

Share to Compare: the Mandarin *bǐ* Comparative¹

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Goals

The *bǐ* (比) comparative is a very common comparative construction in Mandarin Chinese and the most commonly studied in the literature. The *bǐ* comparative follows the schema in (1):

- (1) target *bǐ* standard predicate of comparison

Today I will:

- argue that the gradable predicate in a *bǐ* comparative must be the predicate in two clauses—one for the target and one for the standard.²
- (2) **Independent Dependency:**
A comparative [X *bǐ* Y predicate] includes both [X predicate] and [Y predicate] within its syntactic derivation.
- motivate this claim through *syntactic dependencies (movement chains) between both the target and the predicate and the standard and the predicate*, in internal argument comparatives, subject reconstruction, *bèi* long passives, and verb-copy constructions;
- note that recent analyses (Erlewine, 2007; Lin, 2009; Xiang, 2005) cannot accurately account for these facts; and
- illustrate one of two *potential technical implementations* which obey Independent Dependency, **using multidominance** (“sharing”), and show how this proposal yields a more refined characterization of restrictions on the construction.

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²In Bhatt and Takahashi’s (2011) terminology, the proposal presented here is a Reduction Analysis.

1 The Mandarin *bi* Comparative

1.1 Parallelism between the target and standard

The target and standard in the *bǐ* comparative seem to exhibit a **parallelism** requirement: both must be of the same syntactic “type.” (Fu, 1978; Hong, 1991; Li and Thompson, 1981; Tsao, 1989)

- (3) **Phrasal target and standard** DP-DP

約翰 比 湯姆 喜歡 瑪麗。
[Yuehan] **bi** [Tangmu] xihuan Mali
John bi Tom like Mary

“John likes Mary more than Tom does.”

- (4) **“Clausal” target and standard** SVO-SVO

約翰 騎 馬 比 瑪麗 騎 牛 騎 得快。
[Yuehan qi ma] bi [Mali qi niu] qi de kuai
John ride horse **bi** Mary ride cow ride **DE** fast

“John rides horses faster than Mary rides cows.”

- (5) **Mismatches are disallowed: only one possible reading**

約翰 比 瑪麗 騎 牛 騎 得快。
Yuehan bi Mali qi niu qi de kuai
John **bi** Mary ride cow ride **DE** fast

- a. * [約翰] 比 [瑪麗 騎 牛] 騎 得快。 DP-SVO

[Yuehan] bi [Mali qi niu] [qi de kuai]
John **bi** Mary ride cow ride **DE** fast

“John rides (things) faster than Mary rides cows.”

- b. ✓ [約翰] 比 [瑪麗] [騎 牛 騎 得快]。 DP-DP

[Yuehan] bi [Mali] [qi niu qi de kuai]
John **bi** Mary ride cow ride **DE** fast

“John rides cows faster than Mary rides cows.”

1.2 Previous analyses

Xiang (2003, 2005); Erlewine (2007):

☞ The parallelism requirements observed may be explained by employing Heim's (1985) "direct analysis" in all *bi* comparatives.³

- (6) **Heim's (1985) Direct Analysis:** Given gradable predicate *f* a function from individuals to degrees, $\llbracket -er(a, b)f \rrbracket = 1 \iff f(a) > f(b)$.

In a Direct Analysis comparative, there is only **one instance of the predicate** in the syntax (Bhatt and Takahashi, 2011). The gradable predicate is associated with the target and standard only via the semantics.

Lin (2009):

Lin (2009) extends the Direct Analysis to also apply to multiple topic comparatives:

- (7) **"Multiple topic comparison"** (Tsao, 1989):

他 昨天 在 學校 比 我 今天 在 家裡 開心
[ta zuotian zai xuexiao] bi [wo jintian zai jiali] kaixin
He yesterday at school **bi** I today at home happy

"He was happier yesterday at school than I am today at home."

☞ **A Direct Analysis for multiple arguments:** Lin's *bi* first merges with the *n* arguments, y_n, \dots, y_1 which form the standard, then merging with an *n*-place gradable predicate, then merging with the *n* arguments of the target, x_n, \dots, x_1 .

- **Strict parallelism:** If all the *n*'s aren't the same *n*, the derivation crashes.

Summary:

- ☞ The target and standard in a Mandarin *bi* comparative exhibit a *parallelism requirement*.
- ☞ The previous analyses reviewed have only *one instance of the predicate in syntax*. They put the burden of composing the predicate of comparison with its arguments on *bi*.

³In this view, the surface-clausal standards (4) would also have to be arguments (sentential subjects) of the predicate of comparison.

2 Proposal: Independent Dependency

☞ Contra the Direct Analysis, there cannot be only one instance of the predicate of comparison in syntax:

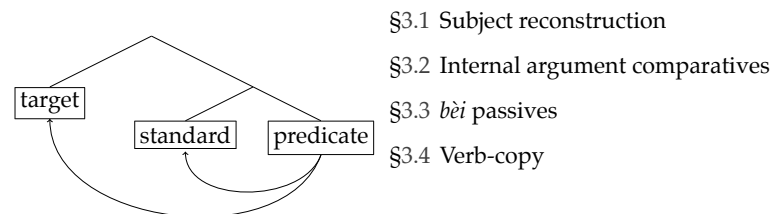
- (2) **Independent Dependency:**

A comparative [*X bi Y* predicate] includes both [*X* predicate] and [*Y* predicate] within its syntactic derivation.

- In other words, *both the target X and the standard Y are independently dependent upon the predicate*. I will present evidence from movement chains between the predicate and the target and between the predicate and the standard, with a shared gap within the predicate of comparison.
- Technically, this could involve obligatory **ellipsis** or **multidominance**. I will not attempt to distinguish between these two approaches here, and will present only a multidominance analysis (cf Gracanin-Yuksek, 2007, 2009).

3 Dependencies between target-predicate and standard-predicate

☞ In this section I will present evidence from various constructions which involve movement simultaneously between the predicate and the target and between the predicate and the standard. *Analyses with just one copy of the predicate in syntax cannot account for such data.*



3.1 Subject reconstruction with de dicto readings (à la Grosz 2009)

Reconstruction of both the target and standard into a lower subject position—within the predicate of comparison—must be possible.

(8) de re/de dicto readings: baseline

中國人 有可能 贏 這 個 比賽
 Zhongguoren youkeneng ying zhe ge bisai
 Chinese-person possible win this CL competition

De re: 'A (specific) Chinese person is likely to win the race.' $\exists > \text{likely}$
 De dicto: 'It is likely that a Chinese person will win the race.' $\text{likely} > \exists$

(9) Comparatives get de re/de dicto readings

中國人 比 澳洲人 有可能 贏 這 個 比賽
 Zhongguoren bi Aozhouren youkeneng ying zhe ge bisai
 Chinese-person BI Australian possible win this CL comp.

De re/de re: 'A (specific) Chinese person is more likely to win the race than a (specific) Australian.' $\exists^2 > \text{likely}$
 De dicto/de dicto: 'It is more likely that a Chinese person will win the race than that an Australian will.' $\text{likely} > \exists^2$

☞ Reconstruction of both subjects within the VP, under the scope of *you keneng*, must be possible, assuming syntactic reconstruction for the derivation of de dicto readings.

3.2 Internal argument comparatives

Internal argument comparatives are instances of object preposing, where the objects base-generated as complements of the verb within the predicate of comparison, then move to their surface positions.

(10) Internal Argument (IA) comparatives: (Tsao, 1989):

他 英文 比 我 法文 說 得 好
 ta yingwen bi wo fawen shuo de hao
 He English BI I French speak DE good

"He speaks English better than I speak French."

Not all objects can participate in this frame: [Subj_X Obj_X bi Subj_Y Obj_Y Pred _].

☞ Tsao (1989) observed that the same distributional restrictions on IA comparatives also apply to the *object preposing* construction (Ernst and Wang, 1995; Paul, 2002) as well.

(11) Animacy restrictions on object preposing and IA comparatives⁴

Object preposing:	Comparative:
a. * 我 張三 喜歡 wo Zhangsan xihuan I ZS like Int: 'I, Zhangsan, like'	a'. * 我 張三 比 李四 喜歡 wo Zhangsan bi Lisi xihuan I ZS bi LS like Int: 'I like ZS more than I like LS'
b. ? 我 貓 喜歡 wo mao xihuan I cat like Int: 'I, cat, like'	b'. ? 我 貓 比 狗 喜歡 wo mao bi gou xihuan I cat bi dog like Int: 'I like cats more than dogs'
c. 我 代數 喜歡 wo daishu xihuan I algebra like 'I, algebra, like.'	c'. 我 代數 比 幾何 喜歡 wo daishu bi jihe xihuan I algebra bi geometry like 'I like algebra more than geometry.'

Moreover, IA comparatives in animate-inanimate or inanimate-animate object order are uniformly judged as hesitant to ungrammatical; i.e. *the animacy restriction applies equally to objects in the target and objects in the standard*.⁵

(12) Object preposing cannot leave behind a monosyllabic verb with gap; also restricted in IA comparatives (cf 11c+11c' above)

Object preposing:	Comparative:
a. * 我 代數 愛 wo daishu ai I algebra love Int: 'I, algebra, love.'	a'. * 我 代數 比 幾何 愛 wo daishu bi jihe ai I algebra bi geometry love Int: 'I love alg. more than geo.'

In addition, preposed objects cannot be indefinite (Tsao, 1989, a.o.). The same effect is observed with IA comparatives:

(13) Internal arguments in IA comparatives cannot be indefinite

Context: looking at a course listing.

* 我 三 個 科目 比 你 兩 個 科目 喜歡 得 多
 [wo san ge kemu] bi [ni liang ge kemu] xihuan de duo
 I three CL classes BI you two CL courses like DE more

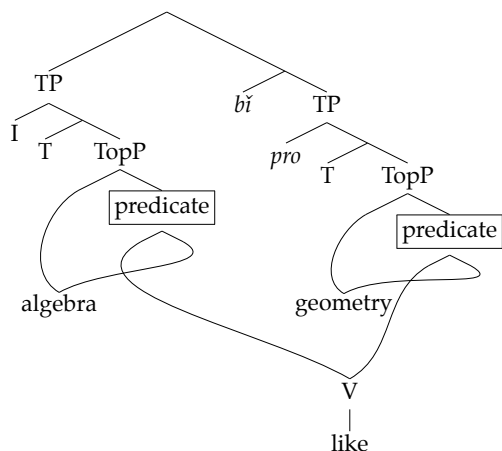
Int: '(of these courses,) I, three courses, like more than you, two courses.'

⁵The Direct Analysis of Bhatt and Takahashi (2011) would predict an asymmetric effect, where only the object in the target is an instance of object preposing.

The *bǐ* comparative need not have a special mechanism for IA comparatives: **IA comparatives are cases of parallel object preposing**, explaining why the same restrictions apply on both. Two instances of object preposing are involved.

Object-preposing is a Mandarin TP-internal topic (often contrastive) construction. Where object preposing leaves a gap after a transitive verb, the object has moved from its base position to the topic position (Paul, 2002).

(14) **Derivation of (11c'):**



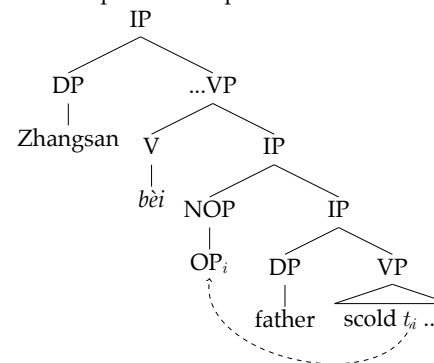
NB: Lin (2009) clearly overgenerates IA comparatives, as he can generate them without making use of object preposing and thus without the pursuant restrictions.

3.3 *bèi* long passives in comparatives

The *bèi* passive involves \bar{A} -movement of a null operator above the embedded agent position from within the predicate. In comparatives across two different [*bèi* agent]s, the operator must move to both the target and standard from within the predicate of comparison.

- (15) 約翰 被 爸爸 罵 得 很 殘
 Yuehan bei baba ma de hen can
 John BEI father scold de very serious
 'John was scolded very seriously by his father.'

The flagship analysis of the *bèi* long passive, Huang (1999) argues that they involve \bar{A} -movement of an operator to a position between *bèi* and the agent:



(16) **“sharing” the predicate of two *bèi* long passives**

約翰 被 爸爸 比 被 媽媽 罵 得 還 要 更 殘
 Yuehan bei baba bi bei mama ma de hai yao geng can
 John BEI father BI BEI mother scold de even want more serious
 'John was scolded by his father to a degree more serious than by his mother.'

3.4 Verb-copy constructions:

“Clausal” comparatives involve two instances of verb-copy, but there is only one “lower copy” visible.

(17) **“Verb-copy” constructions:**

約翰 騎 馬 騎 得 很 快。
 Yuehan qi ma qi de hen kuai
 John ride horse ride DE HEN fast

“John rides horses quickly.”

(18) **“Clausal” comparatives are derived from these constructions: (=4)**

約翰 騎 馬 比 瑪麗 騎 牛 騎 得 快。
 [Yuehan qi ma] bi [Mali qi niu] [qi de kuai]
 John ride horse bi Mary ride cow ride DE fast

“John rides horses faster than Mary rides cows.”

All three instances of the verb in examples such as (18) must match precisely.

☞ Cheng (2007); Huang (1988), argue that these verb-copy constructions are indeed derived via movement without deletion. Having only one copy of the predicate in the derivation of (18) would be problematic.

Conclusion:

☞ In these examples, we see parts of the standard and target simultaneously moving out of the predicate of comparison. Two have moved out, but we only see one base position. **Such examples are an immediate difficulty for Direct Analysis approaches**, but are simple if there are two instances of the predicate of comparison in syntax.

4 Deriving parallelism

4.1 Parallelism by COSH

Recall that there seem to be some parallelism requirements between the target and the standard.

(19) Parallelism in action:

約翰 比 瑪麗 騎 牛 騎 得 快。

Yuehan bi Mali qi niu qi de kuai

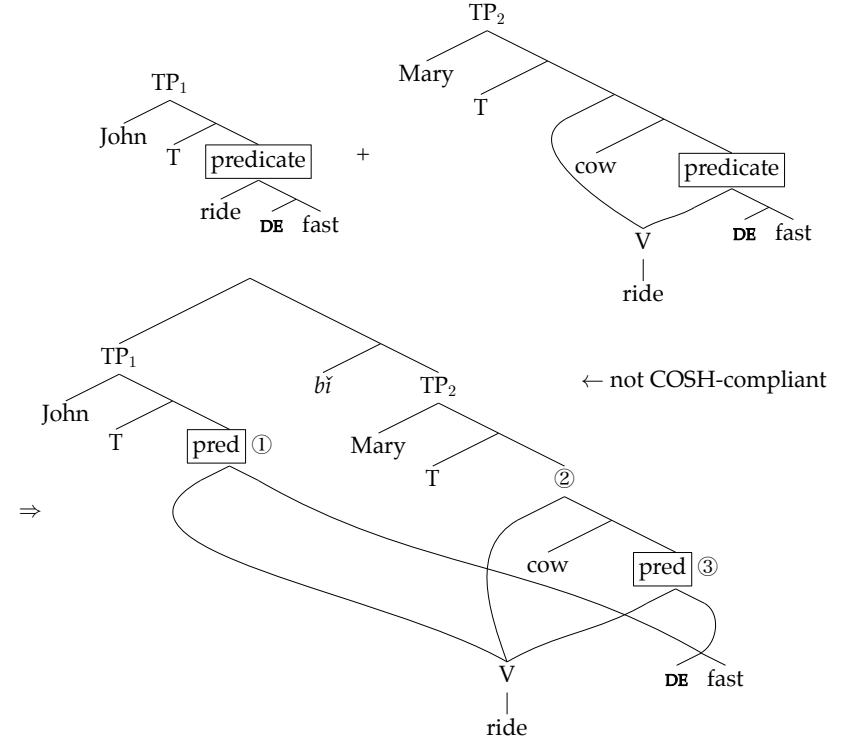
John BI Mary ride cow ride DE fast

a. * [約翰] 比 [瑪麗 騎 牛] 騎 得 快。
 [Yuehan] bi [Mali qi niu] [qi de kuai]
 John BI Mary ride cow ride DE fast
 "John rides (things) faster than Mary rides cows."

b. ✓ [約翰] 比 [瑪麗] [騎 牛 騎 得 快]。
 [Yuehan] bi [Mali] [qi niu qi de kuai]
 John BI Mary ride cow ride DE fast
 "John rides cows faster than Mary rides cows."

☞ Independent Dependency itself will not yield these restrictions. Consider the following Independent Dependency-obeying structure for (19a), (19a'). Both [X predicate] and [Y predicate] sentences are valid structures (modulo positive form marker *hěn*). Note that TP₂ is a verb-copy structure.

(19a') Ungrammatical derivation of un-parallel parse (19a):



☞ This structure, however, is ruled out by the Constraint on Sharing (COSH, Gracanin-Yukse 2007, 2009), an independently motivated constraint on multidominated structures and their linearization based on the study of Q&Q's:

(20) Q&Q:

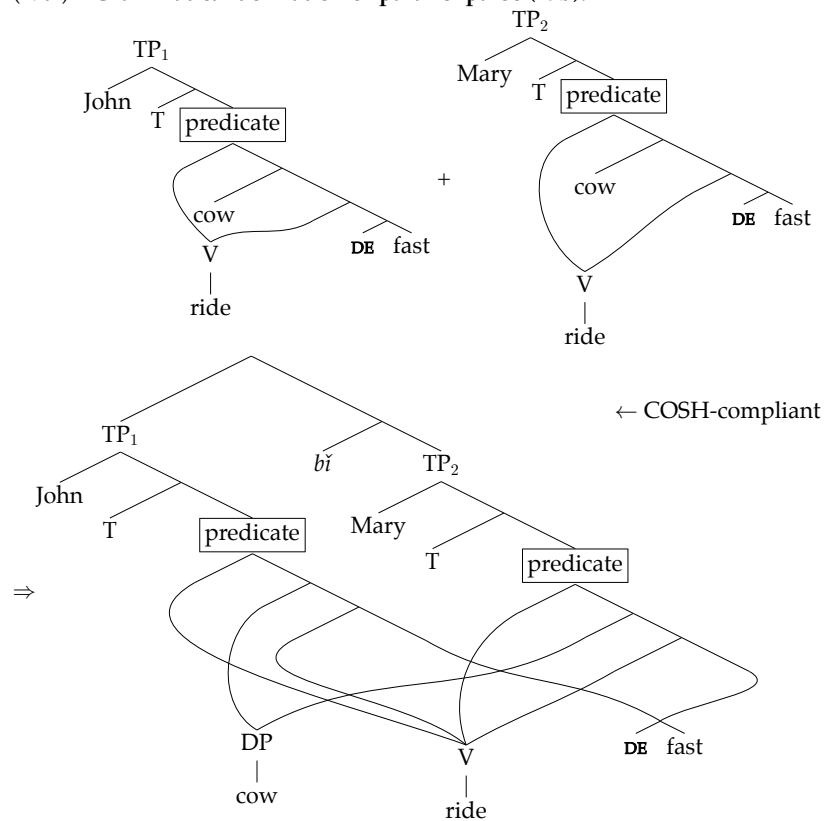
What and where does Peter sing?

(21) Constraint on Sharing (COSH): (informal ver.)

Multiple locally-highest mothers of every shared node in a multidominated structure completely dominate⁶ identical sets of terminal nodes.

☞ "ride" in (19a) has two locally highest mothers, ① & ②, but they completely dominate different sets of nodes: ② dominates "cow" which ① does not. (19b), on the other hand, has a COSH-compliant parse.

(19a') Grammatical derivation of parallel parse (19b):



☞ Independent Dependency and COSH can derive parallelism effects:

Intuitively, the predicate in the target clause and in the standard clause may differ, so long as any differing content have an independent mechanism by which they can escape the obligatorily shared projection, in parallel, into the target and standard, respectively. This results in the tight parallelism requirements observed and is precisely what we saw in action in §3.

⁶Complete dominance (Fox and Pesetsky, 2005): a node α completely dominates a node β iff every path from β to the root includes α .

4.2 Strict parallelism is an illusion

Lin's (2009) syntax/semantics requires that the target and the standard in the *bi* comparative be the same number of arguments and adjuncts.⁷

Context: Zhangsan is a very important businessman. Both USPS and FedEx have special priority service specifically for Zhangsan:

	FedEx	USPS
Zhangsan	3 days	2 days
everyone else	5 days	4 days

(22) An optionally ditransitive predicate: baseline

- a. USPS的 一般 服務 送 信 送 得 很 快
USPS de yiban fuwu song xin song de hen kuai
USPS.GEN regular service deliver letter deliver DE very fast
'USPS's regular service delivers letters quickly.'
- b. FedEx 給 張三 送 信 送 得 很 快
FedEx gei Zhangsan song xin song de hen kuai
FedEx GEI ZS deliver letter deliver DE very fast
'FedEx delivers letters to Zhangsan very quickly'

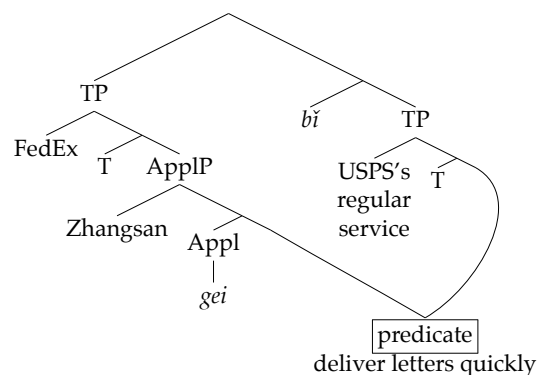
(23) The test: comparing the transitive (generic) with the ditransitive

- a. ✓ FedEx 給 張三 比 USPS的 一般 服務 送 信
FedEx gei Zhangsan bi USPS de yiban fuwu song xin
FedEx GEI Zhangsan BI USPS.GEN regular service deliver letter
送 得 快
song de kuai
deliver DE fast
'FedEx delivers letters to Zhangsan faster than USPS's regular service delivers letters (in general).'
- b. # FedEx 比 USPS 給 張三 送 信 送 得 快
FedEx bi USPS gei Zhangsan song xin song de kuai
FedEx BI USPS GEI Zhangsan deliver letter deliver DE fast
'FedEx delivers letters to Zhangsan faster than USPS does [deliver letters to Zhangsan]'
False in context: 3 days $\not<$ 2 days

⁷modulo deletion of "shared" (in common) arguments and present time/place adjuncts

(23a) is appropriate for this context, but (23b) is not. This is because the FedEx service for Zhangsan is faster than USPS's service in general, but is not faster than USPS's Zhangsan express service. **Thus (23a) must be interpreted with the indirect object only in the standard, but not in the target.**

(24) Derivation of (23a):



☞ Lin (2009) explicitly rules out such structures with targets and standards of differing numbers of arguments.

Conclusion:

- Independent Dependency and the universal Constraint on Sharing (COSH) can derive a more nuanced characterization of the “parallelism” effects observed between target and standard.
- Strict parallelism is an illusion and Lin (2009) would explicitly rule out sentences such as (23a).

5 Conclusion

☞ Previous analyses of the Mandarin *bi* comparative which syntactically only have one instance of the predicate (Erlewine, 2007; Lin, 2009; Xiang, 2005) **are unable to derive comparatives which involve object preposing, subject reconstruction, verb-copy, or the *bei* long passive.** These examples pose a challenge for any Direct Analysis approach.

(2) Independent Dependency:

A comparative [X *bi* Y predicate] includes both [X predicate] and [Y predicate] within its syntactic derivation.

- A **multidominance syntax** was presented as one of two potential analyses—an ellipsis account and a multidominance account—which obey Independent Dependency. The proposal made here derives a **more precise characterization of the “parallelism” effects observed between the target and standard.**
- ☐ Are there tests applicable to Mandarin Chinese which can help distinguish between the multidominance analysis presented and an ellipsis account? How is the obligatory sharing or ellipsis enforced?
- ☞ The availability of multidominance as a viable alternative to ellipsis for a Reduction Analysis of the Mandarin *bi* comparative provokes reevaluation of the previous literature on ellipsis versus direct analyses of comparatives in other languages.

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