

A Time-Relational Approach to Tense and Mood

Ilana Mezhevich
University of Calgary

1. Introduction

This paper explores the relationship between Tense morphology and the expression of irrealis. It has long been observed that many languages with no inflectional Mood morphology use past tense morphology to convey irrealis (Langacker 1978; James 1982; Givón 1994; Dahl 1997; Tynan & Lavín 1997; Iatridou 2000; Palmer 2001; Ippolito 2006 among others). This phenomenon is illustrated in (1), where both sentences contain the same past tense verb form *lived*:

- (1) a. I lived in a big house.
b. If I lived in a big house I would invite you to stay.

(1a) has past temporal reference: it means that I lived in a big house at some point prior to the moment of speech. In contrast, (1b) contains what Iatridou (2000) terms “fake past”: a past tense morpheme that does not convey past temporal reference. Instead, the antecedent conveys that the situation in the actual world is the opposite: I do not live in a big house now.¹

While there is substantial amount of literature on past tense morphology conveying irrealis, future tense morphology in irrealis contexts has received less attention. For example, future tense morphology appears in Hebrew subjunctives, as shown in (2b):²

- (2) a. Ron *yi-zke* ba-pras.
Ron 3SG.MASC-win.FUT in-the-prize
'Ron will win the prize.'
b. Rina *racta* [še-Ron *yi-zke* ba-pras].
Rina wanted that-Ron 3SG.MASC-win.FUT in-the-prize
'Rina wanted Ron to win the prize.'

Both sentences contain the verb *yizke* ‘(he) will win’. (2a) has future temporal reference: the event of winning the prize occurs after the moment of speech.³ In contrast, the embedded sentence in (2b) describes a desirable event that may or may not happen in the actual world.

The goal of this paper is to propose a unified account of past and future tense morphology in irrealis contexts. Previous analyses assume that past and irrealis have something in common, such as

¹Note that in (1b) past tense morphology receives not only a counterfactual interpretation, but also a present tense interpretation. This shift in temporal reference can be explained assuming that when “fake” past tense morphology expresses counterfactuality it does not express any tense. In English, tenseless forms often receive non-past temporal reference, which means they are interpreted as either present or future depending on factors other than Tense morphology. For example, in *John wants Mary to leave* the embedded verb refers to an event in the future because of the restrictions imposed by *want*. Similarly, if the atelic predicate in (1) is replaced by a telic predicate, e.g., *If I bought a big house...* it would refer to a future event: If I bought a house sometime after the utterance time, not if I am now in the process of buying a house. As discussed in detail in Iatridou (2000:249ff), in this case the temporal interpretation is determined by the situation type aspect.

²Since Hebrew lacks a subjunctive complementizer it is not immediately obvious that (2b) contains a subjunctive clause. The evidence that this is indeed a subjunctive is provided in section 3.1.

³Following Comrie (1985) and Hornstein (1990), I treat future as tense in the sense that it places an event to the right of the moment of speech without making reference to hypothetical worlds.

the notion of “distancing” (e.g., Lyons 1977), “remoteness” (e.g., Langacker 1978; James 1982), or the exclusion feature (Iatridou 2000). Adopting this intuition as my point of departure, I take this assumption a step further and propose that the parallel should be drawn between Tense and Mood themselves and not between particular realizations of these categories. I propose that Tense and Mood should both be analyzed as dyadic predicates that take time-denoting phrases as arguments, essentially extending Klein’s (1995) and Demirdache & Uribe-Extebarria’s (2000) analysis of Tense and Aspect. The relation between the temporal arguments can be characterized in terms of the single opposition of coincidence versus non-coincidence: Tense expresses (non-)coincidence of the utterance time and the assertion time, while Mood expresses (non-)coincidence of the evaluation time and the utterance time.

I show that this analysis makes correct predictions about the expression of irrealis in languages with no inflectional Mood. First, the expression of irrealis in such languages is determined by the morphological contrast within the Tense system. Second, the choice of Tense morphology within a single language depends on the type of irrealis: past tense morphology is used in counterfactuals, i.e., to describe hypothetical situations that are unlikely to arise in the actual world. Future tense morphology is used in subjunctives, i.e., to describe hypothetical situations that can still be realized.⁴ Focusing on counterfactuals and subjunctives in Hebrew and Russian, I demonstrate that both predictions are borne out as summarized in Table 1:

Language	Morphological contrast within Tense system	Tense morphology in Counterfactuals	Tense morphology in Subjunctives
Hebrew	Past, present, future	Past	Future
Russian	Past vs. non-past	Past	Past

Table 1. Tense morphology and the expression of irrealis

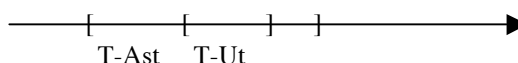
This paper is organized as follows. In section 2, I outline the time-relational analysis of Tense and Mood. Section 3 deals with the relationship between Tense morphology and the expression of irrealis in Hebrew and Russian—two languages with morphologically different Tense systems. Section 4 is a conclusion.

2. A Unified View of Tense and Mood

2.1. Time-Relational Analysis of Tense

Following much current research, Tense is a dyadic predicate that takes time-denoting phrases as arguments (Stowell 1995, 1996; Zagana 1990, 1995, 2003; Demirdache & Uribe-Etxebarria 2000). Klein (1995) proposes that Tense orders the utterance time T-Ut (the time when the utterance is made) and the assertion time T-Ast (the time about which the assertion is made). The relation between T-Ut and T-Ast is characterized as (non-)coincidence (cf. Hale 1986; Demirdache & Uribe-Etxebarria 2000; Ritter & Wiltschko 2005).⁵ In present tense, T-Ut and T-Ast coincide: the utterance time picks out a time interval within the assertion time, as shown in (3a). In past and future tense, T-Ut and T-Ast do not coincide, as shown in (3b-c): the utterance time picks out a time interval that precedes and follows the assertion time, respectively:

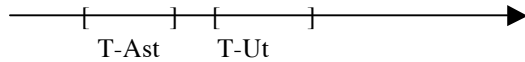
(3) a. John is baking a cake.



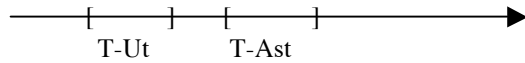
⁴Lewis (1979) observes that past and future differ with respect to their relationship to the present: past does not depend in any way on what present is like, while future is arguably determined by events in the present.

⁵Klein (1995) and Demirdache & Uribe-Etxebarria (2000) propose a unified analysis of Tense and Aspect as dyadic predicates that relate times, with Aspect ordering T-Ast and the situation time T-Sit (the time when the situation in question obtains). For reasons of space, I do not discuss it here. For a detailed discussion of how both Tense and Aspect can be represented in terms of (non-)coincidence see Mezhevich (to appear).

b. John baked a cake.



c. John will bake a cake.



According to Zagona (2003), the temporal arguments of Tense are licensed in the structure by the grammatical feature $[\pm\text{PAST}]$, very much like direct objects are licensed by a Case feature on a transitive verb. She also proposes that $[\pm\text{PAST}]$ does not by itself provide a particular temporal interpretation but licenses a particular semantic relation or a range of relations. Following her analysis, I propose in Mezhevich (2006, to appear) that Tense has complex interpretable content represented by the grammatical feature $[\pm\text{PAST}]$ that receives its value from verbal morphology and the abstract feature $[\pm\text{COIN}]$ for (non-)coincidence that receives its value from the grammatical feature via licensing.⁶ A particular temporal interpretation of a clause arises compositionally, from the two types of interpretable content, as shown in Table 2:⁷

Grammatical feature (tense morphology)	$[\text{+PAST}]$	$[\text{-PAST}]$	
Abstract feature (licensed relation)	$[\text{-COIN}]$	$[\text{+COIN}]$	$[\text{-COIN}]$
Interpretation	<i>past</i>	<i>present</i>	<i>future</i>

Table 2. Featural make-up of Tense

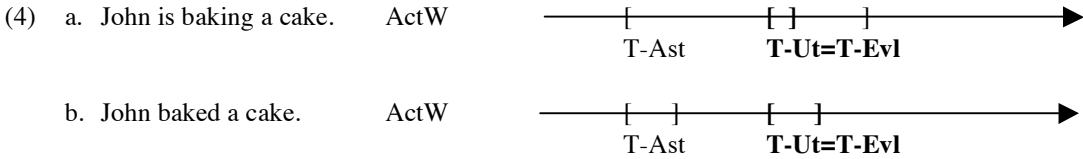
The feature $[\pm\text{PAST}]$ for English was postulated based on the fact that English has a past/non-past opposition within the inflectional morphology, with future marked by the auxiliary *will* (e.g., Stowell 1995, 1996). It follows then that if a language marks present, past, and future within the inflectional morphology it should have features $[\text{PRESENT/PAST/FUTURE}]$ instead of the binary feature $[\pm\text{PAST}]$. I argue in section 3 below that this representation should be adopted for Hebrew. In the next section, I propose to extend the time-relational analysis to Mood.

2.2. Extending the Analysis to Mood

Tense and Mood are distinct grammatical categories that convey very different types of information. Tense is a deictic category that locates an event in time relative to the utterance time, while Mood describes an event as possible, desirable, etc. Yet, I propose that just like Tense, Mood can be analyzed as expressing a (non-)coincidence relation, but between different arguments: T-Ut and the evaluation time T-Evl (the time relative to which the utterance is evaluated, cf. Zagona 2003). My analysis retains the traditional view that Mood operates on worlds: it compares the world of the event denoted by the propositional content of a clause to the actual world (e.g., Chung & Timberlake 1985; Bybee, Perkins, & Pagliuca 1994; Palmer 2001). What I propose is a small modification. I assume that time in hypothetical worlds runs parallel to the time in the actual world (cf. Bach 1981) and propose that Mood compares the world of the utterance to the actual world by comparing two time lines. Crucially, in the case of Mood (non-)coincidence is a relation of identity, not temporal ordering: T-Evl is or is not T-Ut. For example, in *realis* an utterance is evaluated as true or false relative to the utterance time. Therefore, T-Evl is T-Ut, or T-Evl and T-Ut coincide:

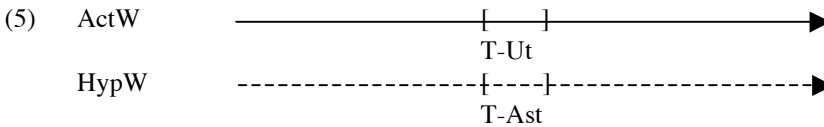
⁶For the exact technical implementation of feature valuation see Mezhevich (to appear).

⁷At first glance, there is a redundancy in the past tense, where $[\text{+PAST}]$ always gives rise to $[\text{-COIN}]$. Note, however, that $[\text{PAST}]$ and $[\text{COIN}]$ represent different types of information. The former represents an actual morphological shape, while the latter represents what this morphology stands for. Thus, notation $[\text{+PAST}]>[\text{-COIN}]$ reads as “Past means non-coincidence of the utterance time and the assertion time”, which is not redundant.



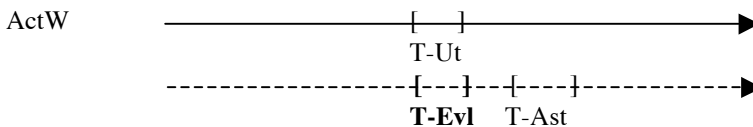
In (4), the utterance is evaluated relative to the utterance time: (4a) is true if there is a baking event during the assertion time about which the utterance is made, and it is false otherwise. Similarly, (4b) is true if there is an assertion time such that it (in this particular case) follows a baking event and precedes the utterance time. Since the sentences in (4) describe situations in the actual world there is only one time line.

In contrast, irrealis creates a contrast between the actual world and a hypothetical world (or a set of hypothetical worlds) by describing situations that do not obtain in the actual world. Therefore, there are two time lines: the actual world time line and the hypothetical world time line. Accordingly, since the utterance is made in the actual world T-Ut appears on the actual world time line; since the assertion is made about a time interval in a hypothetical world T-Ast appears on a hypothetical world time line:

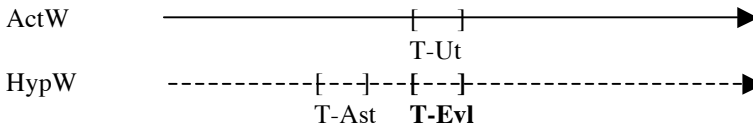


Now consider the antecedents in (6)-(7). Unlike their indicative counterparts in (4), they cannot be evaluated as true or false relative to T-Ut. Thus, T-Evl is not T-Ut, or T-Evl and T-Ut do not coincide. However, the situation they describe can certainly be placed relative to T-Ut as we can distinguish between future and past hypothetical situations. Assuming that the hypothetical world is identical to the actual world except for the situation described in the antecedent (cf. Lewis 1979), it is reasonable to suppose that the situations are evaluated relative to some other time that appears on the same “longitude” as T-Ut. If we were to describe the same situation as actual, the two lines would merge: the situation in question would happen in the actual world, T-Ast would appear on the actual world time line, and T-Evl would merge with T-Ut.

(6) [If John baked a cake], I would be happy.



(7) [If John had baked a cake], I would have been happy.



The diagrams in (6)-(7) show that T-Ut and T-Evl appear on different time lines and therefore they do not coincide: the evaluation time is not the utterance time because the antecedents in (6)-(7) cannot be evaluated relative to the utterance time.

I propose that the temporal arguments of Mood are licensed in the structure by feature [\pm REALIS], whose value determines how many time lines are involved. The featural make-up of Tense and Mood

is given in Table 3. For exposition purposes, let us suppose that this is a language with a three-way morphological contrast within its Tense system. Since under the present approach the presence of a grammatical feature implies the presence of inflectional morphology languages with no inflectional Mood pose an apparent problem. Let us suppose then that a morphological form can be shared by two categories, but only if it licenses the same relation of (non-)coincidence. Thus, even if a language does not have a piece of morphology reserved specifically for Mood a morpheme can be “borrowed” from Tense provided it licenses the right semantic relation. It follows then that both past and future tense morphology can convey irrealis because they both license [–COIN]:

Category	Grammatical feature (inflectional morphology)	Abstract feature (licensed relation)	Interpretation
Mood	[+REALIS]	[+COIN]	<i>indicative</i>
	[–REALIS]	[–COIN]	<i>conditional, subjunctive, etc.</i>
	[PAST]	[–COIN]	<i>past</i>
Tense	[PRESENT]	[+COIN]	<i>present</i>
	[FUTURE]	[–COIN]	<i>future</i>

Table 3. Featural make-up of Tense and Mood

In the next section, I discuss Hebrew and Russian and show that the expression of irrealis in these languages follows from the proposal above.

3. Tense Morphology and Mood

3.1. Counterfactuals and Subjunctives in Hebrew

The Hebrew Tense system contains morphologically distinct stems for present, past, and future (e.g., Glinert 1989; Coffin & Bolozky 2005). Hebrew verb forms consist of stems and inflectional affixes marking person, gender, and number depending on the tense. Table 4 shows the morphologically distinct stems of the verb *lehasbir* ‘to explain’, to which different inflection is attached. The letters in bold indicate the root <sbr> – a sequence of three consonants which can serve as the base for both verbs and nouns. In column Stem, any additional morphological material constitutes tense marking:⁸

Tense	Stem	Inflection
Past	his bar – ; his bir (3sg)	person, number, gender
Present	mas bir –	number, gender
Future	–(a)s bir –	person, number, gender

Table 4. Hebrew Tense system

Since Hebrew has both past and future tense morphology, the prediction is that both should be available to express irrealis. The examples below demonstrate that this prediction is borne out. Moreover, the choice between past and future tense morphology depends on the type of irrealis. Past tense morphology is used in counterfactual conditionals that describe hypothetical situations that by the time of utterance can no longer arise, as shown in (8a). (8b) shows that the same verb form is used in an indicative sentence to convey past temporal reference, as indicated by its (in)compatibility with various time adverbials. The sentence is most natural with *etmol* ‘yesterday’; *axšav* ‘now’ is only acceptable if one is talking about immediate past; *maxar* ‘tomorrow’ is incompatible with the past tense verb. The examples are adapted from Coffin & Bolozky (2005:361):

⁸This three-way contrast is marked differently on verbs that belong to different classes; what’s crucial for my purposes, however, is that past, present, and future stems are morphologically distinguishable in all cases. For details of Hebrew verbal morphology see the grammars cited and reference therein.

- (8) a. im **h-od'a-tem** lanu 'al ha-irua miroš, hayi-nu ba'im.
 if PAST-let.know-2PL us about the-event in.advance be.PAST-1PL come
 'Had you let us know about the event in advance we would have come.'
 b. **h-od'a-tem** lanu 'al ha-irua etmol / #axšav /*maxar.
 PAST-let.know-2PL us about the-event yesterday / now / tomorrow
 'You let us know about the event yesterday / #now / *tomorrow.'

Future tense morphology is used in embedded subjunctives, as shown in (9a). In indicative (9b), the same verb expresses future temporal reference, as evidenced by its (in)compatibility with various time adverbials. The sentence is ungrammatical with *etmol* 'yesterday', while it most naturally occurs with *maxar* 'tomorrow'. The adverbial *ha-jom* 'today' is acceptable only if the conversation takes place prior to the event in question on the same day:

- (9) a. Rina racta [še-hi **ti-zke** ba-pras].
 Rina wanted that-she 3SG.fem-win.FUT in-the-prize
 'Rina wanted that she would win the prize.'
 b. Rina **ti-zke** ba-pras *etmol / #ha-jom / maxar.
 Rina 3SG.FEM-win.FUT in-the-prize yesterday/ today / tomorrow
 'Rina will win the prize *yesterday / #today / tomorrow.'

Since Hebrew lacks a subjunctive complementizer it is not immediately obvious that the complement clause in (9a) is a subjunctive. However, Landau (2004:819ff) argues convincingly that such clauses are indeed subjunctives. First, they demonstrate typical of subjunctives subject obviation. As shown in (10a), the pronominal embedded subject must not be co-indexed with the matrix subject: *hi* 'she' cannot refer to the matrix subject *Rina*; if it does the sentence is ungrammatical. This restriction does not exist in indicative complements, as shown in (10b), where the embedded subject may or may not be co-indexed with the matrix subject:

- (10) a. Rina₁ racta [še-hi_{2/*1} ti-zke ba-pras].
 Rina wanted that-she 3SG.fem-win.FUT in-the-prize
 'Rina₁ wanted that she_{2/*1} would win the prize.' (Landau 2004:820)
 b. Rina₁ amra [še-hi_{2/1} ti-zke ba-pras].
 Rina said [that-she 3SG.fem-win.FUT in-the-prize
 'Rina₁ said that she_{2/1} would win the prize.'

Second, verbs that select subjunctive complements impose restrictions on the embedded tense. As shown by the contrast in (11), the complement of *lircot* 'to want' must contain a future tense verb, while the verb *lomar* 'to say' does not impose such a restriction on its complement:

- (11) a. *Rina racta [še-hi **zax-ta/zox-a** ba-pras].
 Rina wanted that-she won/wins in-the-prize
 'Rina wanted that she would win the prize.'
 b. Rina amra [še-hi **zax-ta/zox-a** ba-pras].
 Rina said that-she won/wins in-the-prize
 'Rina said that she won/would win the prize.'

To sum up, Hebrew has distinct morphological forms for past, present, and future. The analysis proposed here predicts that it should be able to use both past and future tense morphology to express irrealis. This prediction is borne out: Hebrew uses past tense morphology to describe hypothetical events in the past (that is, counterfactual conditionals), while it uses future tense morphology to describe hypothetical events in the future (that is, in embedded subjunctive clauses).

3.2. Counterfactuals and Subjunctives in Russian

The Russian Tense system contains morphologically distinct stems for past and non-past; there is no tense morphology to distinguish between present and future (e.g., Vinogradov 1947/1971; Borik 2002; Verkuyl 2005). Most past stems end in a vowel, while non-past stems end in a consonant or the glide [j]. Russian past tense verb forms are formed by adding the suffix *-l* and an inflectional suffix that marks number and gender to a past tense stem. Non-past verb forms are formed by adding person and number inflection to a non-past stem. In addition, every verb is morphologically marked as perfective or imperfective. As shown in Table 5, the distinction between present and future is conveyed by Aspect: imperfective non-past conveys present temporal reference, while perfective non-past conveys future temporal reference:⁹

	Imperfective	Perfective
Past	Ja Ø-čita-l-a stat'ju. I IMPF-read.PAST-PAST-FEM.SG article 'I read/was reading an/the article.'	Ja pro-čita-l-a stat'ju. I PERF-read.PAST-PAST-FEM.SG article 'I read/have read an/the article.'
Non-Past	Ja Ø-čitaj-u stat'ju. I IMPF-read.NON-PAST-1SG article 'I am reading an/the article.'	Ja pro-čitaj-u stat'ju. I PERF-read.NON-PAST-1SG article 'I will read an/the article.'

Table 5. Russian Tense system

To form counterfactual conditionals Russian uses past tense morphology (just like English and Hebrew) in combination with the conditional particle *by*. As shown in (12b), indicative clauses with past temporal reference contain the same verb form:¹⁰

- (12) a. Esli by Anna (**pro**)-čita-l-a stat'ju, ona by sdala ekzamen.
If COND Anna PERF-read-PAST-FEM.SG article she COND passed test
'If Anna had read the article she would have passed the test.'
- b. Anna (**pro**)-čita-l-a stat'ju včera /#sejčas/*zavtra.
Anna PERF-read-PAST-FEM.SG article yesterday /now /tomorrow
'Anna read the article yesterday /#now /*tomorrow.'

Since Russian does not have future tense morphology, the prediction is that past tense morphology should be found in embedded subjunctives as well. This prediction is borne out. As shown by the grammaticality contrast in (13), a past tense verb form is required in a subjunctive clause:

- (13) a. Ja prošu, [čtoby Anna (**pro**)-čita-l-a stat'ju].
I ask SUBJ Anna PERF-read-PAST-FEM.SG article
'I am asking that Anna read the article.'

⁹Russian also has future imperfective, a periphrastic tense formed by an inflected form of the auxiliary *be* and an imperfective infinitive:

- i. Ja bud-u Ø-čita-t' stat'ju.
I be-1SG IMPF-read-INF article
'I will be reading an/the article.'

This tense form is irrelevant for my purposes here.

¹⁰Aspect does not affect the conditional interpretation: (12a) can be either perfective or imperfective. Also, unlike English, Russian uses the same form for past simple and past perfect. As a result, (12a) can also mean 'If Anna read the article she would pass the test' (cf. Comrie 1986:94).

- b. *Ja prošu, [čtoby Anna (**pro**)-čítaj-et stat'ju].
 I ask SUBJ Anna PERF-read.NON-PAST-3SG article
 'I am asking that Anna read the article.'

To conclude, the morphological contrast within the Russian Tense system is past versus non-past. As a result, when it comes to the expression of irrealis Russian does not have a choice available in Hebrew and therefore past tense morphology is used to describe hypothetical events both in the past and in the future.¹¹

4. Conclusion and Further Issues

It has been argued that to account for Tense morphology in irrealis contexts the parallel should be drawn between Tense and Mood rather than between particular realizations of these categories such as past and irrealis. Once the parallel is drawn between Tense and Mood the similarities between past, future, and irrealis follow, deriving the cross-linguistic expression of irrealis in languages with no inflectional Mood. Another advantage of this proposal is the extension of the time-relational analysis of Tense and Aspect to Mood, which allows for a unified treatment of the three categories realized within the system of verbal inflection. Such an approach may explain why Tense/Aspect/Mood systems tend to be morphologically meager crosslinguistically, with Aspect morphology expressing Tense, and Tense morphology expressing Mood.

Furthermore, to make the typology complete, one should examine languages with a future/non-future Tense system. The prediction is that in such languages, future tense morphology should appear in both types of irrealis discussed above. A preliminary examination suggests that Hopi may be an example of such a language: in Hopi, the suffix *-ni* conveys both future tense and irrealis mood (Malotki 1983). Finally, the non-past and present tense morphology in irrealis contexts should be examined in light of this analysis. It correctly predicts that non-past or present tense morphology should be found in real conditionals, e.g., *If you drop the speaker it will break*. In real conditionals, the antecedent describes a situation that can potentially arise in the actual world. Intuitively, such conditionals can be evaluated relative to the utterance time, i.e., T-Evl is T-Ut. Since non-past or present tense morphology licenses the relation of coincidence this is exactly what we would expect.

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¹¹English subjunctives pose a problem for my analysis which predicts that they should contain past tense verb forms. Contrary to this prediction, English subjunctives contain non-past verb forms in both formal and informal speech, e.g., *I demand that John leave immediately* or *I demand that John leaves immediately*. At this point, I do not have a solution for this problem.

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