Nominal expressions without nouns in Mandarin Chinese

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This talk: nominal syntax and classifier semantics

(1) liang *(ben) shu
two CL book
'two books' [Tripartite: Num Cl Noun]

Mandarin case study: **bipartite exceptions** to generalization in (1).

(2) liang {nian / tian / piao / ye / bu / hua / bi}
two year day vote page step stroke stroke
'two years / days / votes / pages / steps / strokes of the brush/pen'

Superficially: a numeral and a classifier (*zhun-liangci* 准量词, "quasi-measure" in traditional descriptions like Chao 1968; Ding et al. 1961; Lü 1979).

Goals

Bipartite expressions:

(2) liang {nian / tian / piao / ye / bu / hua / bi}
two year day vote page step stroke stroke
'two years / days / votes / pages / steps / strokes of the brush/pen'

Review existing analyses of bipartite expressions, building on C.-C. J. Tang 2005 and S.-W. Tang 2012, 2013, a.o.

Add novel arguments to make the claim that they are **syntactically bipartite**: No phonologically-null noun, NP ellipsis, etc.

- Contra S.-W. Tang (2013) and similar proposals for Japanese by Watanabe (2012) and for English by Kayne (2007).

Implications

If this “nounlessness” argument goes through, there are interesting implications for syntax and semantics.

Syntax:

- Data pose a problem for the NP Hypothesis of nominal expressions (Bruening 2009; Bruening et al. 2018, also Chomsky 1970).
- Indirect evidence in favor of the DP Hypothesis (Abney 1987; Szabolcsi 1994; Huang et al. 2009, etc.).

Implications

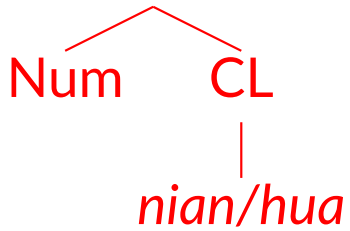
Semantics: A number of influential semantic proposals about why languages like Mandarin have classifiers presuppose the presence of numerals and nouns (Chierchia 1998a; Rothstein 2010; Krifka 1995; Wilhelm 2008; Bale & Coon 2014; Sudo 2016b).

- Data pose problems for these proposals about numeral and noun semantics.
- Discuss whether we can “rescue” these proposals.

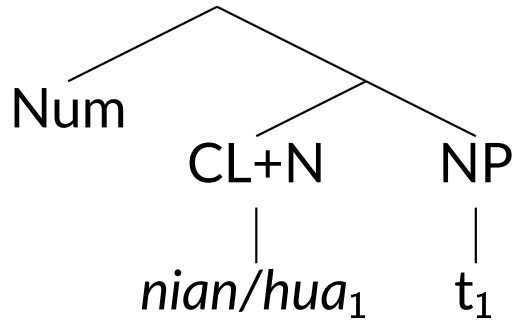
An overview of hypotheses

Argue in favour of the first hypothesis (3a) (cf. C.-C. J. Tang 2005, S.-W. Tang 2012, 2013; S.-W. Tang 2012, 2013; Kayne 2007).

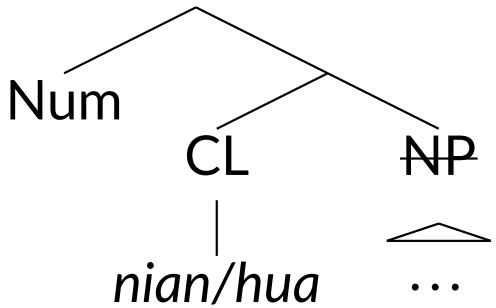
(3) a. Num Cl



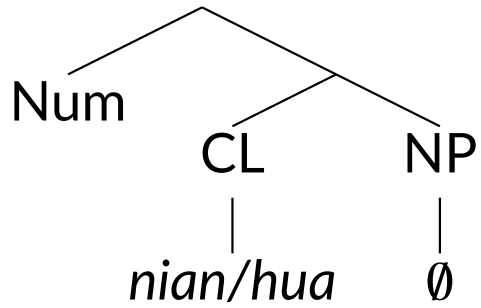
b. Num + N-to-CL movement



c. Num Cl + elided NP



d. Num Cl + covert NP



Outline

Claim 1: QMs are classifiers – reduplication

Classifiers can be reduplicated to give a 'one-by-one' reading (following S.-W. Tang 2012, 2013).

(4) Zhe yi xie baogao, ta [**yi fen fen**] de kan.
this one PL report 3SG one CL CL ADV read
'These reports, he/she read them one by one.'

So can monosyllabic QMs (5).

(5) a. Ta [**yi hua hua**] de ba zi xie chu-lai.
3SG one stroke stroke ADV BA character write come-out
'He/she wrote out the character one stroke at a time.'

b. Shijian jiu zheyang [**yi tian tian**] de guoqu.
time PRT like.this one day day ADV pass
'Time passes like this, day after day.'

c. Wo dei [**yi piao piao**] de qu yingde xuanmin-de
I must one vote vote ADV go win voter's
zhichi.
support
'I must win voters' support one vote at a time.'

Claim 1: QMs are classifiers – plural *xie*

Plural *xie* indicates a plurality of items denoted by the following NP (e.g. Li 1999).

Classifiers do not co-occur with *xie*.

(6) a. yi ben shu
one CL book
'one book'

b. yi **xie** shu / *yi ben xie shu / *yi xie ben shu
one PL book one CL PL book one PL CL book
'some books'

QMs also do not co-occur with *xie* (7).

(7) *yi **xie** (tian / hua / ye / bu)
one PL day stroke page step
'some days / strokes / pages / steps'

Claim 1: QMs are classifiers – no bare classifiers

Three generalizations about Mandarin Chinese (Lü 1990 [1944], Yang 2001, Zhang 2019).

- The numeral *yi* 'one' can be omitted (although interpreted) (8a).
- NPs can be omitted through ellipsis (8b).
- However, the omission of *yi* 'one' and an NP cannot happen together, i.e. classifiers cannot appear alone (8c).

(8) a. Ta mai-le (yi) ben shu.
3SG bought one CL book
'He bought one book.'

b. Ta mai-le yi ben shu, wo ye mai-le yi ben _.
3SG bought one CL book I also bought one CL
'He bought one book, and I also bought one (book).'

c. *Ta mai-le _ ben shu, wo ye mai-le _ ben _.
3SG bought CL book I also bought CL
'He bought one book, and I also bought one book.' (Yang 2001:76, ex. 33)

Claim 1: QMs are classifiers – no bare classifiers

Like classifiers, QMs cannot appear alone (9).

(9) a. Zhe ge zi shao-le *(yi) hua.
this CL character missed one stroke
'This character is missing a stroke.' (e.g. pointing out mistakes in Chinese characters.)

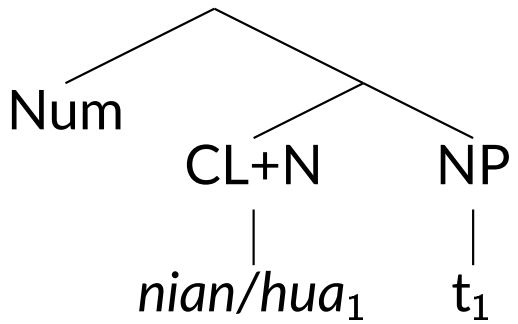
b. Wo zai zhe lüguan zhu-le *(yi) tian.
I at this hotel stayed one day
'I stayed at this hotel for a day.'

c. Lisi huode *(yi) piao.
Lisi receive one vote
'Lisi received a vote.'

Outline

Claim 2: QMs are not nouns

(3) b. Num NP + head movement of NP to Cl



Cf. Simpson & Ngo 2018 for Vietnamese

Claim 2: QMs are not nouns – plural *xie*

As a rule, nouns can co-occur with the plural *xie* (6). QMs cannot.

(6) yi **xie** shu
one PL book
'some books'

(7) *yi **xie** (tian / hua / ye / bu)
one PL day stroke page step
'some days / strokes / pages / steps'

Claim 2: QMs are not nouns – no bare QMs

Nouns can appear bare in Mandarin Chinese (10).

But QMs cannot, as we saw in the discussion of the “no bare classifiers” test (11).

(10) Wo mai-le shu.
I bought book
‘I bought books.’

(11) *Zhe ge zi shao-le hua.
this CL character missed stroke
Intended: ‘This character is missing a stroke/strokes.’ (e.g. pointing out mistakes in a Chinese character.)

Claim 2: QMs are not nouns – relative clause modification

Bare nouns (and even overt pronouns) can be modified with relative clauses (12).

(12) a. [$_{RC}$ hui youyong de] ren / wo
can swim MOD person I
'a person who can swim' / 'I, who can swim'

b. [$_{RC}$ xie cuo de] bihua
write wrong MOD brushstroke
'a stroke that was written incorrectly'

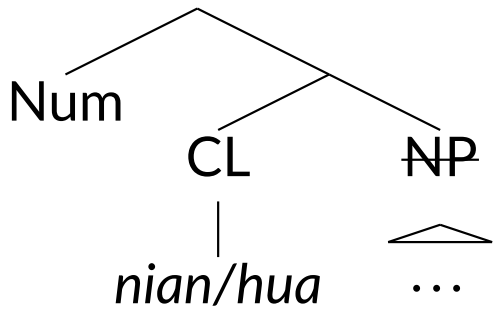
QMs cannot be modified directly by relative clauses (13).

(13) *[$_{RC}$ tamen yin cuo de] ye
they print wrong MOD page
Intended: 'a page that they printed incorrectly'

Outline

Claim 3a: no elided NPs

(3) c. Num Cl + elided NP



Claim 3a: no elided NPs

NP ellipsis is usually unacceptable in out of the blue contexts.

Scenario: Someone looking at the character  *biang*.

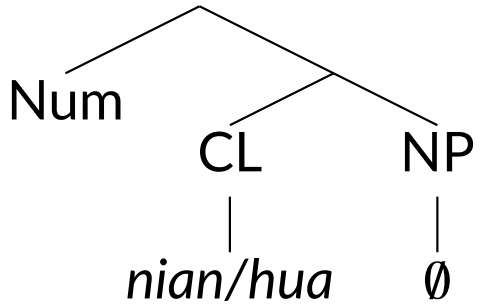
(14) Zhe ge zi you 58 ge [$_{NP}$ #(bihua)].
this CL character has 58 CL brushstroke
'This character has 58 brushstrokes.

Bipartite expressions are acceptable in out of the blue contexts.

(15) Zhe ge zi you 58 hua.
this CL character has 58 stroke
'This character has 58 brushstrokes.'

Claim 3b: no covert nouns

(3) d. Num Cl + covert NP (cf. Kayne 2007, S.-W. Tang 2013)



For concreteness, suppose this hypothesis works as follows:

- There is a set of covert (phonologically null) nouns that mean 'time,' 'vote,' '(brush) stroke,' etc.
- QMs are classifiers; the form of the QM depends on the noun.
- E.g., *hua* is used with the null noun that means 'stroke.'

Prediction: covert nouns have the same syntactic properties as phonologically overt nouns.

Claim 3b: no covert nouns – relative clause modification

First, overt nouns can be modified with relative clauses (a examples). But these covert nouns (if they exist) cannot be (b examples), even though the QM makes clear which noun is intended.

(16) a. liang ge [$_{RC}$ xie-cuo de] bihua
two CL write-wrong MOD brushstroke
'two brushstrokes that were incorrectly written'

b. *liang hua [$_{RC}$ xie-cuo de] $\emptyset_{stroke}$
two CL$_{stroke}$ write-wrong MOD

(17) a. shi zhang [$_{RC}$ pingshen tou de] xuanpiao
ten CL judge cast MOD ballot
'ten votes that judges (in a contest) cast'

b. *shi piao [$_{RC}$ pingshen tou de] $\emptyset_{vote}$
ten CL$_{vote}$ judge cast MOD

Claim 3b: no covert nouns – plural *xie*

Second, the plural "classifier" *xie* should appear with covert nouns. This is not the case (18), even there is a suitable context.

(18) a. *Xiaohai xie-cuo-le yi **xie** $\emptyset_{stroke}$.
child write-wrong-PFV one PL
Intended: 'The child wrote some strokes incorrectly.'
(Context: A child made mistakes writing a Chinese character: it is missing a few strokes.)

b. *Zhe ge cansaizhe jingran hai neng yingde yi **xie** $\emptyset_{vote}$.
this CL participant unexpectedly still can win one PL
Intended: 'This participant still somehow managed to win some votes.' (Context: describing someone who performed poorly in a contest and should have not won any votes from the judges)

Interim summary

- QMs are clearly classifiers (C.-C. J. Tang 2005, S.-W. Tang 2012, 2013), not nouns.
- No clear evidence that there is NP ellipsis or a silent noun (*contra* S.-W. Tang 2012, 2013, also Kayne 2007; Watanabe 2012).
- Most parsimonious explanation: bipartite expressions are nounless syntactically.

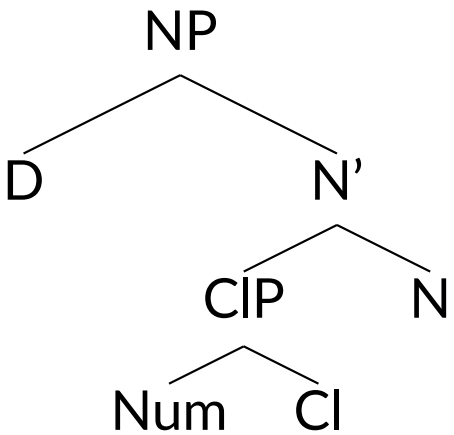
Outline

Implications for syntax: the NP vs. DP debate

Recent work by Bruening 2009; Bruening et al. 2018 (reviving Chomsky 1970) argue that nominal expressions are NPs.

- Bruening et al. (2018) apply this analysis to classifier languages like Korean and Vietnamese (19).
- This might be the case for Korean and Vietnamese (but see Simpson & Ngo 2018), but difficult to extend to noun-less bipartite expressions in Chinese.

(19)



(Bruening et al. 2018, p. 2)

Implications for syntax: the NP vs. DP debate

Bipartite expressions can be easily accommodated under a theory where nominals are headed by a functional head.

- For instance, the DP Hypothesis (Abney 1987; Szabolcsi 1994; as applied to Chinese, see Cheng & Sybesma 1999; Huang et al. 2009; Zhang 2013, 2019, among others).

Implications for semantics of numerals, classifiers, and nouns

Why does Chinese (and many other languages) have classifiers? (And why not all languages?)

A number of proposals: deeper cross-linguistic semantic differences in nouns or numerals (see Bale & Coon 2014 for a summary).

Debate over the nature of this semantic difference.

“Classifiers for nouns”

Cross-linguistic differences in noun semantics (Chierchia 1998a,b, see also Rothstein 2010):

- Numerals can only combine with count nouns.
- Mandarin only has mass nouns (some equivalent thereof).
- A classifier ‘individuates [mass nouns] to a level suitable to counting.’ (Chierchia 1998a, p. 93)

Function of a Mandarin classifier: help nouns get counted.

Bipartite expressions: numeral and classifier present, but no noun.

“Classifiers for numerals”

Cross-linguistic variation in numeral semantics:

- All languages use a measure function to express quantity.
- English numerals have this measure function “built in” (Krifka 1995).
- Mandarin numerals do not, and so require a classifier to supply it.

Function of a classifier: help numerals quantify nouns.

Bipartite expressions: numeral and classifier present, but no noun.

Salvaging the hypotheses?

One possible conclusion: the cross-linguistic distribution of classifiers cannot be boiled down to cross-linguistic differences in noun semantics (or numeral semantics).

I would like to suggest another way of thinking about the hypotheses. And if we do that, there might be an argument in favor of the "classifiers for numerals" hypothesis.

- Other languages cited for this hypothesis: Dëne Sųłiné, (Wilhelm 2008); Mi'gmaq and Chol, (Bale & Coon 2014); Japanese, (Sudo 2016a).

Salvaging the hypotheses?

A central part of the "classifiers for numerals" proposal is that classifiers denote a measure function, taking numerals and nouns as arguments.

So why is there no noun in bipartite expressions?

- Hypothesis: the classifiers here (QMs) contain a measure function *and* noun-like semantics.
- Example: *Hua*'s denotation contains the measure function *and* a noun-like semantics that approximately means 'brushstroke.'

Conclusion

- Reviewed Mandarin bipartite nominal expressions.
- Argued that these expressions do not contain a noun in the syntax: quasi-measures are classifiers.
- Showed that they pose a problem for recent proposals that nominal expressions are headed by N.
- Showed that they pose a problem for certain theories about the cross-linguistic distribution of classifiers, but argued that the problem might not be fatal for a 'classifiers for numerals' proposal.

QMs with the classifier *ge*

Some time-interval QMs can appear optionally with the classifier *ge*, e.g. *xiaoshi / zhongtou* 'hour', *xingqi / libai* 'week.' Some speakers report similar alternations for *tian* 'day' and *nian* 'year.'

(20) liang (ge) xiaoshi
two CL hour
'two hours'

It is possible that these terms are syntactically ambiguous between noun and a classifier; when analyzed as a noun, the classifier *ge* appears (following C.-C. J. Tang 2005).

Claim 3b: no covert nouns – ellipsis licensing

Generalization: ellipsis requires some degree of semantic identity between elided constituent and antecedent (21b) (an influential hypothesis: e-GIVENness, Merchant 2001; Huang & Mendes 2019, among many others).

(21) a. Zhe ge zi shao-le liang ge bihua, …
this CL character missed two CL brushstroke
'This character is missing two brushstrokes …

b. … na ge zi ze shao-le san ge ~~*bihua*~~.
that CL character while missed three CL brushstroke
'…while that character is missing three (strokes).'
(The first *bihua* licenses ellipsis of the second *bihua*)

Claim 3b: no covert nouns – ellipsis licensing

Assuming semantic identity, covert nouns should license ellipsis of overt nouns that are semantically identical (22b). But ellipsis is not possible here.

(22) a. #Zhe ge zi shao-le liang hua $\underline{\emptyset_{brushstroke}}$, …
this CL character missed two stroke
'This character is missing two strokes …

b. … na ge zi ze shao-le san ge ~~*bihua*~~.
that CL character while missed three CL brushstroke
'… while that character is missing three strokes.' (Null $\emptyset_{brushstroke}$ does not license ellipsis of *bihua*)

Claim 3b: no silent nouns – ellipsis licensing

Another example, with *piao*/*xuanpiao* 'votes, ballots':

(23) a. Zhe ge houxuanren yigong huode 4010 zhang
this CL candidate a.total.of win 4010 CL
xuanpiao, duishou ze zhi huode 105 zhang ~~*xuanpiao*~~.
ballot rival while only win 105 CL ballot
'This candidate won a total of 4010 votes, while his/her rival only won 105 (votes).'

b. #Zhe ge houxuanren yigong huode 4010 piao $\emptyset_{vote}$,
this CL candidate a.total.of win 4010 vote
duishou ze zhi huode 105 zhang ~~*xuanpiao*~~.
rival while only win 105 CL ballot

Formal assumptions for "Classifiers for nouns"

In formal terms, following Bale & Coon 2014, pp. 696–697:

(24) English [[*two*]] = Mandarin [[*liang*]]
= $\lambda P \lambda x.\ \text{atomic}(P).\{x :^{*} P(x)\ \&\ \mu_{\#}(x) = 2\}$

(25) a. [[*brushstroke*]] = $\{x : \text{atom}(x)\ \&\ \text{brushstroke}(x)\}$
b. [[*bihua*]] = $^{\cap}$brushstroke (the "brushstroke kind")

(26) Classifier [[*ge*]] = $^{\cup}$ (a function from kinds to sets of atoms)

Formal assumptions for “Classifiers for numerals”

Adapting Wilhelm 2008, p. 55:

(27) a. [[*two*]] = $\lambda P \lambda x.[P(x)\ \&\ OU(x) = 2]$
OU = function that gives the cardinality of ‘object units’

b. [[*liang*]] = 2

(28) [[*brushstroke*]] = [[*bihua*]] = $\lambda x.[\text{brushstroke}(x)]$

(29) [[*ge*]] = $\lambda n \lambda P \lambda x.[P(x)\ \&\ OU_{general}(x) = n]$

Distinguishing QMs from classifier omission

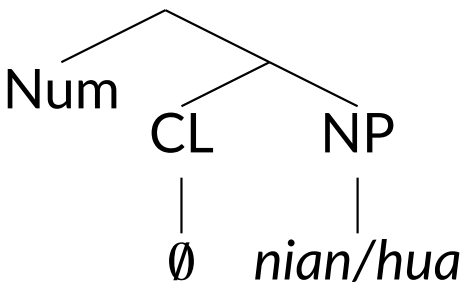
Mandarin allows classifiers to be omitted in formal registers (e.g. news headlines), producing Num Noun sequences.

(30) [$_{Num}$ Liang] [$_{Noun}$ du-fan] jiechi [$_{Num}$ wu] [$_{Noun}$ renzhi]
two drug-trafficker hold five hostage
'Two drug traffickers hold five people as hostages.'

But QMs are acceptable in non-formal registers, and so are not instances of classifier omission.

- Rules out an analysis like (4b).

(31)



Relative clauses, *xie*, and covert nouns

(16) and (18) show us that relative clauses and *xie* do not co-occur with covert nouns (if they exist).

Can we explain these examples by claiming that relative clauses and *xie* have some idiosyncratic requirement for an overt head noun?

- Not quite: relative clauses and *xie* can co-occur with elided NPs.

(32) a. Lisi mai-le yi xie shu, wo ye mai-le yi xie ~~shu~~.
Lisi bought one PL book I also bought one PL book
'Lisi bought some books, and I also bought some (books).'

b. [$_{RC}$ Ni chang de] ge bu bi [$_{RC}$ wo chang de]
you sing MOD song not than I sing MOD
~~ge~~ hao ting.
song good hear
'The song you sang is not as nice as the one I sang.'

A (non-exhaustive) list of quasi-measures

(33)
- a. **Strokes of the pen/brush**: 笔 *bi*, 画、划 *hua* “stroke,” 横 *heng* “horizontal stroke”
- b. **Time**: 年 *nian* “year,” 星期 *xingqi* “week,” 天 *tian* “day,” 秒 *miao* “second”
- c. **Publication**: 册 *ce* “volume,” 回、章 *hui*, *zhang* “chapter,” 页 *ye* “page,” 卷 *juan* “volume.” Also 幕 *mu* “act” and 场 *chang* “scene” (in a play)
- d. **Vote**: 票 *piao* “vote” (but not in the sense of “ticket”)
- e. **Coursework**: 科 *kē* “course,” 课 *kè* “lesson”
- f. **Location (of abstract or concrete entities)**: 边 *mian* “side,” 方面 *fangmian* “aspect, area,” 头 *tou* “end”
- g. **Standardized units**: *lubu* 卢布 “ruble,” *cun* 寸 “inch”
- h. **Might be quasi-measures** (not fully productive or only appearing in formal registers)
  - (i) Administrative units: 国 *guo* “country,” 省 *sheng* “province,” 州 *zhou* “state,” 县 *xian* “county,” 院 *yuan* “main branch of government, college”
  - (ii) Grades: 级 *ji* “grade” (as in first and second grade)

(Cf. list in Chao 1968)

Time units

Time unit nouns like *yue* 'month' or *xingqi* 'week' cannot appear with *xie*, nor be bare, nor be elided.

(34) a. *Women langfei-le yue.
we wasted month
Intended: 'We wasted months (of time).'

b. Zhe xie yue tianqi hen re.
this PL month weather very hot
'The weather has been very hot these few months.'

c. Wo zai Niuyue zhu-le yi ge yue, ta ze
I at New.York stay-PFV one CL month 3S while
zhu-le liang ge *(yue).
stay-PFV two CL
'I stayed in New York for one month, while she stayed for two.'

These restrictions certainly reflect idiosyncrasies of *yue* and *xingqi*. But they do not necessarily bear on the analyses of other time unit expressions.

A hybrid theory?

'Bipartites' are headed by functional heads, 'tripartites' with overt nouns are headed by NPs.

But misses a generalisation: both have the same *external* distribution.

- Can appear as arguments of verbs.
- Can co-occur with demonstratives (35a).
- Can be fronted (35b).

(35) a. Zhe [$_{bipartite}$ yi hua] he na [$_{tripartite}$ yi ge bihua] dou xie cuo le.
this one stroke and that one CL brushstroke all write wrong PRF
'This stroke and that brushstroke are all written incorrectly.'

b. Ta lian {[$_{bipartite}$ yi hua$_1$] / [$_{tripartite}$ yi ge bihua$_1$]} dou mei xie t_1.
3s even one stroke one CL brushstroke all not write
'He didn't even write a single stroke.'

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