

# Coherence and Extraction from Adjuncts in Chinese

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**Abstract** The paper compares asymmetrical extraction from coordinate structures (in English) (that is, violations of the coordinate structure constraint) with asymmetrical extraction from subordinate structures (in Chinese) (that is violations of the adjunct island condition) and argues that these are grammatical if certain discourse requirements, in particular discourse relations (e.g. explanation, Occasion, common topichood etc) are met. These can be specific to the language and the kind of construction, depending also on the means of each language to express the discourse relations (by coordination or subordination).

**Keywords:** Coherence relations, adjunct island condition, clause linkage, parasitic gaps, Chinese

## 1 Introduction

Empirical and experimental evidence over the years (Xu, 1990; Truswell, 2007; Heestand et al, 2011; Hofmeister et al, 2014) have shown that extraction from across adjuncts induces crosslinguistically less robust island effects, compared to extraction from across other strong island domains (such as complex NPs or subject clauses). This prompts debates as to whether the adjunct island effects follow from a syntactic locality constraint, as is commonly assumed for strong island effects in mainstream literature. My paper seeks to contribute to the debates by presenting an argument in favor of the nonsyntactic approaches. Specifically, I present new data to show that extraction from a structured subset of adjuncts in Chinese is sensitive to discourse-semantic coherence relations (Hobbs, 1979), which are originally invoked to predict extraction behaviors from conjuncts (Schmerling, 1972; Goldsmith, 1985; Lakoff, 1986; Deane, 1990; Na and Huck, 1992; Kehler, 2002).

This paper is organized as follows: in section 2 I summarize the coherence accounts of conjuncts; in section 3, I show that the extraction behaviors in Chinese temporal adjuncts strongly parallel those of English conjuncts; Section 4 argues that this parallelism can be accommodated by treating the conjunct-adjunct difference as following from an implicational semantics-syntax mapping rule (van Valin, 2005); Section 5 explains the adjunct island effects as well as parasitic gap effects within this new analysis and suggests future extensions.

## 2 Coherence and Conjuncts

In this section I summarize previous contributions to the coherence-based theory. As Ross (1967) first notes, normally extraction from conjuncts occurs across the board, which means the extracted element needs to correspond to a position in both conjuncts. This is exemplified in (1).<sup>1</sup>

- (1) What book<sub>i</sub> did you buy t<sub>i</sub> and read t<sub>i</sub>?

Aside from such symmetric extraction, nevertheless, asymmetric extraction can also take place across conjuncts, such as the following (Kehler, 2002):

- (2) a. That's the stuff<sub>i</sub> that the guys in the Caucasus drink t<sub>i</sub> and live to be a hundred.  
 b. How many lakes<sub>i</sub> can we destroy t<sub>i</sub> and not arouse public antipathy?  
 c. Which liquor<sub>i</sub> did you go to the store and buy t<sub>i</sub>?

(2a) expresses a causal relation between the two conjuncts. (2b) expresses a violated expectation (concessive) relation between the two conjuncts: the second event is an unexpected development given the first event. In (2c) the first conjunct provides a scene (frame, setting, etc.) for the second event to occur. In all these cases, the element being extracted corresponds to the position within one conjunct, but not the other. Symmetric extraction is always possible in these relations, but (2) indicates that the constraint for extraction to be across the board is not categorical.

According to Kehler (2002, 2008), which draws upon previous approaches, symmetric and asymmetric extraction from conjuncts can receive a unified coherence-based explanation. This is based on Hobbs' (1979) argument that one of the three coherence relations (Parallel, Cause-Effect and Occasion) must be inferred and established between conjuncts for them to be asserted felicitously. Establishing a coherence relation requires that a link be identified between the propositions denoted by the utterances in a passage. According to Hobbs, the establishment of Parallel, Cause-Effect and Occasion relations proceeds as follows, respectively:

- (3) Parallel: Infer  $P(a_1, a_2, \dots)$  from the assertion of  $S_1$  and  $P(b_1, b_2, \dots)$  from the assertion of  $S_2$ , where for some property vector  $q_i$ ,  $q_i(a_i)$  and  $q_i(b_i)$  for all  $i$ .  
 (4) Explanation: Infer  $P$  from the assertion of  $S_1$  and  $Q$  from the assertion of  $S_2$ , where normally  $Q \rightarrow P$ .  
 (5) Occasion: Infer a change of state for a system of entities from the assertion of  $S_2$ , establishing the initial state for this system from the final state of the assertion of  $S_1$ .

To explain extraction behaviors, Kehler further proposes that only potential common topics for the conjuncts may undergo extraction. A potential common topic is identified when a given coherence relation is established.

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<sup>1</sup> constructions such as (1) will be henceforth referred to as ATB

Take the Parallel relation for example. Once we infer (3) and establish a Parallel coherence relation between propositions  $S_1$  and  $S_2$ , it follows that we can determine candidates for a common topic in a programmatic way. First, any assertion of a proposition in a particular situation can be construed as being about a particular entity. Assume a situation where the assertion of  $S_1$  (*i.e.* denoting a relation  $P(a_1, a_2, \dots)$ ) is construed as being about  $a_1$ , *i.e.*  $S_1$  is a statement that  $a_1$  bears the property of in the relation  $P$  with other entities. Then we infer that parallel to  $S_1$ , the assertion of  $S_2$  under the same situation is a statement that  $b_1$  is related by the relation  $P$  to other entities. Here  $a_1$  and  $b_1$  occupy the same formal position within the  $n$ -place predicate  $P$ , and they share the property of  $q_1$ . Kehler argues that we can then think of the common topic here as the superordinate category of both  $a_1$  and  $b_1$ . If  $a_1$  and  $b_1$  are totally identical, there will be no another entity that serves as a superordinate category, so the common topic will be  $a_1 (=b_1)$ . This is exactly the case of across-the-board extraction. Moreover,  $a_1$  and  $b_1$  simply needs to share the property  $q_1$  and may be specified differently in other properties. Then, the common topic can be an entity that is specified with the property  $q_1$  but is unspecified for the other properties. The following example is given by Kehler to illustrate this scenario:

- (6) Speaking of reading materials, John bought the books and Bill bought the magazines.

Here the preposed element reading materials does not correspond to a slot within either of the conjuncts, giving rise to a “gapless” extraction. It is more general than the books and the magazines, hence subsuming both, who may only share partial identity with each other (Lakoff, 1986).

Cause-Effect Relations determine potential common topics in a similar manner. As (4) shows, the second event of  $Q$  forms a causal link with the first event of  $P$ . Thus, the final state of  $Q$  will connect with the  $P$ -event and serves also as  $P$ 's result state. Given a situation where the assertion of  $P$  is construed as about an entity within  $P$ ,  $Q$  will be part of the coherent scenario that centers around that entity, even if the entity doesn't correspond to any constituent in the representation of  $Q$ . As a result, this entity qualifies as a common topic in this scenario, so that it can be extracted from its conjunct. The inference process for Violated Expectation is similar, except that we infer that  $P$  leads to  $Q$  although normally  $P$  does not cause  $Q$ . In this sense, concessive relation can be seen as a negation of causal relation (König and Siemund, 2001).

The inference process underlying Occasion relation is different. In this relation, the event denoted by the first conjunct provides the scene/circumstance for the event denoted by the second conjunct. As the two events are temporally contiguous, this scene-setting is construed as a transition where the initial state of the second event connects with the final state of the first event. As a result of this transition, as we reach the end state of the first event, we infer that a change of state takes place so that we are now in the initial state of the salient event. For each circumstance, the second event is uniquely identified by a particular connection that differs it from similar events of the same type. Thus, the

two connected events can express a coherent scenario centered around a salient entity in the second event. On the other hand, as the connection is seen as the first event preparing the scene to evoke the salience of the second event, not the other way round, the internal entities within the first event are not seen as salient within this coherent scenario.

In general, both symmetric and asymmetric extraction from conjuncts are sensitive to a coherence condition: an entity is extractable if it is salient throughout both conjuncts, which can be achieved when the connection of two conjuncts constitute a coherent scenario about that entity.

### 3 Chinese Adjunct Data

Previous literature often assumes that overt extraction from adjuncts obey the syntactic island conditions (Lin, 2005; Ting and Huang, 2008). This is motivated by data such as the following: both (8) and (9) are relative constructions where the relative head corresponds to a constituent within the adjunct part of the relative clause. (8) is unacceptable, whereas judgment in (9) is good.<sup>2</sup>

- (8) \*[Laoban [mianshi-wan ti yihou] chuqu chi fan-le] de yingpinzhe;  
*Boss interview-ASP after go.out eat meal-ASP REL applicant*  
 'The applicant<sub>i</sub> [that the boss went out for meal [after (he) interviewed   <sub>i</sub>]]'
- (9) [Laoban [mianshi-wan ti yihou] jueding luyong ti] de yingpinzhe;  
*Boss interview-ASP after decide recruit REL applicant*  
 'The applicant<sub>i</sub> [that the boss decided to recruit   <sub>textsubscripti</sub> [after (he) interviewed   <sub>i</sub>]]'

Syntactic approaches argue that this contrast is due to that in (9), a second gap occurs in the matrix part of the relative clause, creating a parasitic gap environment. Furthermore, even in a parasitic environment, if the matrix clause is further embedded in a relative clause, or if the adjunct clause is recursively embedded in another adjunct clause, judgment will be downgraded again, echoing the cases in English (Contreras, 1984; Xu, 1990; Cinque, 1990). Although I agree with the judgment patterns as mentioned above, I argue that this is not yet the full picture. Instead, I argue that the following sentences in (10-11) are also acceptable (the native speakers I consulted with unanimously agreed with my judgment), posing a severe challenge to the syntactic approach.<sup>3</sup>

- (10) [Zhangsan [yujian ti yihou] jueding gen yuanlai nüyou fenshou] de nei-ge nvhair;  
*Zhangsan meet after decide with then girlfriend break.up REL DEM-CLF girl*  
 'The girl<sub>i</sub> [that Zhangsan decided to break up with his then girlfriend [after (he) met   <sub>i</sub>]]'
- (11) [[Chubanshang jueding chuban ti yihou] zuozhe fan'er youyuqilai] de nei-ben xiaoshuo;  
*Publisher decide publish after author nevertheless be.reluctant REL DEM-CLF novel*

<sup>2</sup> ASP:aspectual marker; REL: relativizer

<sup>3</sup> DEM:demonstrative; CLF: classifier

'The novel<sub>i</sub> [that the author became reluctant [after the publisher decided to publish <sub>i</sub>]]'

In (10), the event denoted by the adjunct and the event denoted by the matrix clause are not only temporally contiguous, but also form a causal link. In (11), the event denoted by the matrix clause occurs contrary to the normal expectation of the adjunct event. Thus these examples resemble the asymmetric extraction behaviors in English conjuncts in Cause-effect and Violated Expectation relations. Furthermore, in the following examples that I construct, if we force a reading where the temporal adjunct and the matrix stand in the Hobbsonian Parallel relation, and disallows a Cause-Effect reading (i.e., watching movie follows as a consequence of me reading the book), then a symmetric extraction requirement becomes operative: judgment is downgraded both when extraction is from the adjunct and when it is from the matrix.

- (12) a. \*Nei-ben shu<sub>i</sub>, wo du-le ti yihou kan-le yi-bu dianying.  
*DEM-CLF book, I read-ASP after watch-ASP one-CLF movie*  
 'That book<sub>i</sub>, I watched a movie after (I) read <sub>i</sub>.'
- b. \*Nei-bu dianying<sub>i</sub>, wo du-le yi-ben shu yihou kan-le ti.  
*DEM-CLF movie<sub>i</sub>, I read-ASP one-CLF book after watch-ASP*  
 'That movie<sub>i</sub>, I read a book after (I) watched <sub>i</sub>.'

Another similarity concerns gapless extraction. As has mentioned above, in extraction from conjuncts the common topic may be less specific than the pair of entities in both conjuncts and simply be a superordinate category for the pair, allowing gapless extraction. As the following illustrates, a similar possibility for the extracted element to be a superordinate category also obtains in extraction from adjuncts, giving rise to gapless constructions like (13a-b).

- (13) a. Shuiguo, Zhangsan xihuan xiangjiao erqie Lisi xihuan pingguo.  
*Fruit, Zhangsan enjoy banana and Lisi enjoy apple*  
 'Fruit, Zhangsan enjoys banana and Lisi enjoys apple.'
- b. Fabiao, Zhangsan ji xie-le lunwen you chu-le shu.  
*Publications, Zhangsan both write-ASP paper and publish-ASP books*  
 '(Speaking of) publications, Zhangsan has both written papers and books already.'

## 4 Interclausal Hierarchy and Clause Linkage

The new data in (10-13) show that extraction from adjuncts and from conjuncts need to be characterized in a uniform way: here a common set of semantic relations are encoded by subordinative structures in one language and by coordinative structures in another language, but the extraction possibilities are the same for the two structures. This suggests that the extraction condition is sensitive to the semantic relations, not to syntactic structures.

Therefore, at least for temporal adjuncts in Chinese, we can rephrase the adjunct island constraint as a semantic filter, which dictates that given a coherence

relation, if the extracted element does not qualify as the common topic under a coherent scenario, the sentence will be infelicitous.

Before proceeding, we need to consider a reanalysis approach: Maybe the adjunct clauses in these examples are actually coordinative structures. Accept coherence for conjunct structure, but still maintain adjunct island conditions. This notion has been proposed for English (Huybregts and van Riemsdijk, 1987; Williams, 1990) to capture the observations that parasitic gap extraction from across adjuncts share strong semantic similarities with across the board extraction from across conjuncts (Ross, 1967; Grosu, 1980; Torris, 1983).

Williams suggests that the more a subordinative structure exhibit syntactic and semantic symmetry, the closer it would be construed as coordinative and the higher acceptability its PG will receive. Thus the acceptability hierarchy for different parasitic gaps (henceforth: PG) is reduced to a gradable scale of “coordinativeness”. The PG-ATB parallelism, thus, is accounted for because a subset of subordinative structures are actually subject to the licensing rules governing ATB.

This sort of coercion is undesirable. First, in short of a precise characterization, it is never clear how to coerce a coordinative structure from a subordinative structure, nor is it clear what it means to talk about “graded” coordinativeness. In particular, this coercion idea is originally motivated for the ATB-PG similarities, but since coordinative structure allows asymmetric extraction, we would have to coerce subordinative structure that allows asymmetric extraction to be coordinative, too. It thus seems that most subordinative structures share some “coordinativeness” to a certain degree. And since the island-inducing adjunct examples can also be construed as coordinative structure that bears an Occasion coherence relation, there might be no uncontroversially subordinative structures upon which adjunct island conditions apply.

One further piece of evidence is that a reanalysis approach is ill fit to account for the fact that the use of coordination to encode coherence relations in Chinese is quite constrained. Chinese encodes coordinative linkage by the sentential conjunction marker *erqie*, which corresponds to the sentential use of *and* in English. We see that English *and* is able to encode all the coherence relations in (1). In Chinese, as (14a-d) shows, all four coherence relations can be encoded by subordinative linkage, but only Parallel (13a) and Violated Expectation (14b) relations can also be optionally expressed by coordinative linkage. This option is not available for the Cause-Effect (14c) and Contiguity Relations (14d), which obligatorily employ subordinative linkage strategy.

- (14) a. Neiben shu<sub>i</sub>, ni mai-le ti yihou/*erqie* du-guo?  
*DEM-CLF book you buy-ASP after/CONJ read-EXP*  
 ‘Which book<sub>i</sub>, did you read   <sub>i</sub> after (we) bought   <sub>i</sub>?’
- b. Duoshao-tiao hupo<sub>i</sub>, women keyi huidiao ti yihou /*erqie* bu yinqi gong fen?  
*How.many-CLF lake we can destroy after/CONJ NEG arise public outcry*  
 ‘How many lakes<sub>i</sub>, can we not arise public outcry after (we) destroy   <sub>i</sub>?’
- c. Nei-ge jiushi [gaojiasuo de ren he-le ti yihou/\**erqie* huo dao yibaisui ] de dongxi<sub>i</sub>.

*DEM-CLF BE Caucasus REL person drink-ASP after/CONJ live till one.hundred.age REL stuff*

'That is the stuff<sub>i</sub> that people in Caucasus lived till a hundred years old after (they) drank \_\_<sub>i</sub>.'

- d. Zhei-ge weishiji<sub>i</sub>, wo qu shangdian yihou/\*erqie mai-de ti.

*DEM-CLF whiskey I go store after/CONJ buy-ASP*

'This whiskey<sub>i</sub>, I bought \_\_<sub>i</sub> after (I) went to the store.'

If, as a renalysis approach would argue, the temporal adjunct and the matrix clause linked by yihou 'after' is actually a coordinative structure, why would this coerced coordinative structure more liberal in allowing extraction than a canonical, true coordinative structure?

On the other hand, I argue that if we are to accept a semantic extraction condition, this restraint in Chinese coordinative structure can be captured by an independently motivated semantics-syntax mapping hierarchy that addresses the crosslinguistic differences in clause linkage strategies.

Typological literature has formulated a set of coherence relations that denote the connection between propositional units crosslinguistically (Lehmann, 1988), which are compatible with Hobbs' formulations. Specifically, the semantic relations of causation, concession and circumstance used in the typological tradition match with result, violated expectation and occasion respectively (Grote et al, 1995). The typological terms tend to focus on the fundamentally semantic nature of these relations (König and Siemund, 2000), whereas the coherence terms underscore their cognitive and rhetorical/interactional nature (Couper-Kuhlen and Thompson, 2000). Leaving aside this distinction, it is noteworthy that different languages employ different clause linkage strategies to encode these semantic relations in their syntax (Couper-Kuhlen and Kortmann, 2000). The choice is subject to language-internal conventionalization, but also subject to a general hierarchy (Silverstein, 1976; Givon, 1980; Foley and van Valin, 1984; van Valin and LaPolla, 1997; van Valin, 2005), such that more cohesive semantic relations between propositional units tend to be expressed by stronger linkage strategies.

The cohesiveness of an inter-propositional semantic relation can be understood as how connected are the two propositional events relative to each other. For example, a Parallel coherence relation normally comprises of two temporally simultaneous or sequential states of affairs, which are expressed by two discrete events/actions. However, in an Occasion relation, the scene-setting event is interpreted as a spatial/temporal parameter of the primary event. In this sense it expresses one facet of a single action. Similarly, in a Result relation, the result event is construed as expressing the end state of a causal chain, thus also expressing a facet of a single action (van Valin, 2005: 208). In general, measured by the degree to which the propositional units depict facets of a single action/event van Valin (2005) argues for a general cohesiveness scale. Limiting to the four coherence relations discussed in this paper, we can assume the following ranking of cohesiveness:

- (15) Occasion > Result > Violated expectation > Parallel Where > denotes 'more cohesive than'

On another end, the strength of clause linkage strategies pertains to the way that juncts (i.e. sentences, clauses, phrases, etc. see van Valin, 2005: 209) are linked together. A set of crosslinguistically robust criteria (properties) have generally set apart subordination and coordination as two distinct clause linkage structures (Lehmann, 1988; Couper-Kuhlen and Kortmann, 2000). Although closer statistical studies reveal that the set of properties that set the two structures apart are not clear-cut, as a tendency there is still a type of “subordinative” prototype which can be distinguished from coordination type, differing crucially in the possibilities of illocutionary scope marking, tense scope marking, flexible position, etc. (Bickel, 2010). Importantly, we can take these behaviors as evidence to indicate that subordinate structure as a type tends to be formally more integrative than coordinative structures, represented as follows.

(16) subordination  $\succ$  coordination. Where  $\succ$  denotes ‘stronger than’.

Importantly, this semantics-syntax mapping hierarchy cannot be one-on-one correspondence, as the same semantic relation may well be mapped onto two different linking strategies for two languages, and even within one language, two linking strategies can be available for the same semantic relations.

Rather, for any given language, this hierarchy should be understood as implicational:

(17) If  $R_1 > R_2$ , then  $S_1 \succeq S_2$ .

For two semantic relations  $R_1$  and  $R_2$ , and two clause linkage strategies  $S_1$  and  $S_2$  such that  $R_1$  maps to  $S_1$  and  $R_2$  maps to  $S_2$ .  $>$  denotes ‘more cohesive than’,  $\succeq$  denotes ‘at least as strong as’

Independent survey of typologically distinct languages also supports the validity of this implicational hierarchy crosslinguistically (Kockelman, 2003). The Chinese data in (14) now can be readily accounted for by this implicational hierarchy. First, because the less cohesive violated expectation and parallel relations can be encoded by subordination in Chinese, the hierarchy correctly predicts that the more cohesive Occasion and Result relations are also encoded by subordination. Second, while violated expectation/parallel can be encoded by coordination, occasion/result cannot. This is also predicted since the implicational hierarchy totally allows that stronger semantic relations do not map to a weaker clause linkage strategy.

## 5 Conclusion

We now possess the apparatus to explain the extraction from adjuncts in Chinese in a uniform way.

First, for extraction that involves gaps, both the adjunct and the matrix clause must contain a gap when the two events stand in a parallel relation for a coherence scenario to be established for the gapped constituent, thus correctly predicting the phenomena in (12a-b), where extraction from only one of the sentences (adjunct or matrix) is always bad. When the two events stand in a



cause-effect relation as in (10-11), they constitute a connected scenario that centers around an entity within the first event, making asymmetric extraction from adjuncts possible. When the two events are related in an Occasion relation as in (8), adjunct island effects are predicted to arise, due to the fact that the first event provides the scene for the second event, so that only entities in the second event are salient in the coherent scenario.

As the condition on extraction is defined in terms of coherent scenarios, this theory predicts that parasitic gap extraction is always good: in a parasitic gap construction, the two events share one common event participant (i.e. the entity denoted by the extracted element), which means we know that a common entity remains salient for both events, thus always satisfying the requirement for the two events to constitute a coherent scenario. For example, in (9), repeated below: The relative head, the applicant, belongs to both adjunct-denoted interviewing event and the matrix-denoted recruiting event. Here the two events stand in one of the coherence relations, i.e. They constitute an Occasion scenario. Thus, the applicant is not only salient within the scene-setting event but also remains salient within the primary event, so that the coherent scenario as a whole centers around it.

- (18) [Laoban [mianshi-wan ti yihou] jue ding luyong ti] de yingpinzhe<sub>i</sub>  
*Boss interview-ASP after decide recruit REL applicant*  
 'The applicant<sub>i</sub> [that the boss decided to recruit <sub>i</sub> [after (he) interviewed <sub>i</sub>]]'

Importantly, this situation is only part of the broader observation that in all coherence relations, including both those that allow for symmetric and asymmetric relations, it is always the case that PGs are good. Thus, there is no need to stipulate a specialized constraint for PG, as opposed to other adjunct constructions. Rather, the circumvention effect of PG follows naturally from the coherence conditions.

Finally, for gapless cases where an element corresponds to none of the clauses, the same mechanisms apply as in cases with gapped extraction in all the above relations. A case of Parallel relation has been mentioned already in (13a), repeated below.

- (19) Shuiguo, Zhangsan xihuan xiangjiao erqie Lisi xihuan pingguo.  
*Fruit, Zhangsan enjoy banana and Lisi enjoy apple*  
 'Fruit, Zhangsan enjoys banana and Lisi enjoys apple.'

Here *fruit*, as a superordinate category of both *banana* and *apple*, is salient in both events. Thus, the coherent scenario centers around *fruit*. Similarly, in other coherence relations, e.g. in a Result relation, when an entity is the superordinate category of another entity that appears within the first event (cause event), the whole scenario may also center around the superordinate entity, as (20) illustrates.

- (20) Chubanshang jian-guo zuozhe yihou like gaibian-le taidu de nei-ben xiaoshuo  
*Publisher meet-ASP author after immediately change-ASP attitude REL*  
*DEM-CLF novel*

'The novel that the publisher changed their attitude right away after they met with the author'

As my theory is formulated in general semantic terms, it is my expectation that it extends to all languages in a predictive manner, although I do not attempt to make such an extension in the face of the complexities with how different languages encode subordination differently. It is worth noting, though, that the adjunct examples Truswell (2007, 2010) gives may be compatible with a coherence explanation: Truswell discusses two scenarios where the adjunct denotes a preceding event that causes or describes the matrix event. As such the matrix event can be construed as a coherent part of the scenario centering around a salient entity within the adjunct event, denoting an end state or a result state. The fact that Truswell's examples involve non-bare adjuncts that are tenseless and nonfinite (hence no Chinese counterparts can be found), but might receive a similar explanation, is a particularly encouraging sign.

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