A temporal analysis for 'irrealis' ZAI

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Abstract

The Mandarin Chinese adverb ZAI, in its adverbial use, displays a number of peculiarities—concerning the temporal orientation of the predicate, its aspectual properties and the syntactic/logical role of the sentence where it occurs—which, as a whole, have been subsumed under the feature 'irrealis'. In this paper, we consider ZAI as an additive particle in the domain of events and we propose to derive its 'irrealis' flavour from constraints on the structure and temporal location of the asserted event. As an additive particle, ZAI conveys a presupposition which cannot be recovered indipendently from the context of occurrence.

1 Introduction

Both in traditional grammars and in monographic studies (Ma (1985), Li (1982), Liu (1999)), the adverb ZAI is usually described as satisfying two major distributional constraints, which set it aside from other aspectual and repetitive adverbs of Chinese (for instance, *hai* 'still' and *you* 'again'). One restriction is that it seems to be confined to irrealis/future contexts, see the examples (1) and (3). The other is that it cannot modify non-eventive predicates, see (2).

(1) (a) *Wo mingtian hui zai qu.*
         I   tomorrow MOD ZAI go
         I will go again tomorrow.
     (b) **Wo zuotian zai qu (le).*
         I   yesterday ZAI go PERF

(I went again yesterday)

(2) **Zhangsan zai lei.*
     Zhangsan ZAI tired
     (Zhangsan is still tired)

(3) *Ruguo Zhangsan zai qu, ta jiu*
     If   Zhangsan ZAI go, he then
     yao shenqi.
     MOD get.angry
     If Zhangsan go again, he will get angry.

The restriction on the context has received much attention in the literature, but, to the best of our knowledge, its relation with the restriction on the lexical aspect of the verb is an area of infrequent analysis. In the present paper, it is proposed that the irrealis flavour of ZAI comes from constraints on the structure and temporal location of the event. We defend the idea that ZAI is an additive particle specialised for the temporal domain.

The paper is organised as follows. In section 2, we discuss the irrealis flavour of ZAI and propose to treat it as a temporal rather than a modal constraint. In section 3, we give more evidence for an aspecto-temporal characterization, focussing in particular on the nature of the presupposed material. Next, we examine the aspectual restrictions on the sentences hosting ZAI, we present data concerning the distribution of the adverb with respect to the predicate structure and we propose to characterise ZAI as a modifier of eventive predicates. Finally, in section 4, we survey some data that show that the notion of addition applied to events surfaces in different forms of repetition, depending on the predicate type, the

arguments and contextual restrictions. Concluding remarks close the discussion.

2 The irrealis constraint

2.1 Prospective events

ZAI is mainly restricted to clauses that describe what we may call 'prospective events', see (1a,b). This situation has been captured either via a temporal restriction (Renaud and Luo (1987)) or a modal one (Liu, 1999). More precisely, Renaud and Luo (1987) caracterize the eventuality asserted by ZAI as 'future with respect to R[eference] T[ime]'. Liu (1999) adopts a stronger position and adds an 'irrealis' feature to the lexical content of the adverb. However, one should notice that caracterizing the opposition in (1) as due to an irrealis constraint makes too strong a prediction. As we can see from (4), realised events are not always ruled out, as it would be expected if such a constraint were at work.

(4) (a) *Na   shihou, wo bu   zhidao*
        That time,   I   NEG know
        women hui   zai   jianmian.
        we   MOD   ZAI meet
        At that time, I didn't know that we would meet again.

    (b) *Na   shihou, wo bu   zhidao*
        That time,   I   NEG know
        women zuotian   hui   zai
        we   yesterday MOD ZAI
        jianmian.
        meet
        At that time, I didn't know that yesterday we would meet again.

In example (4a), the event of meeting cannot be ordered with respect to utterance time, assuming a Reichembachian framework for temporal ordering of predicates. The configuration expressed can be characterised as having Reference Time which precedes both event and Utterance Time which in turn cannot be ordered among them, i.e. $<RT, \{\varepsilon_1, UT\}>$ where ε_1 is the event, RT the reference time and UT the time of utterance. An even stronger case is made by (4b), where the event of meeting is asserted to be realised in the actual world, since the temporal adverb *zuotian* 'yesterday' sets its occurrence in the past with respect to utterance time. The configuration is $<RT, \varepsilon_1, UT>$. In this case too, the occurrence of ZAI does not make the sentence ungrammatical. This example is interesting insofar as it allows us to tease apart futurity from realisation. On the one hand, Event Time is asserted to follow Reference Time in both sentences (4a,b), hence the temporal location of the event with respect to Reference Time—set by the frame adverbial *na shihou* 'at that time'—goes as expected for ZAI. The prospective facet of the traditional characterisation of the event is upheld. On the other hand, in neither sentence the event is asserted to occur before UT, hence the irrealis facet cannot be mantained.

Beside this empirical problem, notice that a modal constraint on a VP-level adverb is hard to maintain on theoretical grounds as well, since it appears to be unmotivated at the syntax-semantics interface. Indeed, modal functional projections are higher than vP/VP in the structure of the sentence (Cinque, 1999), as generally assumed in the principles and parameters paradigm. Arguments in favour of considering ZAI a VP-level adverb can be found in (Lin and Liu, 2006), where it is argued that ZAI must be located at vP level because it occurs after modal verbs and it seems sensitive to the thematic properties of the verb.

In order to account for the preceding observations, a temporal ordering is introduced in the characterisation of ZAI according to which the event described by the sentence must follow Reference Time. We also follow much literature in assuming that ZAI, as an additive adverb, does not affect the truth conditions of the sentence hosting it, see Kartunnen and Peters (1979); König (1991) and followers. Hence, a sentence containing ZAI implies the host sentence, e.g. (5a) entails (5b).

(5) a *Zhangsan mingtian hui   zai   qu*
       Zhangsan tomorrow MOD   ZAI go
       Xianggan.
       Hong-Kong
       Tomorrow Zhangsan will go again to HK.

    b *Zhangsan mingtian hui   qu*
       Zhangsan tomorrow MOD   go
       Xianggan.
       Hong-Kong
       Tomorrow Zhangsan will go to HK.

Our proposal for the asserted content of the adverb is given in (6).

(6) zai' $(P)(\varepsilon_1) = 1$ iff $P(\varepsilon_1) \wedge RT < \varepsilon_1$

The fact of assuming that the asserted event must occur after the Reference Time introduced by the main clause enables us to predict the main distributional restrictions of ZAI correctly, while leaving open the possibility of mapping realised events, a case illustrated by example (4). In short, (6) allows configurations $<RT, \{\varepsilon_1, UT\}>$, cf. (4a), as well as $<RT, \varepsilon_1, UT>$, cf. (4b), and $<UT, \varepsilon_1>$ as usually accepted.

2.2 Future reference and virtuality

The issue of the nature of ZAI is not easily settled. The mandatory presence of a modal auxiliary in the clause hosting ZAI, e.g. *hui* in example (7b), may be taken as evidence for postulating a modal constraint on ZAI. When expressing an event which is future with respect to reference time, the modal seems to be required, as illustrated by the contrast in (7), a fact that makes it hard do distinguish between modality (hence 'irreality') and future reference.

(7) (a) *??/*Mingtian   Zhangsan   chuyuan.*
         Tomorrow   Zhangsan   be.dismissed

     (b) *Mingtian   Zhangsan hui*
         Tomorrow   Zhangsan MOD
         chuyuan.
         be.dismissed
         Tomorrow Zhangsan will be dismissed from the hospital.

Modal *hui* is generally assumed to conflate temporal and modal functions, in partial analogy with modal auxiliaries in other languages, as for example English *will*. Recent proposals, in particular, treat *hui* as a fully grammaticalized temporal marker. For instance, Lin (2003) analyses *hui* as a temporal operator which always shifts forwards the time of the event. This characterisation appears to be too strong, when one considers that *hui* behaves as a true epistemic modal which can refer to past or simultaneous eventualities, as Lu (2003) and Wang (2007) have indipendently pointed out. Once one assumes an epistemic value for *hui*, its necessary contribution to

the expression of future reference follows straightforwardly. The fact that future reference and epistemic uncertainty coincide is well established[1].

3 Temporal and aspectual restrictions

3.1 The presupposed event(s)

ZAI may seem not to conform to the traditional notion of additive particles as focus sensitive particles because it occupies a fixed position in the clause. However, it does conform to it in the sense that it relates the value of the particular expression in its scope to a set of alternatives.

As recalled in the previous section, the contribution of an additive adverb to the meaning of sentences is not expressed in terms of modification of their truth conditions. Additive adverbs affect the felicity conditions of host sentences as they trigger presuppositions. We propose that ZAI triggers two presuppositions. The first one is the traditional presupposition of existence of at least another event ε_2 (called alternative or antecedent), which is the proper of additive items. The presuppositional status of ε_2 is confirmed by the fact that the committment to its existence is preserved in negative contexts. As shown by example (8), adding a continuation that denies the existence of the presupposed event leads to inconsistency.

(8) *#Zhangsan hui   zai   chang yi   shou*
     Zhangsan   MOD ZAI sing   one   CL
     ge   (keshi ta yiqian mei   chang ge)
     song (but   he before NEG sing   song)
     Zhangsan will sing one more song (but he didn't sing before)

The second presupposition stems from the nature of ZAI as it concerns the temporal order between asserted and presupposed events. The presupposed event ε_2 must precede the asserted event ε_1, as illustrated by the contrast between (9) and (10). In (10), ε_1 temporally precedes ε_2 and the sentence is akward.

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[1] The temporal constraint on the positioning of the event seems to be flouted in some cases of subordinate clauses introduced by *-de shihou*, as noted by Alleton (1972). The semantic relation that the temporal clause entertains with the matrix clause in such examples needs to be considered in more detail. The issue would bring us beyond the scope of this paper.

(9) *Zhangsan hui chang yi shou ge,*
Zhangsan MOD sing one CL song
yihou hui zai chang yi shou.
after MOD ZAI sing one CL
Zhangsan will sing a song, and then he will sing another one.

(10) *#Zhangsan houtian hui*
Zhangsan the.day.after.tomorrow MOD
qu Xianggan, mingtian hui zai
go Hong-Kong, tomorrow MOD ZAI
qu.
go
(Zhangsan will go to HK the day after tomorrow (and) tomorrow he will go again.)

No ordering constraint is imposed on the presupposed event ε_2 with respect to reference time, i.e. the configuration $<\varepsilon_2, \text{RT}>$ is admissible, as exemplified by (4), as well as $<\text{RT}, \varepsilon_2>$, cf. (11).

(11) *Zhe zhong cai hen haochi, chi le*
This kind dish very tasty eat PERF
yi ci, (kending) hui zai chi!
one time for-sure MOD ZAI eat
This dish is very tasty, once you have tried it, you will eat it again!

The presuppositional content of the adverb is given in (12).

(12) $\exists \varepsilon_2 [P(\varepsilon_2) \wedge \varepsilon_1 \neq \varepsilon_2 \wedge \varepsilon_2 < \varepsilon_1]$

The presuppositional and asserted status of ε_2 and ε_1 respectively is illustrated by (13). Under negation, event ε_1 is negated but the presupposition of ε_2 survives, so the sentence is understood as saying that we met in the past but we will not meet another time. As a result, ZAI is interpreted as 'anymore'.

(13) *Women bu (hui) zai qu Aomen,*
We NEG (MOD) ZAI go Macao,
nali luxing tai weixian!
there travel too dangerous
We won't go to Macao anymore, travelling there is far too dangerous!

Two more points must be made. First, the presence of the ordering follows from the fact that ZAI applies to the domain of events. It is not an order

on which scalar inferences are drawn. Second, the existential presupposition may be satisfied by verification, when antecedents can be found in the context, see (14), but also by accommodation, when the existence of alternatives is accepted as information shared by speaker and hearer although it has not yet been introduced in the domain of discourse. This is usually not the case for unspecialised additive particles, e.g. English *also* and French *aussi* (also), but is not uncommon for temporal additive adverbs, e.g. French *encore* (again/still).

(14) *Qunian women zai Beijing jianmian*
Last year we in Beijng meet
le, jinnian kending hui zai
PERF this year for sure MOD ZAI
jianmian.
meet
We met a year ago in Beijing and we will certainly meet again this year.

3.2 General considerations for an aspecto-temporal constraint

The structure of the predicate, and in particular its dynamicity, also affect the temporal reference of the eventuality, besides modals and explicit tense and aspect markers.[2] In particular, the contrast in dynamicity can be held responsible for the so-called 'prospective interpretation' of simple present in English and other European languages. When occurring in simple present, dynamic predicates must be interpreted as describing events holding at intervals located after RT (15a), whereas non dynamic predicates, i.e. statives, overlap with RT (15b).

(15) (a) Peter plays the piano (*now/ this evening)
(b) Peter is ill (now/ *this evening)

If the generalization on the role of dynamicity holds for Mandarin Chinese too, it may provide the ground for correlating the two distributional restrictions observed for ZAI and illustrated by examples (1)–(3). As pointed out in the introduction, ZAI is restricted to clauses containing eventive (dynamic) predicates (2). The argument goes as follows. Given

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[2]See (Kaufmann et al., 2006) for a recent review and references.

the general fact that eventive predicates in non-past sentences are necessarily future with respect to RT, together with the fact, specific to Mandarin Chinese, that eventualities future with respect to RT are necessarily modalized, we conclude that the 'irrealis' flavour of ZAI does not come from a specific requirements but results from the conjoint action of the temporal (non-past) and structural (dynamic) constraints.

3.3 Taking into account properties of predicates

ZAI cannot modify homogeneous predicates. States are thus excluded (2) as well as dynamic predicates under the progressive operator (16).

(16) *Zhangsan zai zai-shuijiao.*
Zhangsan ZAI PROG-sleep
(Zhangsan is still sleeping)

Up to here we have treated eventualities as points that can be ordered. But now we need to consider the cumulative property of predicates while preserving the identity of the eventualities. Therefore, we have to look at the interval occupied by an eventuality and consider its boundaries. In order to do this we borrow the temporal trace function τ (Link, 1987; Krifka, 1989) that takes eventualities as argument and returns their running time, i.e. the smallest time at which they occur. When τ is applied to a state it returns an interval open on both sides. The (reformulated) constraint $\tau(\varepsilon_2) < \tau(\varepsilon_1)$ builds a temporal chain, and the two eventualities are distinct and ordered.

If the ordered eventualities are states, they must be disjoint. Otherwise they may overlap, the overlap would contain an interval, cumulativity applies and an unattested reading of duration would result, making ZAI similar to *still*.

There is one case where the incompatibility of ZAI with states leads to a coherced dynamic reading and this is in the comparative construction. ZAI can occur with attributive predicates (Ma, 1985) describing states, which allows the sentence to be interpreted as describing a change of state. The comparison is carried out between two stages, i.e. disjoint states, of the same subject in (17).

(17) *Zhe zhang qunzi yinggai zai chang*
This CL skirt must ZAI be-long
liang cun.
two inch
This skirt should be two inches longer.

Activities can also be seen as homogeneous down to a certain granularity. Notice that atelic activities may occur with ZAI if an interruption in the activity is supposed, see (18), even when not overtly expressed.

(18) *Zhangsan hui zai xiuxi (yi*
Zhangsan MOD ZAI rest one
huir).
little-time
Zhangsan will rest a little more.

When τ is applied to an activity it returns an interval with a closed initial boundary and an open final one. Two events can be distinct and ordered.

4 Additive readings

In this section, we look at the distribution of the adverb with respect to lexical aspectual information coming from complements and adjuncts. There appears to be a relation between the predicate type and the different forms in which repetition may surface.

The temporal constraints discussed in section 2 differentiate ZAI from repetitive adverbs like English *again* and French *encore*. For instance, *again* allows a reading where the asserted event ε_1 precedes RT, as in (19).

(19) She says she has visited London again this year.

ZAI differs from *again* also with respect to the definition of the properties that ε_1 shares with the presupposed event ε_2. In the case of *again*, the full description of ε_1 is to be used to identify ε_2. For instance, example (20) can only be understood as saying that the previous event of drawing was an event of 'drawing two circles' and it is deemed unfelicitous if the previous event of drawing was an event of 'drawing three circles' or an unspecified number of circles.

(20) She draw two circles again.

On the contrary, ZAI does not impose such a strict parallelism between events[3]. More generally, the telicity/atelicity of the predicate and the referential properties of its argument play a role in building the characterisation of the presupposed event and affect the interpretation of the repetiton.

Measure complements provide a boundary for processes. The relevant interpretation for ZAI in (21a) is increase rather than repetition of the entire event, as shown for (18). Assuming that the direct object of a transitive verb measures out the event, an interpretation as increase holds also with non referential objects. Repetition of the whole event occurs only when the object is definite and referential (21b).

(21) (a) *Zhangsan hui zai kan (yi*
    Zhangsan MOD ZAI read one
    dian) shu.
    little book
    Zhangsan will read a little more.

   (b) *Zhangsan hui zai kan yi ben*
    Zhangsan MOD ZAI read one CL
    shu/Luotuo Xiangzi.
    book/(booktitle)
    Zhangsan will read one more book / will read again *Luotuo Xiangzi*.

We observe that, in order to capture formally the different interpretations, the notion of 'repetition' as existence of more than one event to which the same event predicate applies—as proposed for adverbs like *again* and *wieder*, see von Stechow (1996) among others—is too strong. The event property contained in the existential presupposition triggered by ZAI cannot be built independently from the distributional context. We tackle this issue in a separate paper (Tovena and Donazzan, in prep.).

5 Conclusion

In this paper, we have provided a detailed analysis of Mandarin adverb ZAI as an additive particle specialised for the temporal domain. Analyses of repeti-

tive adverbs as additive items have already been proposed in the literature, but we extend the approach primarily to cover the aspecto-temporal restrictions of ZAI. On top of a general condition of temporal ordering between asserted and presupposed events, we put an ordering constraint with respect to RT, but not UT, which concerns the asserted event and allows us to distinguish between future vs unrealised events. In this way, the futurity of the asserted event is captured, room is made for the irrealis flavour of ZAI and, at the same time, the possibility of a realised asserted event, attested in (4), is ruled in.

This temporal constraint can be related to the the distribution of the adverb with respect to the predicate structure. The strict linear precedence of distinct temporal traces rules out overlap between eventualities, confining ZAI to non-homogenous (dynamic) predicates.

Finally, characterising ZAI as aspectually and temporally marked seems to be well motivated insofar as the two facets are naturally related to each other. There is crosslinguistic evidence that the instantiation of dynamic predicates is necessarily mapped after RT when the sentence is interpreted as non-past[4]. In this general picture, the irrealis flavour of ZAI can be derived from a parametric requirement of Chinese, a language that most of the time resorts to modal operators to express future reference with respect to RT.

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[3]French *encore* is similar to ZAI in this respect, as we can see from the example below.

  (i) Elle a tracé d'abord un cercle sur le trottoir et puis *encore* deux cercles sur la chaussée.
    She first drew one circle on the pavement, and then two more circles on the road.

[4]This is the case at least for languages that need to express simultaneous events by means of progressive operators or other explicit marking, like English and Chinese (Smith, 1991).

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