same lexical item, a progressive aspectual marker. In this section, we provide evidence to support this assumption.

First, the two *təʔ*s have exactly the same phonological property, and both denote progressive meaning. As far as we know, there is no theoretical assumption regarding aspect that assumes two distinct Asp heads both responsible for the same progressive

interpretation in a single language. Note that the two *təʔ* marked structures, although different in certain respects as described in this paper, share one point: the progressive aspectual reading. Below, we present examples showing that both structures can express two types of progressive interpretation: (a) an ongoing act at a certain point; (b) an act that keeps going within a certain interval:

(11) a. vɤ ʧiəŋ ʧiauʃəʔ sๅxəu, Li lausๅ   ʧəŋ ʧiau təʔ ʧi-kəʔ   ʃyəʔsəŋ.
     I   enter classroom when, Li professor right teach PROG several-CL student.
     When I entered the classroom, Professor Li was teaching several students right then.

   b. tsai ʃyəʔʧʰi Li lausๅ   ʧiəu ʧiau təʔ ʃəʔ-lai-kəʔ   ʃyəʔsəŋ.
     this semester Li professor only teach PROG ten-around-CL student.
     Professor Li is only teaching around ten students this semester.

(12) a. vɤ ʧiəŋməŋ sๅxəu, tʰa lia-kəʔ ʧəŋ ʒɔʧia təʔ   ləʔ.
     I   enter-door when they two-CL right quarrel PROG SFP.
     When I entered, they two were having a quarrel right then.

   b. Li lausๅ   ʧəŋnie xe ʧiauʃu təʔ   ləʔ, miəŋnie ʧiəu tʰuei ia.
     Li professor this year still teach   PROG SFP next year then retire FUT.
     Professor Li is still teaching this year, and will retire next year.

These examples show that the two *təʔ*s are the same lexical item in the lexicon: a progressive marker. This is because in terms of aspectual reading, they have the same semantic contribution, while the differences presented throughout this article do not concern progressive reading.

Second, the two *təʔ*s can both co-occur with tense markers, including the past tense marker *lai-lai*(13a & 14a), and the future tense marker *ia* (13b & 14b), giving past progressive and future progressive interpretations respectively.

(13) a. ʧʰynie Li lausๅ   ʧiau təʔ u-ʃəʔ-kəʔ ʃyəʔsəŋ lai-lai, ʧəŋnie
     last year Li professor teach PROG five-ten-CL student PAST   this year
     ʧʰəŋ   ləʔ se-ʃəʔ-kəʔ le.
     become PERF three-ten-CL SFP.
     Professor Li was teaching fifty students last year, but thirty this year.

   b. tʰa tsai-ʃiɔ ʧəŋ ʃie təʔ   iəʔ-pəŋ ʃu, ni ʃia-kəʔ yəʔ   tsai
     he this-time right write PROG one-CL book, you next-CL month again
     lai iauyu   yəu ʃie təʔ   iəʔ-pəŋ ia.
     come probably again write PROG one-CL FUT.
     He is writing a book these days, and will probably be writing another one when you come again next month.

(14) a. ielai   ʧɔse   na   ie məʔ kʰəʔ, ʧiəu tsai ʧia-tʰəu   ʃie
     yesterday Zhangsan where also not go,   only at   home-inside write
     tsuəʔiəʔ   təʔ   lai-lai.
     homework PROG PAST.

Zhangsan didn't go anywhere yesterday, but was only doing homework at home.

b. miər   t͡ʃəʔtsaxər, vɤ iauyu   tʰa tsai t͡ʃia-xər   ʃie tsuəʔiəʔ
   tomorrow this time, I   speculate he at   home-inside write homework
   təʔ   ia.
   PROG FUT.

I speculate he will be at home doing homework at this time tomorrow.

The third reason concerns the two *təʔ*s' consistent behavior with respect to modals. Both are able to co-occur with epistemic modals *kie*(may) (15), but not ability modals *nəŋ*(can) (16), or deontic modals *tiəʔ*(have to) (17).[4]

(15)   a. Li lausɹ   kʰəʔ kie t͡ʃiəu t͡ʃiau təʔ   iəʔ-kəʔ ʃyəʔsəŋ.
          Li professor very may only teach PROG one-CL student.

          It's very possible that Professor Li is only teaching one student.

       b. t͡ʃɔse   kʰəʔ kie t͡ʃiauʃu   təʔ   ləʔ.
          Zhangsan very may teach-book PROG SFP.

          It's very possible that Zhangsan is a teacher. (Literally: *It's very possible that Zhangsan is teaching.*)

(16)   a. * Li lausɹ   ʃia ʃyəʔt͡ʃʰi nəŋ t͡ʃiau təʔ se-kəʔ pe ia.
          Li professor next semester can teach PROG three-CL class FUT.

          Intended Meaning: *Professor Li can be teaching three classes next semester.*

       b. * Li lausɹ   miəʔ   nəŋ tsai ʃyəʔʃiau ʃɔkʰɤ   təʔ   ia.
          Li professor tomorrow can at   school   give class PROG FUT.

          Intended Meaning: *Professor Li can be teaching at school tomorrow.*

(17)   a. * Li lausɹ   t͡ʃər tiəʔ   t͡ʃiau təʔ u-kəʔ ʃyəʔsəŋ ia.
          Li professor today have to teach PROG five-CL student.

          Intended Meaning: *Professor Li has to be teaching five students today.*

       b. * Mauxau tiəʔ   ʃie   tsuəʔiəʔ   təʔ   ləʔ.
          Mauxau have to write homework PROG SFP.

          Intended Meaning: *Mauxau has to be doing homework.*

All those in (16) and (17) would be grammatical without the progressive marker *təʔ*.

In summary, though occurring in different positions, the two *təʔ*s behave almost the same in terms of their phonological forms, semantic (aspectual) contribution, and

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[4] A reviewer asks why both *təʔ*s are incompatible with deontic and ability modals. This might be due to some semantic reason. Even in English, *can*, for example, when used in a progressive sentence (for example, *John could be doing his work at 5 p.m.*), the epistemic reading is preferred, while the ability reading, according to our native speaker consultants, is only possible with a very specific context (e.g. John was able to be doing his work at 5 pm when the library was open then). We do not explore the deep reason here, as we take this group of examples mainly to illustrate that verbal *təʔ* and VP *təʔ* behave alike in terms of occurring in certain modal contexts, which provides evidence that they are the same lexical item.

their interactions with tense markers and modals. Therefore, we conclude that the two *təʔ*s in the two positions are the same thing: the progressive marker [5]. Based on this observation, we believe that it is a better analysis that the differences between the VP *təʔ* and verbal *təʔ* marked constructions are attributed to factors other than the differences between two distinct *təʔ*s. We will show the crucial factor is the event structure encoded in syntax.

4 The syntax of events: pluralizing events

In this section, we will develop a functional structure that is responsible for the encoding of plural events. We will show that the functional structure of the event allows the language to express plural events responsible for the cumulative event reading. This analysis will be crucial to our analysis of the verbal *təʔ* marked sentence, which, we argue, has the functional structure of plural events.

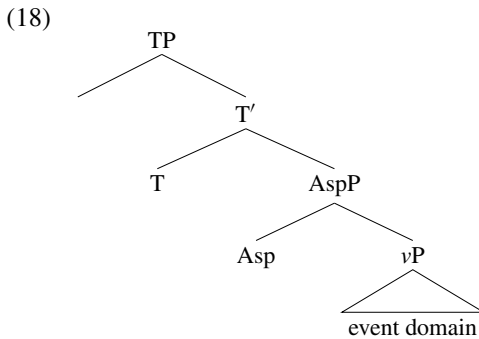### 4.1 The existence of plural events

In this article, we adopt the constructivist approach to the syntax of argument structure (Borer 2005a, b; Ramchand 2008b; Marantz 2013), according to which argument structure is not projected from the verb, but is encoded by functional structure. Following this approach, the information regarding argument structure is read off from a functional structure, *v*P (or E(vent)P in Borer 2005b). Within this approach, theta roles are not assigned by the verb but by the functional structure. Despite the differences in technical details, the mainstream studies within the constructivist approach all assume

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[5] A reviewer points out that *təʔ* in Dalad Chinese might remind readers of *de* in Mandarin Chinese, considering that these two markers have quite similar pronunciations. In particular, *de* in the *shi...de* cleft construction in some northern Mandarin Chinese can also appear in both postverbal and post VP positions. However, there are sufficient reasons to argue that these two markers are completely different. First, in the *sʅ...təʔ* cleft construction in Dalad, the counterpart of Mandarin *shi...de*, *təʔ* can only appear in the postverbal position, which means "S *sʅ* V O *təʔ*" is ungrammatical, as (1b) shows, different from the progressive *təʔ*, which can be either VP final or verb final.

(1) a. vɤ sʅ tsuəʔ təʔ fe
I   is cook TE meal
I COOKED the meal.

b. * vɤ sʅ tsuəʔ fe   təʔ
I   is cook meal TE
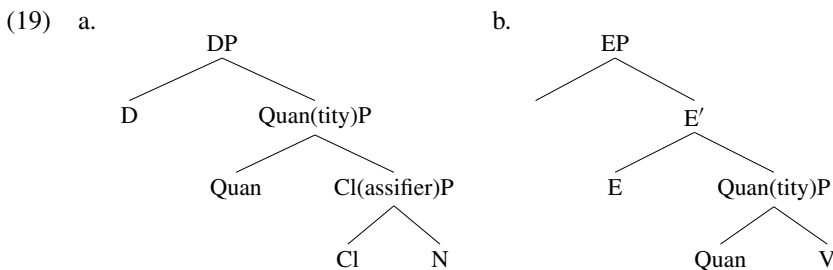Intended Meaning: *I COOKED the meal.*

Secondly, *təʔ* in *sʅ...təʔ* doesn't require the object to be a quantity DP, as showed in (1a). Thirdly, *sʅ...təʔ* has nothing to do with progressive meaning, while the *təʔ* we describe in this article clearly provides progressive interpretation. The *təʔ* in the cleft construction is exactly the counterpart of *de* in Mandarin Chinese, the former exhibiting exactly the same grammatical behaviour with the latter. The progressive *təʔ*, we tentatively assume, has the same origin with the continuous marker *zhe* in Mandarin, hence not sharing any semantic or syntactic similarity or historical origin with *de*. One piece of evidence is that in some regions in Dalad, *təʔ* is still pronounced as *ʧəʔ*, and the native speaker's impression is that *təʔ* is a phonologically reduced version of *ʧəʔ*. Luo (2003) based on his cross-dialect study of Chinese dialects also concludes that the durative *de* and *di* in Chinese northern dialects share the same origin with the durative *zhe* in Mandarin.

that a single event is encoded by a functional structure *v*P or its equivalent like EP, which is further selected by higher heads like Asp and T:

(18)

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           TP
          /  \
             T′
            /  \
           T    AspP
               /    \
             Asp      vP
                     /  \
                  event domain
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The *v*P domain is responsible for the event information, while the higher Asp head provides a point of view over this event, and the T head anchors the event in the timeline by specifying the temporal relationship between the utterance time and the event time. Following this widely adopted structure, it is always the case that only a single event, i.e. a singular event, is encoded in syntactic derivation. However, we argue that there are both conceptual and empirical reasons to assume that the functional structure of events can also express plural events.

The first reason is related to the parallelism between nominals and events. It is a common view that there is a parallel relationship between nominals and events: both are entities denoted by human language, and both have to be anchored, the former in space and the latter in time. This parallel relationship is also assumed to be encoded in syntax (cf. Rothstein 1999, 2004a; Borer 2005a, b; Wiltschko 2014; Truswell 2018). The representative researches that specify this parallel between nominals and events are Borer (2005a, b). Below are the functional structures of DP for nominals and EP (equivalent to *v*P in the traditional sense) for events:

(19)   a.   b.

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            DP                                      EP
           /  \                                    /  \
          D    Quan(tity)P                             E′
              /        \                              /  \
           Quan    Cl(assifier)P                     E    Quan(tity)P
                      /    \                              /    \
                    Cl      N                          Quan     V
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The above structures show that both objects and events are expressed by similar functional structures. The D head corresponds to the E head, both taking the deictic function of anchoring an entity. Also, both structures have a Quantity head: in DP, this head specifies the quantity of the objects, while in EP, it is responsible for telicity. Adopting Borer's basic framework, Hu (2018) further argues that in EP there is a

Classifier head below the Quantity head, hence making the two functional structures of DP and EP exactly parallel.[6]

Despite the parallelism between DP and vP/EP, there is a noteworthy difference. A DP can express a single object or plural objects:

(20)   a.   a cat

      b.   two cats

      c.   cats

Of course, a DP can also involve a mass noun like *water*. EP can express a mass event, i.e. an atelic event, and a single atomic event, i.e. a telic event (cf. Rothstein 2004b, 2008). However, an EP structure in the previous literature does not express more than one event.[7] In addition to the theory-internal motivation regarding the strict parallel relationship between DP and EP to propose the possibility of expressing plural events, there is also an empirical reason illustrated by the following examples:

(21)   a.   John carried a goat into the barn in thirty seconds for an hour straight. (MacDonald 2008: 131)

      b.   Last night, John read that book three times.

In the above examples, more than a single event is expressed. For (21a), the single event is John's carrying a goat into the barn which took thirty seconds, and this event happened quite a few times for an hour, but exactly how many times this event took place was not known. This is a case of 'bare plural events', corresponding to bare plural nominals like *apples*. If a sentence expresses bare plural events, it means that an event e occurred once or more than once, but the exact number of the occurrence is unspecified. This is like the meaning of bare plural nouns. Take *apples* for example. This bare plural expresses the information that there is an apple or more than one apple, but the exact number of apples is not specified, which is exactly the meaning of number-neutrality of bare plurals. In (21b), *three times* indicates that three events of John's reading that book happened last night. This situation corresponds to the quantity DP like *three apples*.

4.2 The functional structure of plural events

Above we have shown that there are both conceptual and empirical reasons to assume that a single clause can also involve a functional structure that can encode plural events. In this subsection, we postulate the structure of plural events as follows:

---

[6] In Hu's (2018) analysis, the Classifier head in the event domain provides an interpretable Division feature (in nature a verbal feature) to turn the predicate into an entity, hence an obligatory functional head in EP.

[7] Zhang (2017) is an exception which argues that there is a Unit head above vP responsible for the counting of the event, and this hypothesis is applied for the account of 'verbal classifiers' in Chinese. Although the research issues and theoretical details are different from those of the present research, the general spirit that an event can be counted (and hence pluralized) is shared here.
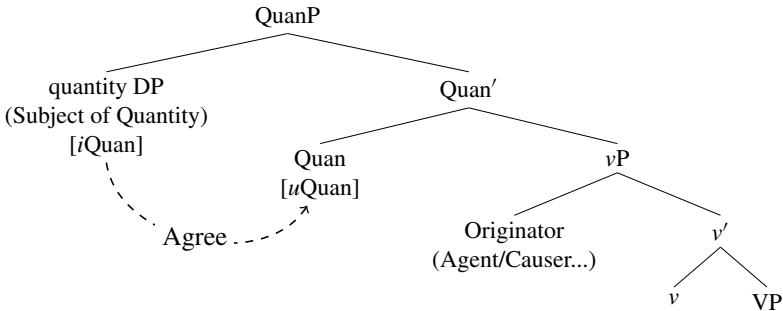
(22)

```
            Quan(tity)P
           /
        Quan′
       /      \
    Quan       vP
              /    \
        single event domain
```
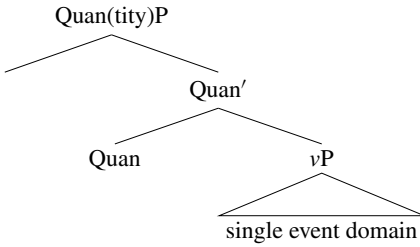
In the above structure, vP is the domain that encodes the information of a single event. If only a single event is to be expressed, QuanP will not project. But if a sentence expresses plural events, then QuanP will be projected. This situation requires that the Quantity feature on Quan head be valued. In DP, a numeral can be merged in the Quan position to directly value the feature, or a silent unspecified Quantity feature is provided in the case of bare plurals. Following Borer (2005b), we argue that the Quan feature in the above structure can be valued via [specifier-head] agreement relationship by copying the Quantity feature of the DP in [Spec, QuanP] onto Quan head.[8] This means that the Quantity feature on Quan head will be valued if a quantity DP is inserted in [Spec, QuanP] position.

We argue that the event in a verbal *təʔ* marked sentence always expresses plural events, for reasons we will present in the next section. If this assumption is on the right track, the event structure is as follows:

(23)

```
                        QuanP
                      /        \
          quantity DP            Quan′
        (Subject of Quantity)   /      \
            [iQuan]          Quan        vP
                            [uQuan]      /    \
                                  Originator    v′
                      Agree     (Agent/Causer...) /  \
                                                 v    VP
```

This syntactic derivation has corresponding semantic consequences, in particular the bare plural event interpretation. The valuation of the Quantity feature on Quan head only guarantees that there is a Quantity value for the event expressed by vP, but the specific quantity, i.e. the cardinality of the occurrence of the event denoted by vP, is not specified. The semantics of bare plural events is therefore quite similar to that of bare plural nominals. It expresses the information that an event occurs once or more than once (and it is the default inference/implicature that often yields the default plural

---

[8] In Borer (2005b) the QuanP is within the single event domain (Borer's EP or vP in this paper). This Quan head, when assigned a Quantity feature (or, in Borer's terminology, when an open value is assigned a range), will provide an atomic (bounded) event, hence giving rise to a telic interpretation. One way to value this Quan feature in English is to merge a quantity DP in [Spec, QuanP] via the [Specifier-Head] agreement relationship, as in *John ate three apples in five minutes*. In this paper, if not specifically explained, QuanP refers to the projection in (22) that is above the single event vP domain.

interpretation, exactly like the interpretation of bare plural nominals), but the specific quantity of the occurrence is unspecified, hence the property of number neutrality.[9] That the quantity feature does not specify the exact number is not a radical assumption, considering that a grammatical feature (in our case the Quantity feature) is typically semantically bleached (cf. Roberts and Roussou 2003; van Gelderen 2004 and also Biberauer 2017a on the "recycling" that underlies the formalization of grammatical features).[10]

The semantic result then is a bare plural event. Hence we reach the following conclusion:

(24) If vP is selected by a Quan head, and the uninterpretable Quantity feature on Quan head is valued by a quantity DP in [Spec, QuanP], an interpretation of bare plural events will be derived.

Following the constructivist approach, the argument structure information is completely derived from the functional structure. In (23), the DP in [Spec, vP] is taken as the Originator (Borer 2005b) (or Initiator in Ramchand (2008b)) which covers Causer and Agent and other names given to the external argument. Note that another argument is in [Spec, QuanP], hence getting the interpretation of 'Subject of Quantity' following Borer (2005b), which is mainly the Theme argument in the traditional sense. Together with the plural event interpretation as stated in (24), for (23) we get the following interpretation:

(25) Let's call the entity denoted by the DP in [Spec, vP] x and the entity denoted by DP in [Spec, QuanP] y.

   a. There is an event e and a set E, such that $e \in E$.

   b. The cardinality of E is unspecified.

   c. e has an agent x, and E involves the total number of y specified by the numeral, but the exact number of y in each e is unspecified.

The above information is completely derived from the syntactic structure. An important point has to be highlighted: in the functional structure of plural events, i.e. QuanP in our analysis, vP does not involve any internal argument, but only an external argument, i.e. x in (25). An additional DP is merged in [Spec, QuanP], which is interpreted as the Subject of Quantity/Theme of the whole set of events. This leads to the consequence that the whole set of entities denoted by this DP does not have to be involved in a single e, because it is not in the vP domain. To meet the requirement of this structure, we only have to make sure that this set of entities is involved in E, which is the sum of e.

---

[9] Another possibility is that a specific numeral is taken to specify the specific number of event occurrences, and if this happens, a specific event classifier is also needed in the derivation. This situation is argued to be existent in Chinese in Zhang (2017).

[10] We thank a reviewer for raising this point for us.

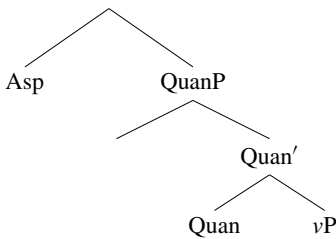## 5 Progressive təʔ in Dalad: category, interpretation, and positions

In this section, with the event structure specified in Sect. 4, we will explain the major issues related to progressive təʔ in Dalad.
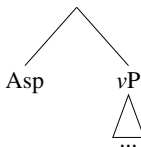
5.1 Deriving the interpretations of təʔ

Our hypothesis is that *təʔ* in Dalad is always the same progressive marker. What distinguishes verbal *təʔ*(26a) from the VP *təʔ*(26b) is that the former appears in a clause where there is an additional layer of QuanP .[11]

(26) a.

```
              /\
             /  \
           Asp   QuanP
                 /\
                /  \
              Quan′
              /\
             /  \
          Quan   vP
```

b.

```
        /\
       /  \
     Asp   vP
           /\
          /__\
           ...
```

We first address the issue of semantic interpretation. For progressive aspectual reading, we follow the syntactic theory of tense and aspect proposed by Stowell (1995, 1996, 2007), Demirdache and Uribe-Etxebarria (2000, 2007, 2014), Arche (2014), among others. According to these researchers, an Asp can be taken as a predicate that takes two temporal arguments, assertion time and event time, and a progressive Asp indicates that the assertion time is within an interval of the event, as is illustrated by the following schema:
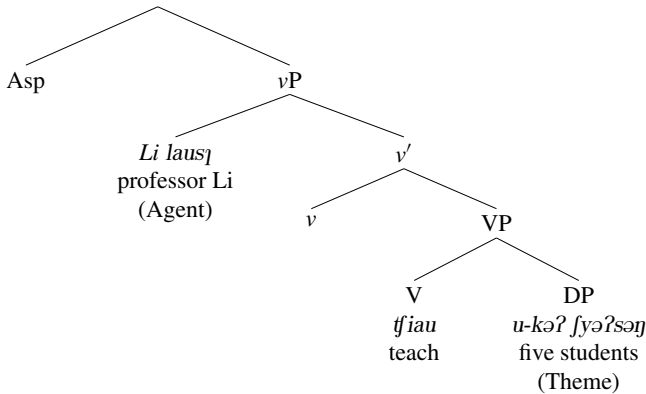
(27)

```
                    AST-T within EV-T
                    REF-T/AST-T
        ──────────┤──┤──────────┤──┤──────────▶
          EV-T
```
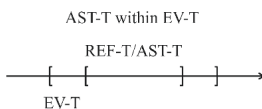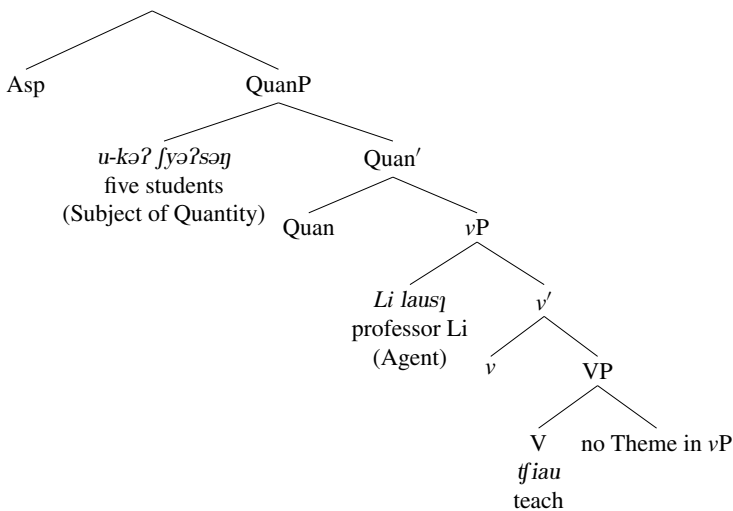
(Demirdache and Uribe-Etxebarria 2014: 857)

---

[11] In 5.3, we will show that *təʔ* only has a semantic Asp feature that provides the progressive aspectual interpretation and it lacks formal features, hence it is not able to project. For details, see the discussion in 5.3. Also, the following tree diagrams do not specify the final position of *təʔ*, and again we will come back to this issue in 5.3.

In the syntactic structure of Dalad, the progressive marker *tə?* provides progressive aspectual information. As shown below, two interpretations will arise depending on whether an additional projection of QuantityP is available, and how the exact positions of *tə?* are determined will be discussed in 5.3.

(28)   a.

```
              Asp                    vP
                          Li lausɪ              v'
                          professor Li
                          (Agent)       v              VP
                                              V              DP
                                              ʧiau         u-kə? ʃyə?səŋ
                                              teach         five students
                                                            (Theme)
```

      b.

```
            Asp                  QuanP
                     u-kə? ʃyə?səŋ              Quan'
                     five students
                     (Subject of Quantity)  Quan              vP
                                                   Li lausɪ              v'
                                                   professor Li
                                                   (Agent)      v              VP
                                                                     V    no Theme in vP
                                                                     ʧiau
                                                                     teach
```

In (28a), the progressive Asp takes two temporal arguments: the assertion time interval, and the event time denoted by *v*P, which is the complement of Asp. This Asp then returns the reading that the assertion time interval is within the time of the event denoted by *v*P, hence the progressive interpretation. Since *five students* is the internal argument of this event, it means that at any sub-interval of this event, the Theme is always *five students*, which therefore explains why acumulative reading is impossible.

Things are very different in (28b) because the temporal arguments of the progressive Asp head are different. Note that in this structure, the functional structure for the event is not *v*P but QuanP. This means that in addition to the assertion time interval, the other

temporal argument of the progressive Asp is the time of the sum of the event denoted by *v*P. Therefore, the reading we get involves the following elements:

(29)   a.   There is an event *e* that involves Professor Li's teaching.

b.   There is a set of *e*, which we call *E*.

c.   The number of *e* in *E* is unspecified.

d.   *E* involves five students.

e.   The assertion time interval is within the time of *E*.

Following this reading, at a sub-interval of *E*, there is always Professor Li's teaching, but how many students he is teaching is unspecified; it can be any number within five. This is exactly what native speakers can get from this sentence.

The derivation in (28b) makes it clear why non-quantity objects are not acceptable in this structure. This is because the projection of QuanP requires that the Quantity feature on Quan head be valued. A quantity DP, as we have argued above, can provide an interpretable Quantity feature via [Spec-head] agreement. If a non-quantity DP is inserted in [Spec, QuanP], the Quantity feature on the Quan head remains unvalued, and the derivation crashes. On the other hand, in (28a), QuanP is not projected, and the object in the sentence is the internal argument of *v*P, which, therefore, does not have to be a quantity DP. Also, as we can expect, the VP *təʔ* marked sentence derived in (28a) does not have the cumulative reading.

A reviewer asks whether we could add the equivalents of adverbial modifiers such as *each* or *together* to both *təʔ*s and if the answer is yes, what interpretation difference they have. We find most of the semantically eligible adverbials in Dalad, such as *iəʔkəʔʐəŋ*(each) and *iəʔtaləʔ*(together), function over subjects instead of objects. The only adverb that meets the requirement is *iəʔsɿ*(simultaneously), which is commonly used with verbal *təʔ*, meaning all the objects are involved in the relevant event at the same time.

(30)   a.   Li lausɿ   iəʔsɿ   tɕiau təʔ u-kəʔ ʃyəʔsəŋ.
            Li professor simultaneously teach PROG five-CL student.
            Professor Li is teaching five students simultaneously.

b.   # Li lausɿ   iəʔsɿ   tɕiau u-kəʔ ʃyəʔsəŋ təʔ   ləʔ.
            Li professor simultaneously teach five-CL student PROG SFP.
            Professor Li is teaching five students simultaneously.

(30a) means there is a teaching event, in which five students are involved simultaneously, hence a collective reading. Why does the verbal *təʔ* structure, which is argued to express cumulative reading above, have a collective reading here? As we have argued in 2.1, the collective reading is the extreme case of, and hence a possible reading of, the cumulative reading, and the adverb *iəʔsɿ*(simultaneously) forces the collective reading to be derived. That is to say, the collective interpretation is potentially allowed by the verbal *təʔ* structure and is enforced by the semantics of the adverb. Different from what we see with verbal *təʔ*, co-occurrence of *iəʔsɿ* (simultaneously) and VP *təʔ* is very odd. This is because the collective reading expressed by VP *təʔ* has already expressed simultaneity (and native speakers do have this feeling), making *iəʔsɿ* (simultaneously) in (30b) redundant. This in fact supports our conclusion that the VP *təʔ*

structure provides collective reading, thus resisting adverbs expressing collectiveness, which then confirms the semantic distinction between verbal *tə?* and VP *tə?*.

5.2 Extending to ditransitives and unaccusatives

Above we analyzed how progressive *tə?* interacts with *v*P and QuanP, resulting in different interpretations of the sentences in transitive constructions, and explained why verbal *tə?* requires quantity objects. A natural question to be asked concerns ditransitives and unaccusatives, which also have nominal phrases in the object position. Do they also allow both *tə?*s with different interpretations? What are the surface word orders in these structures? This subsection addresses these questions.

5.2.1 Ditransitives

The basic word order of double object constructions in Dalad Chinese is [V$_{DITRAN}$ I(ndirect)O(bject) D(irect)O(bject)], [V IO DO] for short. Progressive marker *tə?* in double object structures also has two positions, the postverbal position and the position following the direct object, which indicates that the distinction between verbal *tə?* and VP *tə?* exists as well.

(31)　a.　ʃyə?səŋ mə? suŋ　tə?　Li lausɿ　　*(tʃi　　tʃietsə?) livə?.
　　　　　student PL　send PROG Li professor *(several CL)　　gift.
　　　　　Students are sending professor Li several gifts.

　　　b.　ʃyə?səŋ mə? suŋ　Li lausɿ　　livə? tə?　lə?.
　　　　　student PL　send Li professor gift　PROG SFP.
　　　　　Students are sending professor Li a gift/gifts.

Verbal *tə?* requires the direct object but not the indirect object to be a quantity DP, while VP *tə?* does not have this requirement. A reviewer points out that our analysis would predict that the quantity DP must always be the one which is immediately postverbal, that is, if the only possible word order is [V IO DO], it must be the indirect object instead of the direct object that has to be a quantity DP, contrary to what we see in (31a). We argue that this prediction does not follow our analysis. The recent approaches to ditransitives, despite their technical differences, concur that the indirect object is introduced by a special functional head (the Appl(icative) Head in Pylkkänen's (2008) approach and P$_{HAVE}$ in Harley and Jung (2015). This means that the indirect object can by no means be merged in the [Spec, QuanP] position, a result consistent with the above examples.

5.2.2 Unaccusatives

The Theme argument of unaccusative verbs can occur in either subject position or object position in Dalad Chinese. When it occurs in the subject position, only VP *tə?* is allowed. This is evidenced by the following examples: the Theme argument does not have to be a quantity DP, and only collective reading is possible even when the Theme argument is a quantity DP:

(32) a. ʧi kʰuŋ tsʰaixuɤ ʃau təʔ ləʔ.
several CL firewood burn PROG SFP.

The only possible reading: *Several bundles of firewood are burning simultaneously.*

b. tsaixuɤ ʃau təʔ ləʔ.
firewood burn PROG SFP.

Firewood is burning.

But when the Theme argument occurs in object position in the existential construction where a locative argument fills in the subject position, the distinction between verbal *təʔ* and VP *təʔ* emerges.

(33) a. (xuɤləutsəʔ litʰəu) ʃau təʔ *(ʧi kəŋ) məʔtʰəu kuŋtsəʔ.
(stove inside) burn PROG several CL wood stick.

There burn several wood sticks in the stove.

b. (xuɤləutsəʔ litʰəu) ʃau məʔtʰəu kuŋtsəʔ təʔ ləʔ.
(stove inside) burn wood stick PROG SFP.

There burn wood sticks in the stove.

(34) a. (se ʃɔ) vəʔ xa kuŋ təʔ *(iəʔtautʰe) ʃəʔtʰəu kəʔtaʔ.
(hill up) towards down roll PROG many stone lump.

There roll down many stones from the hill.

b. (se ʃɔ) vəʔ xa kuŋ ʃəʔtʰəu kəʔtaʔ təʔ ləʔ.
(hill up) towards down roll stone lump PROG SFP.

There roll down stones from the hill.

We argue that the above examples are consistent with our analysis. We start from the existential construction where the internal/Theme argument is placed in the object position. In this situation, the Theme argument is placed in [Spec, QuanP], while the locative argument is placed in an external argument position as proposed in Huang (2007). In this structure, the DP in [Spec, QuanP] has to be quantitative to license the verbal *təʔ*. When the Theme argument is in the subject position, it is the only argument in the whole sentence as shown by the above examples. Suppose this DP is indeed inserted in the [Spec, QuanP] position, then following our analysis of the event structure that involves QuanP, it means that the single event encoded by the *v*P below QuanP has no argument at all. This is problematic, considering the Argument-Per-Subevent Condition proposed by Hovav and Levin (2001).

(35) Argument-Per-Subevent Condition: There must be at least one argument XP in the syntax per subevent in the event structure. (Hovav and Levin 2001)

Therefore, for a sentence with an unaccusative verb and a single argument to be grammatical, this only argument has to be placed in the *v*P, which later moves to the subject position. If this is the case, it means that this sentence will never allow for the occurrence of the verbal *təʔ*, which requires a quantity DP in [Spec, QuanP]. This prediction is exactly what we see from the above examples.

5.3 Fixing the positions of təʔ

So far, we have taken the structures in (28) to explain the mechanisms leading to the different readings in verbal təʔ and VP təʔ marked sentences, and the reason why verbal təʔ exclusively requires a quantity DP. But the positions of təʔ are not yet explained. If the təʔs in the two positions are the same item, why is this item ultimately placed in two different positions? This subsection will address this question and show that this issue is closely related to the Final-over-Final Condition (FOFC).

5.3.1 FOFC: a brief introduction

The positions of particles in Chinese are an important issue in the studies of the Final-over-Final Condition (FOFC), which is a generalization about linearization of hierarchical syntactic structures. The original version of FOFC is as follows (note that it was originally named a 'constraint' rather than 'condition'):

(36) **The Final-over-Final Constraint (FOFC) (unrestricted version) (Holmberg 2000: 124):**
   If a phrase α is head-initial, then the phrase β immediately dominating α is head-initial. If α is head-final, β can be head-final or head-initial.

We can illustrate this constraint with the following logically possible complementation combinations that exhibit head initiality/finality:

(37)

a.
Consistent head-final (harmonic)

b.
Consistent head-initial (harmonic)

c.
Initial-over-final (disharmonic)

d.
Final-over-initial (disharmonic)
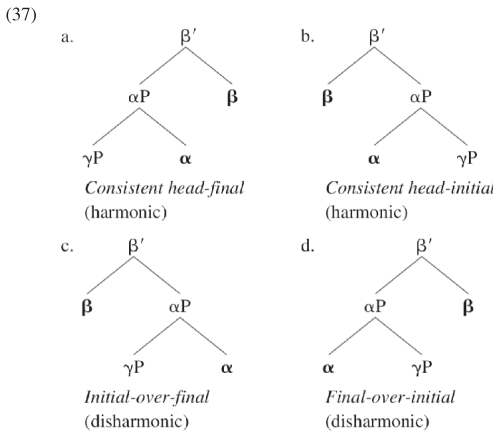
(Biberauer et al. 2014: 171)

The generalization of FOFC is that only (37d) is impossible.

This original version of FOFC proves to be unrestricted, and later a more restricted version of FOFC is proposed in Biberauer et al. (2014), wherein the concept of extended projection plays a crucial role. That is, FOFC does not apply to any phrase, but to a domain that is within a single extended projection.[12]

---

[12] Erlewine (2017) provides an alternative version that takes the spell-out domain as the domain to which FOFC applies. See Biberauer (2017b: 285 and 376–377) for a review.

(38) The Final-over-Final Condition (FOFC) – restricted version (Biberauer et al.
      2014)

      A head-final phrase αP cannot dominate a head-initial phrase βP where α and
      β are heads in the same Extended Projection.

It is shown extensively by Biberauer et al. (2014) and Sheehan et al. (2017) that
the generalization of FOFC holds across categories in the nominal domain and the
verbal domain and across languages, and even constrains diachronic change. Below
we take examples from Holmberg (2017) to illustrate this generalization. As is shown
by Holmberg, if a VP consisting of a verb and a complement is dominated by an
auxiliary verb, then FOFC would determine that the following word order should not
be allowed:

(39)   * [$_{AuxP}$ [$_{VP}$ V XP] Aux]

Finnish serves as a perfect language to show the power of FOFC regarding (39).
In Finnish, both VO and OV are possible, and Aux-VP and VP-Aux are also allowed.
However, when V, the object XP and Aux co-occur, only the order in (39) is forbidden:

(40) a. Kyllä se on ostanut auton.   [Aux [V O]] [Finnish]
          indeed he has bought car

      b. Kyllä se on auton ostanut.   [Aux [O V]]

      c. Kyllä se auton ostanut on.   [[O V] Aux]

      d. *Kyllä se ostanut auton on.   [[V O] Aux]

                                                           (Holmberg 2017: 2)

In all these examples, FOFC functions in the verbal extended projection, i.e. in
the CP domain. Ever since the introduction of FOFC, numerous studies have been
proposed on the underlying nature of FOFC. The ongoing debate about the nature of
FOFC is summarized by Biberauer (2017c: 180) as follows:

(41) a. (tendential) processing/parsing effect (Cecchetto 2013; Hawkins 2013;
          Philip 2013; Mobbs 2015)

      b. (tendential) product of diachronic forces (Whitman 2017)

      c. superficial/"late" PF condition (Sheehan 2013; Richards 2016; Etxepare
          and Haddican 2017)

   d. deep syntactic condition (Biberauer et al. 2009 *et seq.*, Cecchetto 2013)

In this article, we do not go into details of the debate. By adopting the restricted version
of FOFC, together with the acategorial-particle hypothesis in Biberauer (2017b), our
analysis lends support to the proposal that FOFC is a deep syntactic condition, which
applies to the apparent FOFC violation case that involves particles.

5.3.2 Chinese sentence-final particles and FOFC

Regarding surface violations of FOFC, researchers have proposed different approaches (cf. Cecchetto 2013; Sheehan 2013; Biberauer 2017b; Erlewine 2017). In this article, we will adopt and develop the theory put forward by Biberauer 2017b,[13] who is one of the major developers of the FOFC theory.

Biberauer's (2017b) theory on particles in East Asian languages like Chinese and Vietnamese emphasizes two major points: the categorial status of particles and the timing of merging the particle. Regarding categorial status, the essential point is that some particles in these languages are acategorial, lacking any formal feature. We therefore call this assumption the 'acategorial-particle hypothesis', and in the rest of this article, the term 'particle' specifically refers to particles in languages like Chinese, which are taken to be acategorial in Biberauer (2017b). This hypothesis implies that particles do not project, and hence are not functional heads in the extended projection (Grimshaw 1991), that is, a larger projection headed by functional heads above the projection of a lexical head like N and V. Since FOFC applies to the heads in the extended projection, the position of the particle does not affect FOFC.

If the particle is acategorial, we need to explain how it can be selected to get involved in the derivation of narrow syntax. Biberauer (2017b) argues that the acategorial particle, since it has no formal feature, is the last to be selected in the lexical array (LA), and because it does not project, it is always merged via adjunction. Under this hypothesis, an acategorial particle can be merged in three ways which leads to three surface positions, one being part of a lexical item, one being an independent item preceding a phrase, and the other being in the final position of a phrase. For the first situation, assuming a phase-based LA, and adopting Marantz's (2007) 'word-as-phase' hypothesis, Biberauer (2017b) points out that a particle can be included in an LA which contains a Root, a categorizer, such as a verbalizer, and the particle. The schema is as follows (which does not specify the linear order, an issue we will come back to shortly in this subsection):

(42)

$$
\begin{array}{c}
V_{[+V]} \\
\diagdown \\
PRT[-] \qquad V_{[+V]} \\
\diagdown \\
v_{[+V]} \quad \sqrt{R[-]}
\end{array}
$$
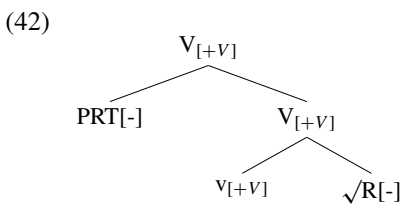
(Biberauer 2017b: 269)

In this derivation, the Root is first merged with the verbalizer, an operation assumed in Distributed Morphology (Halle and Marantz 1993; Marantz 2007; among others), and the particle is then merged via adjunction. In theory, an issue will arise in the above derivation: if both Roots and the acategorial particles are featureless, why is the particle not merged first? Biberauer (2017b) briefly mentions two possible reasons. One explanation appeals to Chomsky's (1995 *et seq.*) convergence-as-gibberish proposal:

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[13] A comprehensive introduction to alternative approaches to FOFC is beyond the scope of this research, but see Biberauer (2017b) for a review.

in principle particles can be merged first, but it is rejected because this derivation does not provide a proper interpretation. Another account is to assume that feature-less particles are just not qualified to get merged in the word-level phase. Since both explanations are very sketchy, and it is stated that the details are left to future research, we cannot offer a detailed comment on either of the accounts. We assume, however, that these points in general are in line with our following proposal which also derives the same conclusion that particles cannot be merged at the word level. Whatever the solution is, a deeper account is needed to distinguish Roots from acategorial particles. Syntactically, they seem to be indistinguishable as both lack formal features. But intu-itively and empirically (such as the possibility of merging with the categorizer), they should be different. We will address this issue later in this subsection.

In the second situation, the acategorial particle is part of an LA alongside a func-tional head, calling it F. This way of merging is quite similar to the first one except that there is no Root involved: the particle is straightforwardly adjoined to F, forming an adjunction structure:

(43)

$$FP_{[+V]}$$
$$PRT[-] \qquad F_{[+V]}$$
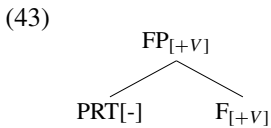
In this structure, if F is phonologically null, it will leave an impression that this particle is placed in a head initial position, as it precedes the complement of F, as if it were the functional head F. But in fact, it is part of the adjunction structure involving the real F.

Finally, an acategorial particle might be included in an LA corresponding to a phrase-level phase. In this situation, the featureless particle will be the last to be merged after other elements in this LA have been selected to enter derivation.

So far, the linearization of elements in an LA has not been explained. The crucial theoretical point can be summarized as follows: grammar tends to 'make maximal use of minimal means' (Biberauer 2017a: 210), according to which, in the early stage of acquisition, the child would maximize the information of head-initiality from existing cues. Abstracting away from technical details, what this hypothesis means is that if the head of the maximal projection to which the particle is adjoined is head-initial, then the particle, which is not a head but an adjunct, will be placed in the head-final position, so as to make the head-directionality of the phase consistent. Therefore, it can be predicted that an acategorial particle in a head-initial phase is always put in the head-final position, be it in a word-level phase or a phrase-level phase. As we will show later, both situations take place in Dalad, which supports the general hypothesis of the acategorial-particle hypothesis.

But before we apply the acategorial hypothesis in the account of the issues regarding the positions of *təʔ* in Dalad, we will first add some theoretical details to it so as to further address the following questions: (a) if both particles and Roots are devoid of any formal feature, how can we distinguish them from each other? (b) Without any formal feature, how can the particle be recognized in the derivation? (c) Not being a category of any type, why can the particle still contribute a semantic interpretation such as aspectual information and clause typing?

Our account of these questions mainly relies on arguments by Biberauer put forward elsewhere (cf. Biberauer and Hu 2014; Biberauer 2017a). Based on Chomsky's (1995) distinction between phonological ([P]), semantic ([S]), and formal features ([F]) as well as the neo-emergentist approach to language acquisition (cf. Biberauer et al. 2014; Biberauer 2016, 2019),[14] Biberauer (2017a) argues that formal features are not given by UG, and hence the acquirer will postulate the existence of a formal feature only when there is sufficient evidence;[15] otherwise, the acquirer will adopt the mechanism of 'maximal use of minimal means', which basically means the infinite use of finite means in language acquisition. In terms of linearization, this mechanism will incorporate ordering information that the child accesses in the early stage of acquisition into the formal specification of lexical categories (Biberauer 2017a: 210). This means the acquirer will only assume that a single item might take a semantic feature [S] but lack a formal feature [F]. Due to space limitations, we do not elaborate on the acquisition-based argument on the validity of this hypothesis, but see Biberauer (2017a) for details. For our purposes, we only present the most important point relevant to the present research:

(44)   Some particles in languages like Chinese only have [S] but lack [F].

The above assumption already shows the distinction between acategorial particles and Roots: the latter do not bear any feature, but only take some unspecified meaning as assumed in DM. This entails two consequences: (a) A Root serves as part of a lexical word which requires conceptual meaning for C-I interface purposes, and this conceptual meaning will only be accessed when it is merged with a categorizer so as to get into narrow syntax; (b) A Root, which does not have any semantic feature but only unspecified meaning, will not appear in positions where acategorial particles are inserted to provide corresponding semantic features.

This featural property of particles has both semantic and syntactic consequences. The semantic consequence is obvious: the merging of a particle will give rise to a type of interpretation determined by the specific content of [S]. For example, if a particle takes a progressive aspectual [S] feature, the merging of this particle will provide a progressive interpretation. The syntactic consequence is that a particle cannot get involved in Agree relation with another head, as Agree is in nature [F] based. What a particle can see is only the semantic feature represented by the label of XP adjacent to it, not any feature of the head inside XP. This is in line with the observation made in Cecchetto (2013) that clause-final particles in Chinese (i.e. particles in the left-periphery of CP domain) do not look inside TP. We argue that this observation extends to particles in other domains and the reason is the lack of a formal feature. Regarding implementation of this hypothesis against the background of Chomsky's labeling algorithm (LA) (Chomsky 2013, 2015), we tentatively argue a feature (at least features like T, Asp, D, etc.,) that determines the label should also involve a semantic feature: one motivation of LA is that we need labels to be interpreted at the

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[14] The neo-emergentist approach should be distinguished from the emergentist approach in the traditional sense such as that in the Construction Grammar tradition.

[15] Such evidence includes cases of F-entailing mappings listed in Biberauer (2017a: 43) such as 'doubling/Agreement and expletives/dummy elements, i.e. cases where we have two/multiple forms and one meaning', or 'one form with no meaning'.

C-I interface which is concerned with semantics, and we assume semantic features should play a role here.

This hypothesis also explains how an acategorial particle can be recognized and hence selected in syntactic derivation. In Biberauer (2017b), the particle is merged when nothing else is left in the LA of a certain phase. While this assumption is reasonable, it still cannot explain how this particle is recognized in the derivation, and why the merging of this particle always happens to give the right interpretation. We argue that a particle is selected due to two factors, the semantic feature [S] and the universal template proposed in Borer (2005a, b), Wiltschko (2014), and Ramchand and Svenonius (2014). These researchers hold the view that there is a universal spine with different layers responsible for the interpretation of events, aspects (viewpoints), tenses [anchoring[16]], clause typing, among others, in the verbal domain. But on the other hand, as Borer (2005a, b) argues, such interpretations do not necessarily have to be realized by a grammatical formative (i.e. the functional item with formal feature [F]), but can be realized in other ways, such as adverbial adjunction. In the spirit of this assumption, we argue that the derivation of a sentence at least involves the following layers of interpretation:

(45)
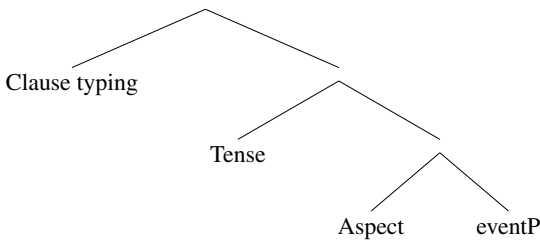
It should be noted that in the above structure, we do not have labels like AspP, TP, or CP. This is because, as we have argued above, items that provide such interpretations do not necessarily take formal features and hence do not always project. One way to achieve the above interpretations is to resort to functional items in the lexicon, i.e. items with [F]s. But following the spirit of Borer (2005a), these interpretations can still be derived if other devices are available. If in a language, the lexicon contains particles with semantic features like Asp, T, Q, etc., but lacks formal features, the only way to produce the above interpretations is to insert such particles in the corresponding layers. For example, for an event phrase, vP, to have an aspectual interpretation, an aspectual particle will be selected. Since this particle has no formal feature, it does not project, but is adjoined to vP to form an adjunction structure. Also, because of the lack of formal features, there is no Agree relationship between this particle and the v head in vP.

This analysis also implies that an acategorial particle can be inserted at different layers as long as its semantic feature is compatible with the X or XP that it is adjoined

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[16] Wiltschko (2014) does not believe that categories like T universally exist, but only assumes that there are abstract layers that are realized differently across languages. T for example, is a substantivizer of the more abstract INFL or Anchoring node. The point we take here is that across languages, there is a template in UG that specifies the layers responsible for interpretations like events, anchoring (such as T), and point of view (such as aspect), as is assumed in Borer (2005b), Ramchand and Svenonius (2014) etc.

to. One case to support this prediction is the attachment of the diminutive marker *-r* in Beijing Mandarin. The semantic contribution of this marker is to emphasize the diminutive property, which is compatible with an object, an event, etc. If this marker is an acategorial particle, our hypothesis willl predict that it can be attached in different domains. The following examples show that *-r* can indeed be attached to a noun, a classifier, and a verb, which therefore supports our hypothesis.

(46) a. yi   shan men-r
          one CL   gate-DIM

          one door[17]

      b. yi   chuan-r putao
          one CL-DIM grape
          one bunch of grapes

      c. wan-r   youxi
          play-DIM game
          play games

Below we summarize the major points of the acategorial-particle hypothesis:

(47) a. There exist a group of acategorial particles that do not contain any formal feature, only having a semantic feature.

      b. The semantic feature of an acategorial particle determines where it can be inserted based on the universal template of interpretations in a syntactic derivation.

      c. Due to the lack of formal features, an acategorial particle does not project, but is adjoined to a constituent to derive corresponding interpretation, and for the same reason, an acategorial particle cannot undergo an Agree relation with another head.

      d. An acategorial particle in a head-initial phase is always placed in the head-final position, be it in a word-level phase or a phrase-level phase.

5.3.3 Accounting for the positions of təʔ

Regarding the positions of *təʔ*, there are two issues to be tackled. The first is why the same particle *təʔ* responsible for progressive aspectual information appears in two positions, and the second is why the positions of *təʔ* are correlated with the cumulative and collective readings of the event. In this subsection we will apply the acategorial-particle hypothesis summarized above to address these two questions. We will show that the *təʔ*-marked structures do not pose any threat to FOFC, and additionally, the

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[17] Note that the diminutive property denoted by the *-r* affix is not reflected in the translation. This is because this diminutive marker mainly implies the speaker's subjective evaluation, not the objective property; hence it is almost impossible to make it explicitly expressed in the translation. The behaviours of this affix are more complex than what we present here. We only use these examples to emphasize the point that acategorial particles seem to be widely attested in Chinese and that when semantic conditions are met, a particle can be inserted in different domains.

acategorial-particle hypothesis, when combined with our proposal for the structure of events in Sect. 4, offers an account for the positional variation of *təʔ* and the corresponding interpretations.

Adopting the acategorial-particle hypothesis, we assume that *təʔ* in Dalad is an acategorial particle, which lacks a formal feature, but has a semantic feature that denotes progressive information. This property leads to the following properties of *təʔ*:

(48) Properties of *təʔ*:
    a. Feature: [S: Asp$_{PROGRESSIVE}$]
    b. Merging type: adjunction, no projection, no Agree
    c. Merging requirement: adjoined to a constituent with a verbal feature.

Caveats are in order, especially regarding the third point. In the last subsection, we have argued that acategorial particles are different from Roots because the former, but not the latter, bear semantic features. This has syntactic consequences in syntactic derivation, i.e. merging via adjunction, and also imposes semantic constraints on what the particle can be adjoined to. As a particle lacks any formal feature, the only information to be recognized is its semantic feature. In a traditional syntactic analysis, a verb or VP bears a verbal feature, which is a formal feature that piggybacks on a semantic feature. As proposed by Déchaine (1993) and Baker (2003), word class categorial features like [V] and [N] must be LF-interpretable, which means such features at least contain some semantic content and hence involve semantic features. Panagiotidis (2014) further argues that a [V] feature imposes an extending-into-time perspective on the categorizer's complement at LF. In the traditional universal hierarchy of functional structure, an Asp head selects a *v*P which also involves semantic features [Asp] and [V], so it is not a radical idea to assume that the semantic feature [Asp], which lacks a corresponding formal feature, has to be adjoined to a head or XP that takes the semantic [V] feature. In our analysis, a semantic feature only interacts with semantic features for semantic reasons. What makes this interaction happen is therefore purely semantic: Asp interacts with V to provide a point of view for an event; D interacts with N to provide a deictic anchoring. This type of interaction is also more or less assumed in Bošković and Hsieh (2013) who assume that in Chinese a demonstrative interacts with an NP to provide deictic information not due to D merging with NP, but via purely semantic function application, as the demonstrative in Chinese is an adjunct to NP.

The structure of *v*P-*təʔ* is therefore as follows:

(49)
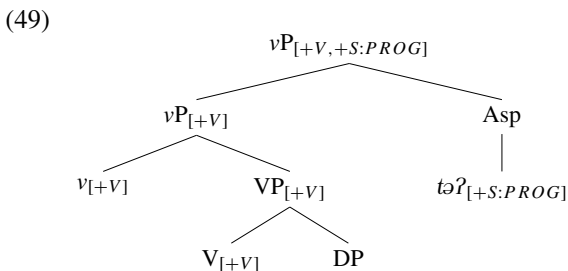
In this structure, vP has a verbal feature that contains a semantic [V] feature, hence a qualified host for the adjunction of $tə\mathord{?}$. Recall that here $tə\mathord{?}$ is not a functional head due to its lack of formal features. Therefore, it does not project, nor does it select vP as its complement. $tə\mathord{?}$ is adjoined to vP via adjunction, which is the reason why the label is still vP after $tə\mathord{?}$ is merged. We have presented the argument in Biberauer (2017b) that an acategorial particle in a head-initial phase is always placed in the head-final position, be it in a word-level phase or a phrase-level phase. This then explains why $tə\mathord{?}$ is VP final.

If $tə\mathord{?}$ in Dalad is always the same particle, why does it also occur in the verb final position? The crucial factor is the additional layer, QuanP, as we proposed in Sect. 4. If the event domain involves a QuanP, then to provide progressive aspectual information, the first possibility is to merge the particle $tə\mathord{?}$ with QuanP. If $tə\mathord{?}$ is a normal aspectual marker in the traditional sense that takes a formal feature, and hence is a functional item, this operation will work well, with the Asp head Agreeing with v head, providing progressive aspectual reading. However, $tə\mathord{?}$ is an acategorial particle lacking a formal feature, only bearing a semantic feature. We have argued, in line with Cecchetto's (2013) observation, that the lack of a formal feature results in the impossibility of an Agree operation between an acategorial particle and another head. This means that $tə\mathord{?}$ cannot see into QuanP to establish an Agree relationship with v. But still, the aspectual semantic feature requires $tə\mathord{?}$ to be adjoined to a constituent with a semantic V feature. While a vP has a verbal feature, QuanP does not. This is supported by Cecchetto and Donati (2010), who argue that when α provides the label, only a subset of its features 'percolate' to αP. For example, when V is merged with the direct object, only its verbal feature percolates, while the φ feature does not. Therefore, the label VP only bears a V feature, not a φ feature, even though the V head has both. In our case, when the Quan head merges with vP, the Quan head projects, taking QuanP as its label, which means that the Quan feature percolates to QuanP, but not the verbal feature. If $tə\mathord{?}$ is an Asp head with a formal feature, it can still merge with QuanP, as it can see into QuanP, establishing an Agree relation with the head inside QuanP that bears the verbal feature. However, since $tə\mathord{?}$ is acategorial, it can only see the semantic feature of a constituent that it is adjoined to, hence cannot be adjoined to QuanP as no V feature is presented on this node that can be seen by $tə\mathord{?}$.

(50)
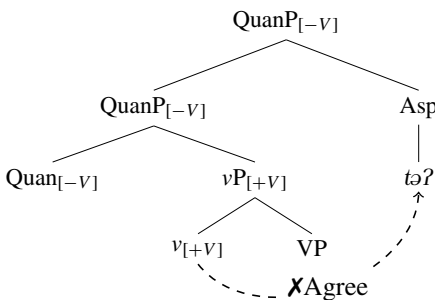
If $tə\mathord{?}$'s adjoining to QuanP is not viable, how can the aspectual information be derived for events that involve QuanP? Recall that in Biberauer (2017b) it is argued

that a particle can be adjoined either to an XP or a head. In the present case, *təʔ* needs to be adjoined to a head with a semantic V feature: obviously the verbal head is the alternative choice. The structure is thus as follows:

(51)

$$V_{[+V,+S:PROG]}$$

$V_{[+V]}$ $təʔ_{[+S:PROG]}$

$v_{[+V]}$ $\sqrt{R}[-]$
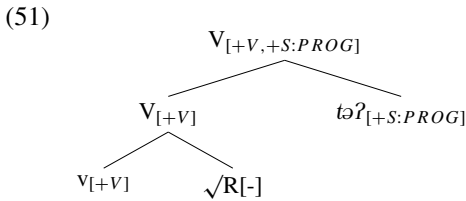
In the above subsection we have already presented Biberauer's (2017b) account of linearization for this type of merging, which dictates that the particle still has to be placed head-final in the word-level phase, that is, it has to follow the verb. This is exactly what we see here in the V-*təʔ* construction, which provides strong support for the proposal in Biberauer (2017b).

According to the above analysis, *təʔ* in theory can be adjoined either to a phrase or to a head. A question then arises, as suggested by a reviewer: why does the verbal *təʔ* not occur when QuanP is not projected? That is, since *təʔ* can be adjoined to the verb, why does this only happen when QuanP is projected? We argue that the key to this issue is the notion of last resort, which is in line with the principle of economy (cf. Chomsky 1995; Bošković 2013). Last resort is often applied to the account of movement, requiring that there must be a reason for movement; otherwise, movement will violate the economy principle. In our case, the adjoining of a particle to a head is a last resort, which only happens when attaching it to a phrase is impossible. If this particle is just a clitic, this means that its morphological property dictates that it must be attached to a head. If, as is in our case, the morphological property of a particle is flexible, making it possible to be attached either to a phrase or a head, then attachment to the head will be the last resort. That is, this will only take place when there is no way to adjoin this particular particle to a phrase. The underlying reason can be attributed to the principle of economy. Other things being equal, attaching a particle to a phrase is more economical than to a head, as in the latter case, it not only involves external merge, but also an additional operation that incorporates this particle to the head so as to form a complex head in the shape of a single lexical item. Whether we take the adjoining of the particle to the head as a purely morphological operation at PF level or as a narrow syntax operation, it is an additional operation that is not required in attaching a particle to a phrase. Therefore, when it is possible to attach *təʔ* to a phrase (*v*P in particular), the option of attaching *təʔ* to the verb will be blocked. This explains why when QuanP is not involved, *təʔ* is only attached to the *v*P. On the other hand, we have shown above that the projection of QuanP makes it impossible to attach *təʔ* to the phrase and so to still express progressive aspectual information, the adjoining of *təʔ* to the verb is adopted as a last resort. The linear order concerning the Theme and the verb (and *təʔ*) here hinges on whether V will move to Asp position. In our account, when QuanP is projected, *təʔ* cannot be inserted in Asp for the reason proposed in this section. The last resort is to adjoin *təʔ* directly to the verb, and hence the verb takes the semantic feature of [Progressive]. According to the universal spine hypothesis adopted in this paper, there is an Asp layer in the spine, and the Asp head needs to

have a semantic Asp feature just for the sake of denoting aspectual information of the event. By moving V-*təʔ* to this Asp position, this semantic feature requirement is met, and the linear order is 'V- *təʔ* Theme'.[18]

Before ending this section, we briefly present a tentative account of the word order regarding V-*təʔ*, Theme, and Goal in ditransitives. In particular, why does the Goal precede the Theme in a *təʔ*-marked sentence as shown in (31a) presented in 5.2.1?[19] In a ditransitive sentence that involves the verbal *təʔ*, we have argued why it is the Theme not the Goal that has to be a quantity DP in 5.2.1. The crucial factor here is where the Goal argument is introduced. According to Pylkkänen (2008), the Goal argument is introduced by an Appl head, which establishes a possessive relationship between the Goal and the Theme. In the structure that involves a single event, the Theme argument is inserted low in the *v*P domain, and therefore the Appl head is also in the *v*P domain where it establishes the relationship between the Theme and Goal, hence termed as lower Appl head. The key for this Appl head is that the Goal is always introduced higher above the Theme. In the verbal *təʔ* marked ditransitive sentence, the Theme argument is inserted above the *v*P, so the Goal introduced by the Appl head should also be above *v*P and higher than Theme. Following our account proposed in this section, after V-*təʔ* moves to Asp position, the linear order would be 'V-*təʔ*-Goal-Theme' as attested in 5.2.1. This analysis of V-*təʔ* ditransitives is very tentative here as the nature of applicatives in general and ditransitives in particular is still in debate (cf. Pylkkänen 2008; Harley and Jung 2015; Hu 2018).

So far, we see that *təʔ*'s different positions, VP final and verb final, find an account based on two theoretical components, the QuanP hypothesis proposed in Sect. 4 and the acategorial-particle hypothesis (Biberauer 2017b) (with our very slight enrichment). We see that our account explains the positions of *təʔ* and the corresponding event interpretations: in the QuanP structure, *təʔ* can only be adjoined to the word(verb)-level phase, which explains why the verbal-*təʔ* position is always correlated with cumulative reading.

5.3.4 (In)compatibility with the negator

Our analysis can address another issue introduced in Sect. 2, that is, the rejection of the negator in the verbal *təʔ* marked structure, which does not apply to VP-*təʔ* sentences.

(52) a. * Li lausɻ   pəʔ tʃiau təʔ   u-kəʔ   ʃyəʔsəŋ.
           Li professor not teach PROG five-CL student.
           Intended Meaning: *Professor Li is not teaching five students.*

     b. Li lausɻ   pəʔ tʃiau ʃyəʔsəŋ təʔ.
         Li professor not teach student PROG.
         Professor Li is not teaching students.

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[18] The Agent argument will move to the subject position, or perhaps topic position, an issue we do not address here.

[19] We thank a reviewer for raising this question.

We argue that the compatibility with the negator *pəʔ* concerns the PF/morphological properties of two items, the negator and V-*təʔ*. In this research we remain neutral as to whether the negator is a head or an adverbial (cf. Ernst 1995; Zanuttini 1997, 2001; Zeijlstra 2013) and only take into account an observation made in Huang (1988) and especially Ernst (1995), who show that the negator *bu* in Mandarin is a clitic, which must be cliticized to the element following it. In Distributed Morphology (cf. Halle and Marantz 1993; Marantz 2007; Embick and Noyer 2001), this is a purely PF property, and hence will take effect at the PF level instead of the narrow syntax level. In a DM-based framework, this type of negator's cliticization to its following element is the operation of Morphological Merger, in particular the type of Local Dislocation proposed in Embick and Noyer (2001), responsible for the formation of complex heads involving two terminal nodes adjacent to each other after lexical insertion. Since this operation takes place after narrow syntax, it only concerns PF instead of narrow syntactic properties like features and Agree. As Morphological Merger in this case involves both the negator and the element following it, the morphological properties of both play a role. This is the essential point we will take to account for the rejection of the negator in the V-*təʔ* construction. Before that, we provide the following examples to show that the negator *pəʔ* in Dalad is the exact counterpart of *bu* in Mandarin, exhibiting the same distribution and hence having the same morphological properties:

(53) a. Nini bu piaoliang (Mandarin).
          Nini pəʔ ʃiəʔʒəŋ   (Dalad).
          Nini not beautiful.

          Nini is not beautiful.

      b. Nver   hen bu xihuan Zhang Laoshi   (Mandarin).
          kueiny kʰəʔ pəʔ ʃixue tʃɔ   lausɿ   (Dalad).
          daughter very not like   Zhang professor.

          (Our) daughter does not like Professor Zhang at all.

      c. wo bu xiyan (Mandarin).
          vɤ pəʔ tʃʰəuie (Dalad).
          I   not smoke.

          I don't smoke.

(54) a. * ta bu chi-le   fan   le (Mandarin).
          tʰa pəʔ tʃʰəʔ-ləʔ fe   le (Dalad).
          he not eat-PERF meal SFP.

          Intended Meaning: *He hasn't eaten a meal.*

      b. * ta bu pao de kuai (Mandarin).
          tʰa pəʔ pʰau təʔ kʰuai (Dalad).
          he not run DE fast.

          Intended Meaning: *He does not run fast.*

(53) shows the negator *pəʔ* in Dalad parallels all the functions and syntactic positions of the Mandarin negator *bu* in negating adjectives (53a), stative verbs (53b), and habituals (53c). (54) tells us that both Mandarin *bu* and Dalad *pəʔ* are not able to co-occur with

perfective *le* (*ləʔ* in Dalad) (54a), or to negate manner phrases in V-de constructions (54b).

Ernst (1995) takes examples like (54b) as core evidence for *bu*'s proclitic nature, as the manner adverbial (*kuai* (fast) in (54b)) can only be generated between the negator and the verb and must move to postverbal position, leaving a trace, which prevents *bu* from cliticizing to the following element, resulting in the ungrammaticality of (54b)). Dalad *pəʔ* behaves the same as Mandarin *bu* in this respect. Therefore, following Ernst (1995), we make the following claim:

(55)   The negator *pəʔ* in Dalad is a proclitic on the following word.

Now we return to *pəʔ* and the V-*təʔ* construction. Recall that V-*təʔ* is derived from the adjoining of the acategorial particle *təʔ* to the verb, making it morphologically complex. This morphological property of the complex head V-*təʔ*, we assume, blocks recursive incorporation/compounding, hence blocking the cliticization of the negator. The blocking of recursive compounding seems to be a general pattern in Chinese, as shown in a recent study of directional constructions in Chinese (Hu 2020b). The blocking of the negator *pəʔ* in the V-*təʔ* construction, therefore, is reduced to the morphological property of *pəʔ* and that of V-*təʔ*, which is in line with our analysis of V-*təʔ* presented above.

If this hypothesis is on the right track, we should predict that as long as there is an element, which is not as morphologically complex as V-*təʔ*, intervening between V-*təʔ* and *pəʔ*, then *pəʔ* should be able to occur in the V-*təʔ* construction. This prediction does hold. The following example shows that when a modal verb occurs between *pəʔ* and V-*təʔ*, the sentence is grammatical:

(56)   tʰa pəʔ kʰɤnəŋ tsʰai tʃiau-təʔ   u-kəʔ ʃyəʔsəŋ (Dalad).
       he not possible only teach-PROG five-CL student.

       He couldn't be only teaching five students.

5.3.5 The clustering of Asp and Tense particles

In this subsection, we further show how the account developed so far can explain another linguistic fact: the clustering of particles in Dalad. Biberauer (2017b) discussed the clustering of sentence final particles (SFP) in different domains: the low SFP_1 in the *v*P domain, the clause type SFP_2, and the Attitude SFP_3. When particles co-occur in a cluster, the precedence order is 'SFP_1 > SFP_2 > SFP_3'. Biberauer's (2017b) explanation is that these particles belong to the edges of different phases, hence are merged at different points. A question, then, can be asked: what might happen when two particles are of the same phasal domain? In the present study, our focus is on *təʔ*, an aspectual particle which is in the *v*P domain. One position of *təʔ* is the *v*P final position when *təʔ* is adjoined to *v*P. If there is a tense particle which is also adjoined to *v*P and hence the two particles are in the same phase, then the phase-based account does not suffice, and we need a further account for the precedence order of the two particles. Fortunately, this situation does exist in Dalad, which, unlike Mandarin Chinese, has explicit tense markers, including the head final past tense marker *lai-lai*:

(57) a. tɕʰynie Li lausɿ   tɕiau təʔ u-ʃəʔ-kəʔ ʃyəʔsəŋ lai-lai, tɕəŋnie tɕʰəŋ ləʔ se-ʃəʔ-kəʔ le.
         last year Li professor teach PROG five-ten-CL student PAST this year become PERF. three-ten-CL SFP.
         Professor Li was teaching fifty students last year, but thirty this year.

      b. ielai   tʃɔse   na   ie məʔ kʰəʔ, tɕiɔu tsai tɕia-tʰəu   ʃie tsuəʔiəʔ təʔ lai-lai[20].
         yesterday Zhangsan where also not go,   only at home-inside write homework PROG PAST.
         Zhangsan didn't go anywhere yesterday, but was only doing homework at home.

      c. * ielai   tʃɔse   na   ie məʔ kʰəʔ, tɕiɔu tsai tɕia-tʰəu   ʃie tsuəʔiəʔ lai-lai təʔ.
         yesterday Zhangsan where also not go,   only at home-inside write homework PAST PROG
         Intended meaning: *Zhangsan didn't go anywhere yesterday, but was only doing homework at home.*

[21] The above examples show that *lai-lai* is compatible with both verbal *təʔ* and VP *təʔ*, and that, in the latter case, we have the cluster of two particles, *təʔ* and *lai-lai*, with the former preceding the latter, not the other way round, as (57c) indicates. Our slight enrichment of the acategorial-particle hypothesis in fact predicts this possibility. Recall that we have argued that although an acategorial particle lacks any formal feature, its semantic feature will determine which X or XP it can be adjoined to. In the present case, we have an Asp particle and a Tense particle, whose semantic content determines the sequence of adjoining: the Asp particle is adjoined to *v*P and then the T particle is adjoined to *v*P, which already bears an [Asp] semantic feature due to the adjoining of the Asp particle. Before ending this section, we would like to point out that the assumption that the semantic content of the acategorial particle determines the sequence of their adjoining is implied in Biberauer's (2017b) account of particle clustering. The reason why SFP$_1$, SFP$_2$ and SFP$_3$ are placed in different phase domains is due to their semantic content, corresponding to aspect, clause typing and speaker's attitude. To put it another way, this implies that the semantic content of these acategorial particles determines which phasal domain it can be engaged in.[22] What we have argued here is just an extension: the semantic feature also determines the sequence of merging of the particles within a single phasal domain.[23]

6 Conclusion

In this paper, we started with the puzzling issues regarding the two positions of the progressive Asp particle *təʔ* in Dalad Chinese. Adopting Biberauer's (2017b) acategorial-particle hypothesis, we proposed that the *təʔ*s in these two positions are the same item, an acategorial particle that bears a semantic progressive aspectual feature but lacks formal features. On the surface, it occurs in different positions because different event structures are involved in the derivation: a *v*P that encodes a default single event, or a Quan(tity)P that can express plural events. The latter is equivalent to the Quan(tity)P in a DP structure. If our analysis is on the right track, this

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[21] A reviewer asks if *lai-lai* is obligatory. At least for this sentence, the answer is "yes".

[22] This then does not exclude the possibility that a single particle might become engaged in different phasal domains as long as its semantic content is compatible with these phases. One situation is the *r*-suffix in Beijing Mandarin, which has the diminutive semantic feature and can be engaged in verbal and nominal phrases as shown in (46).

[23] If we take the assumption in Erlewine (2017) that Asp and T belong to different phases in Chinese, then we can still take Biberauer's (2017b) phase based account, arguing that *təʔ* and *lai − lai* are particles introduced in different lexical arrays for different phases.

research provides an important development of the syntax of event structure within the constructivist approach. Previous studies in this approach, with Zhang (2017) as an exception, assume a single event in the functional structure of argument structure, but this research shows that this functional structure also contains a layer responsible for the pluralizing of events, hence strengthening the parallel relationship between the event domain and nominal domain in syntax as is argued for in Borer (2005a, b, 2013), Hu (2018), among others.

The different positions of *təʔ* and its complement phrase present an important empirical case for the study of FOFC. By combining our hypothesis on the syntax of plural events, the essential elements of FOFC (Holmberg 2000; Biberauer et al. 2008, 2009, 2014), and Biberauer's (2017b) acategorial-particle hypothesis, we argue that the two positions of *təʔ* result from the interaction between the acategorial status of this particle and the event structure involved in syntactic derivation. When there is only a single event *v*P in the derivation, *təʔ* can be adjoined to *v*P, and because of its acategorial property, it is adjoined head-finally as proposed in Biberauer (2017b). When a QuanP is involved, *təʔ* can only be adjoined to the verbal head, as it cannot see into the QuanP to Agree with the verbal head. It has to be adjoined in the postverbal position for the same reason in Biberauer (2017b): an acategorial particle is always placed in the head final position in an XP phase or in a complex head if the language is consistently head initial in its extended projection. We also presented data from Dalad, especially the (in)compatibility with the negator in *təʔ*-marked sentences and the special head final tense markers, to further support our analysis; such data exhibit special linear order issues not observable in Mandarin Chinese, and hence might be of interest for further studies of Chinese in general.

This article provides an account that combines research on event structure, Aspect, and FOFC (especially the research on particles). As far as we know, very few studies have been conducted in this style. We hope the data and the analyses presented here can provide both empirical and conceptual grounds for the further study of FOFC-based accounts of linearization issues and particles in general.

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