

Event Structure, Unaccusativity, and Locative Inversion

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This paper attempts to account for why Chinese locative inversion exhibits crosslinguistically peculiar distributional properties. I argue that the attested crosslinguistic differences are attributed to the differences in the way the so-called “state subevent condition” (Nakajima 2001) is satisfied. Specifically, I claim that it is an operation on the event structure that allows certain non-passivized transitive verbs to meet the condition. The analysis also receives crosslinguistic support from the Japanese *-te aru* construction.

1. Introduction

The locative inversion construction has often been discussed in support of the Unaccusative Hypothesis (Perlmutter 1978) because it is a crosslinguistically robust fact that the verbs attested in this construction are typically unaccusative and passive verbs, both of which lack an external argument (Bresnan and Kanerva 1989; Coopmans 1989; Hoekstra and Mulder 1990, among others). However, Levin and Rappaport Hovav (henceforth L&RH) (1995) cast doubt on the view that locative inversion is associated with unaccusativity, partly because certain subclasses of unergative verbs do occur in English locative inversion. The unaccusative analysis also faces serious challenges from languages like Chinese because not only unaccusative verbs but also certain non-passivized transitive verbs can appear in the locative inversion construction (Pan 1996). The question therefore arises as to why locative inversion constructions display broadly similar distributional patterns across languages but at the same time allow for a limited degree of variation. In this paper, I will argue that the attested crosslinguistic differences are due to the differences in the way the so-called “state subevent condition” (Nakajima 2001) is met. In particular, I will claim that it is the Head Shift operation (Sugioka 2001; cf. Bassac and Bouillon 2002) that enables certain transitive verbs to satisfy the state subevent condition.

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2. Chinese locative inversion

2.1. Two types of locative inversion in Chinese

Chinese locative inversion arguably comes in two varieties (see Pan 1996; Du 1999; Liu 2007). One type involves the perfective aspect marker *le*, and the other, the imperfective aspect marker *zhe*. Examples of each type are given below.

- (1) a. Qian-mian zuo le yi ge ren.
front sit PERF one CL person
'In the front is sitting one person.'
- b. Benzi-shang ji le ta de dianhuahaoma.
notebook-on write PERF 3sg GEN phone.number
'On the notebook was written his phone number.'
- (2) a. Qian-mian zuo zhe yi ge ren.
front sit DUR one CL person
'In the front is sitting one person.'
- b. Benzi-shang ji zhe ta de dianhuahaoma.
notebook-on write DUR 3sg GEN phone.number
'On the notebook is written his phone number.'

While both types of locative inversion take the form "LocP-V-Asp-NP", they behave differently in some respects. For example, the *le* locative inversion construction is compatible with passivization, whereas the *zhe* locative inversion construction generally fails to undergo passivization.

- (3) a. Benzi-shang bei Zhangsan ji le ta de dianhuahaoma.
notebook-on by Zhangsan write PERF 3sg GEN phone.number
'On the notebook was written his phone number by Zhangsan.'
- b. *Benzi-shang bei Zhangsan ji zhe ta de dianhuahaoma.
notebook-on by Zhangsan write DUR 3sg GEN phone.number

In addition, the *le* locative inversion construction can co-occur with an agent argument, whereas the *zhe* locative inversion construction disallows the presence of an agent, as illustrated by the contrast between (4a) and (4b) below.

- (4) a. Zhuozi-shang (Zhangsan) fang le yi ben shu.
 table-on Zhangsan put PERF one CL book
 ‘On the table Zhangsan put a book.’
- b. Zhuozi-shang (*Zhangsan) fang zhe yi ben shu.
 table-on Zhangsan put DUR one CL book
 ‘On the table was put a book (by Zhangsan)’

The agent *Zhangsan* can optionally appear in (4a), where the perfective aspect *le* is attached to the verb. The sentence with *zhe* in (4b), on the other hand, becomes ungrammatical in the presence of the agent. These observations suggest that the derivations of the two constructions follow different routes. Following Pan (1996: 424), I assume that the *le* locative inversion construction is derived through the process of argument dropping, and should be separated from the *zhe* locative inversion construction. For this reason, this paper homes in on the *zhe* locative inversion construction, which I take to be a true instance of locative inversion.

2.2. Properties of the *zhe* locative inversion construction

Let us first investigate the distributional properties of the *zhe* locative inversion construction. As in many other languages, unaccusative verbs are found in the *zhe* locative inversion construction.¹

- (5) a. Chuang-shang tang zhe yi ge bingren.
 bed-top lie DUR one CL patient
 ‘In the bed lies a patient.’
- b. Guangchang-shang shuli zhe yi zuo tongxiang.
 square-top stand DUR one CL bronze.statue
 ‘In the square stands a bronze statue.’
- c. Tai-shang zuo zhe zhuxituan.
 stage-top sit DUR committee
 ‘On the stage is sitting the committee.’

What is crosslinguistically peculiar about the *zhe* locative inversion construction is that some non-passivized transitive verbs such as *fang* ‘put’, *xie* ‘write’, *ke* ‘carve’, *yin* ‘print’, *gua* ‘hang’, and *tie* ‘stick’ can enter into locative inversion. These transitive verbs fall

¹ Notice that the verbs in (5) always receive non-agentive interpretations when they exhibit locative inversion. In other words, none of the locative inversion sentences in (5) describes a situation in which an entity comes to be in a certain position under its control.

into the class of accomplishment verbs with the argument structure <*agent, theme, location*> (Pan 1996: 414).

- (6) a. Heiban-shang xie zhe yi ge zi.
 blackboard-on write DUR one CL character
 ‘On the blackboard is written a character.’
- b. Mingpian-shang yin zhe san ge dianhuahaoma.
 name.card-on print DUR three CL phone-number
 ‘On the name card are printed three phone numbers.’

As pointed out by Liu (2007: 192), intransitive verbs of volitional process (i.e. unergative verbs) generally fail to undergo locative inversion.²

- (7) a. *Yaolan-li ku zhe yi ge xiao yinger.
 crib-in cry DUR one CL small infant
 ‘In the crib is crying a small infant.’
- b. *Chi-li you zhe yi ge nianqing ren.
 pool-in swim DUR one CL young man
 ‘In the pool is swimming a young man.’
- c. *Caochang-shang tiao zhe yi ge xuesheng.
 field-on jump DUR one CL student
 ‘In the field is jumping a student.’

Having seen the distributional properties of the *zhe* locative inversion construction, we now turn to other characteristics of this construction. As we observed earlier, it is impossible to project an agent argument in the *zhe* locative inversion construction.

- (8) Zhuozi-shang (*Zhangsan) fang zhe yi ben shu.
 table-on Zhangsan put DUR one CL book
 ‘On the table was put a book (by Zhangsan).’

In addition, modifying elements such as manner adverbs and agent-oriented modifiers are not allowed to appear in the *zhe* locative inversion construction (Gu 1992: 185; Pan 1996: 430).

² There are two exceptions reported in the literature, namely, *pao* ‘run’ and *zou* ‘walk’ (Liu 2007: 193). I leave this issue for future research.

- (9) a. Zhuozi-shang (*guyi) fang zhe yi ben shu.
 table-on intentionally put DUR one CL book
 ‘On the table was put a book (intentionally).’
- b. Zhuozi-shang (*manmande) fang zhe yi ben shu.
 table-on slowly put DUR one CL book
 ‘On the table was put a book (slowly).’

Furthermore, as in many other languages, the inverted locative phrase is always predicated of the theme argument (Tan 1991; Pan 1996; cf. Bresnan and Kanerva 1989; Coopmans 1989; Hoekstra and Mulder 1990; Bresnan 1994, among others). Consider the following example.

- (10) Che-shang xie zhe san ge zi.
 car-on write DUR three CL character
 ‘On the car are written three characters.’ (adapted from Liu 2007: 185)

In (10), the locative phrase *che-shang* ‘on the car’ is predicated of the theme *san ge zi* ‘three characters’, and it cannot be interpreted as describing the place where the action of writing was carried out. Thus, it would be infelicitous to utter the sentence in (10) in the context of describing a situation where somebody wrote three characters while he was in the car.

3. Japanese *-te aru* construction

In this section, I will show that the so-called *-te aru* construction in Japanese bears a striking resemblance to the *zhe* locative inversion construction in Chinese. It has been noted in the literature (Yamamoto 199; Nakajima 2001: fn.7) that the *-te aru* construction exhibits properties typically found in locative inversion sentences. However, these authors just cited focus on another construction referred to as the *-te iru* construction, which is considered to be the Japanese counterpart to English locative inversion. To my knowledge, there has been no substantive discussion of the *-te aru* construction in connection with locative inversion (see Iwamoto and Kuwabara 1996; Yamamoto 1997; Nakajima 2001; Ono 2001, 2005 for discussions of the *-te iru* construction).

The *-te aru* construction takes the form “LocP-*ni*-(Top)-NP-V-*te-aru*”, where *te* is a conjunctive particle and *aru* is an aspectual auxiliary. Since Japanese is a strict verb-final language, it is not clear whether this construction actually involves inversion. As we will see, however, this construction is uncannily similar to the *zhe* locative inversion construction.

First of all, the underlying object of the verb in the *-te aru* construction is marked with nominative case, and the agent argument of the main verb cannot be syntactically realized.³

- (11) Reezooko-ni-(wa) (*otoosan-ga) biiru-ga hiyasi-te-aru.
 fridge-LOC-TOP dad-NOM beer-NOM cool-PART-AUX
 ‘In the fridge are cooled some bottles of beer (by Dad).’

Secondly, the *-te aru* construction is not compatible with agent-oriented modifiers or manner adverbials.

- (12)a. Manaita-no ue-ni takusanno kudamono-ga kit-te-aru.
 chopping.board-GEN top-LOC many fruit-NOM cut-PART-AUX
 ‘On the chopping board is cut lots of fruit.’

- b. *Manaita-no ue-ni-(wa) takusannno kudamono-ga
 chopping.board-GEN top-LOC-TOP many fruit-NOM
issyookenmei kit-te-aru.
 diligently cut-PART-AUX
 ‘On the chopping board is cut lots of fruit diligently.’

- c. *Manaita-no ue-ni-(wa) takusannno kudamono-ga
 chopping.board-GEN top-LOC-TOP many fruit-NOM
yukkuri kit-te-aru.
 slowly cut-PART-AUX
 ‘On the chopping board is cut lots of fruit slowly.’

Thirdly, only accomplishment verbs can appear in the *-te aru* construction (see Masuoka 1987, among many others). Hence verbs that do not entail a change of state are not found in this construction.

- (13) *Kono niwa-ni-(wa) booru-ga ket-te-aru.
 this garden-LOC-TOP ball-NOM kick-PART-AUX
 ‘In this garden is kicked a ball.’

Fourthly, the inverted locative phrase in the *-te aru* locative construction must be predicated of the theme argument. In Japanese, locatives exhibit different morphological markings, depending on whether they are arguments or adjuncts. To be more specific,

³ Note that this construction is different from another variant of the *-te aru* construction called *possessive resultative* (Martin 1975), in which the agent is syntactically realized, and the theme is marked with accusative case. See Martin (1975) and Matsumoto (1990) for details.

locative arguments are marked with *-ni*, whereas locative adjuncts are marked with *-de* (Nakau and Nishimura 1998; see also. Takezawa 1993). The sentence below demonstrates that a *ni*-marked locative phrase, but not a *de*-marked locative phrase, is allowed to appear in the *-te aru* construction. This means that in the *-te aru* construction, the inverted locative phrase is an argument which describes the place of the theme.

- (14) Manaita-no ue{-ni/*-de} takusanno kudamono-ga kit-te-aru.
 chopping.board-GEN top-LOC many fruit-NOM cut-PART-AUX
 ‘On the chopping board is cut lots of fruit.’

Thus, the locative phrase in (14) cannot be interpreted as expressing the place where the action of chopping took place.

These observations lead us to speculate that the same processes are at work in the formation of Chinese *zhe* locative inversion and the Japanese *-te aru* locative construction. It should be noted here that there are some differences between the two constructions. For one thing, the *-te aru* construction is only compatible with transitive verbs. The contrast in (15) demonstrates that *-te aru* is compatible with the transitive verb *hiyasu* ‘cool’, while it cannot occur with the intransitive verb *hieru* ‘get cold’.

- (15) a. Reezooko-ni-(wa) biiru-ga hiyasi-te-aru.
 fridge-LOC-TOP beer-NOM cool-PART-AUX
 ‘In the fridge are cooled some bottles of beer.’
 b. *Reezooko-ni-(wa) biiru-ga hie-te-aru.
 fridge-LOC-TOP beer-NOM get.cold-PART-AUX
 ‘In the fridge got cold some bottles of beer.’

Another difference lies in the fact that while verbs found in the Chinese *zhe* locative inversion construction are restricted to accomplishment verbs with the argument structure $\langle agent, theme, location \rangle$, it is not necessary for the verb in the Japanese *-te aru* construction to include *location* in its argument structure. For example, *katameru* ‘harden’ has the argument structure $\langle agent, theme \rangle$, and does not take *location* as its argument, as illustrated by (16a) below. However, the sentence in (16b) demonstrates that the verb can occur in the *-te aru* locative construction. Notice that the locative phrase is marked with *-ni* when it occurs in the *-te aru* construction.

- (16) a. Hanako-wa yooki-no-naka{* -ni/-de} nendo-o katame-ta.
 Hanako-TOP container-GEN-inside-LOC clay-ACC harden-PAST
 ‘Hanako hardened clay in the container.’

- b. Yooki-no-naka{-ni/*-de}-(wa) nendo-ga katame-te-aru.
 container-GEN-inside-LOC clay-NOM harden-PART-AUX
 ‘In the container is hardened clay.’

Informally, sentences like (16b) mean not only that a certain entity has undergone a change of state, but also that the entity exists at some location.

4. Previous studies

In this section, we will briefly discuss some of the previous analyses that attempt to explain the distributional properties of the locative inversion construction.

4.1 The discourse functional account

L&RH (1995) deny that the locative inversion construction is an unaccusative diagnostic, claiming instead that its distributional properties are attributed to the discourse function of the construction. The relevant discourse function is “presentational focus” (Bolinger 1977; Rochemont 1986; Rochemont and Culicover 1990; Bresnan 1994, among others), which serves to introduce the referent of the postverbal NP on the scene. This function, L&RH claim, requires that the verb in the locative inversion construction be “informationally light” (Birner 1994, 1995, among others). If the verb conveyed discourse-new information, the presentational focus function would not be fulfilled because the information provided by the verb “would detract from the newness of the information conveyed by the postverbal NP” (L&RH 1995: 230). Given the requirement that the verb in the locative inversion construction be informationally light, it is reasonable that certain verbs are preferred in this construction. Verbs of existence and appearance, for example, are inherently informationally light in the sense that they contribute no discourse-new information to the information imparted by the preverbal PP, and hence they are eligible for locative inversion. Indeed, they are among the most frequently observed verbs in locative inversion.

L&RH (1995: 233) further claim that this restriction explains the virtual absence of externally caused verbs of change of state. Externally caused verbs of change of state such as *melt* and *dry* provide discourse-new information because what they describe is an externally caused, and therefore unpredictable, change of state. As such, they are not compatible with the informational lightness condition, and cannot occur in the locative inversion construction.

It should be noted here that some *internally* caused verbs of change of state are found in locative inversion. This is exemplified by the following excerpts from naturally occurring sentences (L&RH 1995: 235).

- (17) a. In the garden may bloom the Christmas plant ...
 b. Next door, to the east, decays Ablett Village ...

Unlike externally caused verbs of change of state, internally caused verbs of change of state describe a change of state that is inherent to the natural course of development of a certain entity. According to L&RH, many internally caused verbs of change of state are ambiguous between a change-of-state interpretation and a ‘be in state’ interpretation. Importantly, these verbs are found in the locative inversion construction only in their ‘be in state’ reading. To illustrate this, L&RH (1995: 236) report that the verb *grow*, which means either ‘live rootedly’ or ‘increase in size or maturity’, yields only the former reading when it appears in the locative inversion construction (see also Milsark 1974).

- (18) a. In our garden grew a very hardy and pest-resistant variety of corn. (‘live rootedly’)
 b. *In Massachusetts grows corn very slowly. (‘increase in size or maturity’)

Under the ‘live rootedly’ interpretation, the verb *grow* expresses the existence of a certain entity, and it is therefore fair to say that the verb is informationally light. Thus, the presence of internally caused verbs of change of state in the locative inversion construction does not really argue against the discourse functional analysis so long as they occur in their existence/coming-into-existence interpretation.

Convincing though it is, L&RH’s proposal cannot be automatically applied to Chinese and Japanese locative inversion. Under their analysis, it is not expected that non-passivized transitive verbs enter into locative inversion. Indeed, L&RH assume that apart from some idiomatic phrases, transitive verbs are excluded from the locative inversion construction (L&RH 1995: 223). One might nevertheless argue that the transitive verbs found in Chinese and Japanese locative inversion are informationally lighter than those found in canonical sentences. However, such an argument would still beg the question of how informationally light is light enough for a verb to occur in the locative inversion construction.

4.2. The alternation account

One might also explore the possibility that what appear to be transitive verbs have undergone causative/inchoative alternation. Indeed, some researchers assume that Chinese verbs like *fang* ‘put’ are unaccusative when they occur in the locative inversion construction (cf. Huang 1987; Li 1990; Gu 1992). This line of approach circumvents the question of why certain transitive verbs can occur in the locative inversion construction. However, as pointed out by Pan (1996), such an analysis is highly suspect, since there is no independent evidence in support of the claim that those verbs actually have intransitive uses. It should also be noted that this approach is not feasible in the analysis of the Japanese locative inversion construction, either. This is because the intransitive/transitive distinction is morphologically manifested in Japanese, and hence it would be an unreasonable claim to say that those (morphologically) transitive verbs are unaccusatives.

All things considered, the obvious question that needs to be answered is why certain non-passivized transitive verbs are found in Chinese and Japanese locative inversion, despite the fact that transitive verbs are conspicuously absent in locative inversion sentences across languages. In the next subsection, I will review Pan's (1996) analysis, which attempts to account for the presence of transitive verbs in Chinese locative inversion.

4.3. The morphological operation account

Pan (1996) claims that in Chinese, transitive verbs acquire unaccusativity as a result of a morphological operation that is induced by the morpheme *zhe*. This morphological process, which he terms the “*zhe* operation”, deletes the agent role of a verb with the argument structure $\langle agent, theme, location \rangle$.

(19) *Zhe* Operation: $\langle agent, theme, location \rangle \rightarrow \langle theme, location \rangle$ (Pan 1996: 427)

Pan further states that in order for the *zhe* operation to apply, the following conditions must be met.

(20) Conditions on the application of the *zhe* operation

The *zhe* operation applies if (a) the verb in question is an accomplishment verb with the argument structure: $\langle agent, theme, location \rangle$ and (b) the location is predicated of the theme. (Pan 1996: 426)

Under the conditions stated in (20), the *zhe* operation changes the argument structure of the verb to which *zhe* is attached. The resulting argument structure is on a par with that of an existential (therefore unaccusative) verb: $\langle theme, location \rangle$. In this way, Pan maintains the idea that unaccusativity is a necessary condition for locative inversion. However, although this analysis does cover a wide range of empirical data, the *zhe* operation seems to be a rather arbitrary rule. To the extent that the operation is postulated just to account for the peculiar behavior of the *zhe* construction, the analysis is hardly more than a mere restatement of the facts. Indeed, a number of questions are left unanswered under Pan's approach. For example, Pan's analysis does not provide an explanation for the question of why the *zhe* operation is only applicable to the class of accomplishment verbs. It is also unclear why the locative phrase must be predicated of the theme in the *zhe* locative inversion construction.

4.4. The event structural account

Let us next consider the event structural account proposed by Nakajima (2001). Within the framework of Generative Lexicon (Pustejovsky 1995), Nakajima (2001) attempts to formally define the necessary condition for a verb to undergo locative inversion. Before examining Nakajima's analysis, let us briefly look at how a generative

lexicon is characterized. A generative lexicon can be described as a computational system which involves multiple levels of semantic representations. Included in these levels of representations are the *argument structure* (ARGSTR), which contains information on the number and type of arguments a predicate takes, the *event structure* (EVENTSTR), which characterizes the event type of a lexical item and a phrase, and the *qualia structure* (QUALIA), which represents the essential characteristics or properties (attributes) of a word's meaning. Of these three levels of representations, let us discuss the event structure in more detail.

(21) *Event Structure* (Pustejovsky 1991, 1995)

- a. STATE:
 e_1 : state
- b. ACTIVITY:
 e_1 : process
- c. ACHIEVEMENT:
 [e_0 e_1 : process e_2^* : state]
- d. ACCOMPLISHMENT:
 [e_0 e_1^* : process e_2 : state]

As illustrated above, states and activities denote single eventualities (Vendler 1967; Dowty 1979, among others). Achievements and accomplishments are both analyzed as having a complex event structure consisting of two subevents: process and state. In addition to the process/state distinction, Pustejovsky postulates headedness as part of an event structure, and distinguishes achievements and accomplishments in terms thereof. Event headedness represents prominence of a subevent; that is, a headed subevent can be viewed as the most prominent part of the whole event denoted by a predicate. According to Pustejovsky, achievements involve a structure in which the final state subevent is headed, whereas accomplishments have a structure where the initial process is headed.⁴ The subevent marked with an asterisk (e_1^* or e_2^*) in (21) indicates that it is headed.

Nakajima (2001) argues that in order for a verb to occur in the locative inversion construction, the following condition, which he terms the “state subevent condition”, must be satisfied.

(22) Verbs can occur in locative inversion constructions only if their lexical representations (or those of the verb phrases containing them) involve the headed final subevent structure designating a state, the quale for which means that something is AT some place, with AT being an operator indicating locational prepositions. (Nakajima 2001: 46)

⁴ For motivations for postulating event headedness, see Pustejovsky (1995) and references therein.

Verbs of appearance and existence are subsumed under the condition in (22). In addition, the condition is compatible with unaccusative verbs in general. This is because unaccusative verbs generally correspond to achievement verbs, and, as mentioned above, achievements are analyzed as involving a complex event structure whose final subevent has a head value. Nakajima further argues that the presence of certain unergative verbs in the locative inversion construction is attributed to an operation called co-composition. I will not recapitulate his analysis here. For details, see Nakajima (2001).

Nakajima's analysis, as it stands, is confronted with two potential problems. For one thing, the state subevent condition potentially allows for gross overgeneration because the condition by itself does not say much about crosslinguistic variation. For another, the presence of transitive verbs in the locative inversion construction is problematic for his analysis because transitive verbs generally do not involve a headed state subevent. The first point seems less of an issue, given that the condition is a necessary, rather than sufficient, condition for a verb to enter into locative inversion. The second problem is more critical because the condition incorrectly rules out those transitive verbs which can undergo locative inversion.

In the next section, I will propose an alternative analysis that integrates the morphological operation approach into the event structural approach, and attempt to account for why Chinese and Japanese locative inversion display crosslinguistically peculiar distributional patterns. Assuming, despite apparent counterexamples, that the state subevent condition proposed by Nakajima (2001) accurately defines the necessary condition for verbs to enter into locative inversion, I argue that the observed crosslinguistic differences are attributed to the differences in the way the condition is met. It should be noted at this point that unlike the analysis proposed by Pan (1996), the morphological operation postulated here is an independently motivated mechanism that operates on the event structure rather than on the argument structure of a verb, and no ad hoc argument-structure-changing mechanisms would be needed to accommodate the observed facts.

5. An alternative analysis

I claim that it is an operation on the event structure rather than on the argument structure of a verb that is responsible for the presence of transitive verbs in locative inversion. More specifically, I argue that the so-called Head Shift operation (Sugioka 2001; cf. Bassac & Bouillon 2002) enables certain transitive verbs to occur in the locative inversion construction.

Recall Pustejovsky's event structure, repeated here as (23) below.

- (23) *Event Structure* (Pustejovsky 1991, 1995)
 a. STATE:
 e_1 : state

- b. ACTIVITY:
 e_1 : process
- c. ACHIEVEMENT:
 $[e_0 e_1$: process e_2^* : state]
- d. ACCOMPLISHMENT:
 $[e_0 e_1^*$: process e_2 : state]

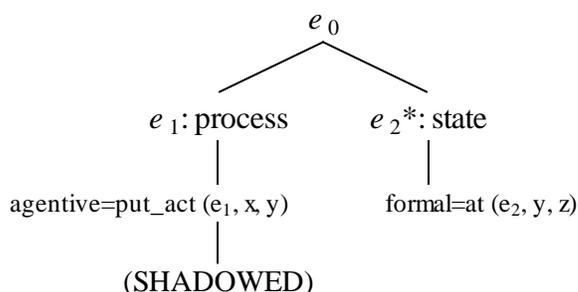
As mentioned above, achievements and accomplishments are both analyzed as having a complex event structure consisting of the initial process and the final state, and are distinguished in terms of event headedness. Head Shift is an operation that changes a left-headed complex event structure to a right-headed one, and, as a result, shadows the initial process subevent and foregrounds the final state subevent (see Sugioka 2001; Bassac & Bouillon 2002 for details), as schematically illustrated below.

(24) *The Head Shift Operation*

$[e_0 e_1^*$: process e_2 : state] \rightarrow $[e_0$ ~~e_1^* : process~~ (SHADOWED) e_2^* : state]

With this in mind, let us assume that the Chinese affix *zhe* may optionally trigger Head Shift. This means that once *zhe* attaches to a verb, it may trigger the Head Shift operation. If the V-*zhe* complex undergoes this operation, the initial process subevent is shadowed, and the final subevent receives a head value. For example, the Chinese verb *fang* ‘put’ originally has a left-headed complex event structure, but if the verb is attached to *zhe* and undergoes Head Shift, its left-headed event structure shifts into a right-headed one, as shown below.

(25)



Since the Head Shift operation shadows the initial process subevent and foregrounds the final state subevent, the resulting *fang-zhe* complex acquires passive-like properties and satisfies the state subevent condition.

In a similar vein, suppose that the Japanese auxiliary *-te aru* obligatorily triggers Head Shift. In other words, once *-te aru* attaches to a verb, it must trigger the Head Shift operation. As with the Chinese V-*zhe*, the resulting V-*te aru* complex acquires passive-

like properties without recourse to passivization, and conforms to the state subevent condition. What makes the Chinese suffix *zhe* distinct from the Japanese auxiliary *-te aru* is that the application of Head Shift is optional in the case of *zhe* but is obligatorily enforced by *-te aru*.

The analysis proposed here not only accounts for the presence of transitive verbs in Chinese and Japanese locative inversion but also provides an explanation for the differences between the Chinese *zhe* construction the Japanese *-te aru* construction. Given that the Japanese auxiliary *-te aru* obligatorily triggers Head Shift, and that no vacuous application is permitted, it automatically follows that the original event structure of a verb to which *-te aru* is attached must be left-headed because Head Shift is, by definition, an operation that changes a left-headed event structure into a right-headed one. This in turn means that only accomplishment verbs, which involve left-headed complex event structures, can occur in the Japanese *-te aru* construction. By contrast, given that the Chinese affix *zhe* optionally triggers Head Shift, it follows that both unaccusative and accomplishment verbs are allowed to appear in the *zhe* locative inversion construction. More specifically, unaccusative and accomplishment verbs meet the state subevent condition in different ways; for unaccusatives, the condition is satisfied by default, while for accomplishments, it is satisfied only by resorting to the Head Shift operation.

Let us further explore the consequences that ensue from the present analysis. As mentioned earlier, both the Chinese *zhe* construction and the Japanese *-te aru* construction prohibit the syntactic realization of the agent argument.

(26) *Chinese*

Zhuozishang (*Zhangsan) fang zhe yi ben shu.
 table-on Zhangsan put DUR one CL book
 ‘On the table was put a book (by Zhangsan).’

(27) *Japanese*

Reezooko-ni-(wa) (*otoosan-ga) takusanno biiru-ga hiyasi-te-aru.
 fridge-LOC-TOP dad-NOM many beer-NOM cool-PART-AUX
 ‘In the fridge are cooled many bottles of beer (by Dad).’

The fact that the two constructions are constrained in the same way with respect to argument realization can now be seen as a corollary of the Head Shift operation, rather than as a sheer coincidence. That is, since the process subevent is shadowed through Head Shift, it is impossible to make reference to the agent, which is an element bound within the process event.

The same reasoning applies to the ban on the presence of modifying elements related to an action. Recall that manner adverbs and agent-oriented modifiers are incompatible with the Chinese *zhe* construction and the Japanese *-te aru* construction.

(28) *Chinese*

- a. Zhuozishang (*guyi) fang zhe yi ben shu.
 table-on intentionally put DUR one CL book
 ‘*On the table was put a book (intentionally).’
- b. Zhuozishang (*manmande) fang zhe yi ben shu.
 table-on slowly put DUR one CL book
 ‘*On the table was put a book (slowly).’

(29) *Japanese*

- a. Manaita-no ue-ni-wa takusannno kudamono-ga
 chopping.board-GEN top-LOC-TOP many fruits-NOM
 (*issyookenmei) kit-te-ar.
 diligently cut-PART-AUX
 ‘On the chopping board is cut lots of fruit (diligently).’
- b. Manaita-no ue-ni-wa takusannno kudamono-ga
 chopping.board-GEN top-LOC-TOP many fruits-NOM
 (*yukkuri) kit-te-ar.
 slowly cut-PART-AUX
 ‘On the chopping board is cut lots of fruit (slowly).’

Our analysis naturally explains the fact that modification possibilities are severely limited in the two constructions. Given that manner adverbs and agent-oriented modifiers carry out modification over the initial process subevent, it follows that these modifiers are incompatible with this construction, as the initial process subevent is shadowed through Head Shift

Another important consequence of the present analysis is that it also accounts for the fact that transitive verbs that denote simple activity are not attested in locative inversion constructions across languages. This is because these verbs cannot undergo Head Shift, and hence there is no way for them to satisfy the state subevent condition.

(30) *Chinese*

- *Jiali da zhe Zhangsan.
 home-inside beat DUR Zhangsan
 ‘*At home is beaten Zhangsan.’ (adapted from Pan 1996: 425)

(31) *Japanese*

- *Kono niwa-ni-(wa) booru-ga ket-te-ar.
 this garden-LOC-TOP ball-NOM kick-PART-AUX
 ‘In this garden is kicked a ball.’

We have seen that our analysis nicely accounts for the presence of transitive verbs in Chinese and Japanese locative inversion constructions. The question that still remains is why only accomplishment verbs with the argument structure <agent, theme, location> may appear in the *zhe* locative inversion construction, whereas the *-te aru* construction does not require that the verb take a locative argument. As we saw earlier, change-of-state verbs that do not originally take a locative argument can occur in the Japanese *-te aru* construction.

- (32) a. Hanako-wa yooki-no-naka{* -ni/-de} nendo-o katame-ta.
 Hanako-TOP container-GEN-inside-LOC clay-ACC harden-PAST
 ‘Hanako hardened clay in the container.’
- b. Yooki-no-naka{-ni/*-de}-(wa) nendo-ga katame-te-aru.
 container-GEN-inside-LOC clay-NOM harden-PART-AUX
 ‘In the container is hardened clay.’

Along the lines of Nakajima (2001), I propose that the locative argument is introduced by the aspectual auxiliary *aru*. This is not surprising, given the fact that the auxiliary *aru* is morphologically identical to the existential verb *aru*. On the other hand, the Chinese affix *zhe* simply cannot introduce a locative argument on its own.

6. Concluding remarks

This paper has investigated why Chinese locative inversion shows crosslinguistically atypical distributional properties. We have seen that it is the Head Shift operation that makes it possible for certain transitive verbs to satisfy the state subevent condition. The analysis proposed here is further corroborated by the Japanese *-te aru* construction.

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