

# Aspect in Counterfactuals from A(rabic) to Z(ulu)

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Counterfactual (CF) conditionals are constructions that refer to situations that are contrary to fact. Languages often encode counterfactuality through the appearance of ‘repurposed’ past tense and imperfective aspect morphology that does not receive its standard interpretation (cf. Iatridou 2000).<sup>1</sup> There are several accounts of ‘repurposed’ morphology in CFs that focus on the use of past tense morphology, as illustrated in (1) below (Iatridou 2000, 2009; Ippolito 2002, 2003, 2006; Han 2006; Ogihara 2000; Arregui 2004, 2008).

- (1) **English: repurposed past tense in CFs** (Iatridou 2000)
- a. If he **left** tomorrow, he would get there next week. (FLV<sup>2</sup>)
  - b. If I **had** a car (now), I would be happy. (PresCF)
  - c. If he **had** been descended from Napoleon, he would have been shorter. (PastCF)

With respect to repurposed aspect, however, much less has been said (cf. Iatridou 2009; Arregui 2004, 2007). Iatridou (2009) shows us two different ways in which languages employing repurposed imperfective aspect in CFs use it: in some languages, as in the Greek examples shown in (2), the repurposed imperfective morphology is the only aspectual morphology that is present in CF constructions; other languages, such as Hindi, shown in (3), both the imperfective morphology associated with the CF and aspectual morphology associated with the actual aspectual interpretation can appear.

- (2) **Greek: repurposed imperfective is only aspect marked in CFs**
- a. An **pari**           afto to siropi θa    yini                           kala.  
if takenPST.PFV this    syrup FUT become.NPST.PFV well  
‘If he takes this syrup, he will get better.’ (Non CF)
  - b. An **eperne**       afto to siropi θa    yinotan                kala  
if takePST.IMP this    syrup FUT becomePST.IMP well  
‘If he took this syrup, he would get better.’ (FLV)
  - c. An **peθene**      o arxivos θa    ton θavame       stin korifi tu vunū  
if die.PST.IMP the chief   FUT him bury.PST.IMP on.the top   the mountain  
‘If the chief died, we would bury him on the top of the mountain.’ (FLV)

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<sup>1</sup>Languages that do not encode counterfactuality this way either use an analogous INFL-related item (cf. Nevins 2002; Wiltschko 2009) or dedicated morphology that appears only in CFs (cf. Iatridou 2000; Legate 2003; Van Linden & Verstraete 2008). In addition to the repurposed morphology strategies discussed in this paper, both Palestinian Arabic and Zulu also have separate dedicated CF morphology. These morphemes, *law* in Palestinian Arabic and *ngabe* in Zulu, are in complementary distribution with the repurposed-morphology strategies we discuss here. See Karawani & Zeijlstra (2010) and Halpert (2010) for a comparison of the two strategies in Palestinian Arabic and Zulu, respectively.

<sup>2</sup>A class of future-oriented constructions called ‘future less vivid’ (FLVs) (Iatridou 2000, following classical Greek grammarians, e.g. Smyth 1920) shares many grammatical properties with CF constructions and are discussed alongside CFs here where their properties align.

(3) **Hindi: auxiliary hosts repurposed habitual; ‘standard’ aspect on verb**

- a. Agar vo macchlii khaa-**taa** ho-**taa**, to use yeh biimaarii nahiiN ho-tii  
 if he fish eat-HAB be-HAB then he.DAT this illness NEG be-HAB.FEM  
 ‘If he ate fish (on a regular basis), then he would not have this disease.’ (PresCF)
- b. Agar vo gaa **rahaa** ho-**taa**, to log wah wah kar rahe ho-te  
 if he sing PROG be-HAB then people wow wow do PROG be-HAB  
 ‘If he were singing, people would be going ‘wow wow’.’ (PresCF)

In this paper, we focus on the question of what accounts for the cross-linguistic differences we see in how ‘standard’ aspect (and tense) is realized in CF constructions, as in the differences between Greek and Hindi in (2) and (3). We propose that languages attempt to *maximize the exponents* of tense/aspect that correspond to the interpretation of the sentence, while still always realizing the repurposed tense/aspect morphology required by the CF construction. We explore the morphological composition of tense and aspect in CF constructions in two unrelated languages, Palestinian Arabic and Zulu, to illustrate this principle.

(4) **Palestinian Arabic**

[iza kaan ʕaʕaʕ ] kaan htaaz mahrame  
 if be.PST sneeze.PFV.3SM be.PST need.PFV.3SM tissue.F  
 ‘If he had sneezed, he would have needed a tissue.’ (conveys: he did not sneeze)

(5) **Zulu**

[ukuba be-ngi-thimul-ile ] be-ngi-zo-dinga ithishi  
 if PST.IMP-1SG-sneeze-PFV PST.IMP-1SG-FUT-need 5tissue  
 ‘If I had sneezed, I would have needed a tissue.’ (conveys: I did not sneeze)

While both languages use repurposed past tense in CFs, as shown in (4) and (20b), the ways in which they differ can illuminate our understanding of aspect in CFs. We will show that in PA, imperfective is not required in CFs and that aspect morphology always receives its standard aspectual interpretation. In Zulu, by contrast, imperfective morphology is required in all CFs and does not always receive its standard aspectual interpretation in these constructions.

Despite the differences in the way aspect is realized and interpreted in CFs, we argue that these languages can both be accounted for in terms of maximizing exponents of tense/aspect. The differences in actual morphology expressed by the languages is determined by two factors: (1) the specific feature bundling of tense and aspect morphology in the language and (2) the availability of strategies that allow tense/aspect morphemes to be ‘stacked’ on a single main verb in CFs.

In Palestinian, past tense is bundled with perfective aspect in a single morpheme and the auxiliary KAAAN ‘be’ can always be inserted in a CF structure to host past tense<sup>3</sup>. The result of this combination of characteristics is that the perfective morpheme can yield a CF meaning, since it contains past tense. The availability of the auxiliary structure to host past ensures that aspect on the main verb is always ‘real’. Since perfective is not necessary for CF meaning, the past tense auxiliary can host the repurposed past tense that is necessary for CF and so the verb is free to carry real aspect.

In Zulu, past tense is bundled with imperfective aspect and CF constructions do not generate auxiliary structures to host tense/aspect. In addition, aspect morphemes are realized in one of two ‘slots’ on the predicate; future is realized in a separate slot. The result of these characteristics in Zulu is that imperfective is required in all CFs, since it is used to mark past. ‘Real’ tense/aspect morphology is marked just in case it is realized in a separate slot; otherwise, stacking is not allowed.

<sup>3</sup>In this paper, we characterize KAAAN simply as a past form. Morphologically, it looks like a past-perfective form, but it is not completely clear to us what to make of this fact: because it is the case that all auxiliaries in Palestinian Arabic appear to be morphologically perfective, including non-past auxiliaries, we choose not to treat this form as a true perfective in the nature of perfective-marked main verbs, which always receive a past tense interpretation.

## 1. CF basics in Palestinian Arabic and Zulu

### 1.1. Palestinian Arabic

In PA, CFs using repurposed morphology can be marked in one of two ways: in present CFs and FLVs with a perfective interpretation, the main verb is marked past-perfective, as in (6) below, while in past CFs and CFs with imperfective interpretations, a past tense form of the auxiliary verb ‘be,’ KAAAN is used, followed by a verb that either receives past-perfective or imperfective morphology, as in (7).

#### (6) Palestinian Arabic CFs with perfective

- a. iza **ṭileʕ** halaʔ, kaan b-iwsal ʕa l-waʔt la l-muḥaadara  
if leave.PST.PFV now, be.PST B-arrive.IMP on the-time for the-lecture  
‘If he left now, he would arrive on time for the lecture.’ (PresCF)
- b. iza **ṭileʕ** bukra, (kaan) b-iwsal ʕa l-waʔt la l-muḥaadara.  
if leave.PST.PFV tomorrow, (be.PST) B-arrive.IMP on the-time for the-lecture  
(without kaan in conseq): ‘If he left tomorrow, he would arrive on time.’ (FLV)  
(with kaan in conseq): ‘If he had left tomorrow, he would have arrived on time.’ (FutCF)

#### (7) Palestinian Arabic CFs with KAAAN

- a. iza **kanno** ṭileʕ mbaareh, kaan wisel ʕa l-waʔt la l-muḥaadara  
if be.PST leave.PST.PFV yesterday, be.PST arrive.PST.PFV on the-time for the-lecture  
‘If he had left yesterday, he would’ve arrived on time for the lecture.’ (PastCF)
- b. iza **kanno** ʕam yitlaʕ halaʔ min l-bet, kaan b-iwsal ʕa l-waʔt  
if be.PST PROG leave.IMP now from the-home, be.PST B-arrive.IMP on the-time  
‘If he were leaving home now, then he would arrive on time.’ (PresCF)
- c. iza **kanno** b-yitlaʕ bakkeer kul yom, kaan b-iwsal ʕa l-waʔt la l-muḥadaraat  
if be.PST B-leave.IMP early every day, be.PST B-arrive on the-time for the-lectures  
‘If he were into the habit of leaving early, he would arrive on time for the lectures.’ (PresCF)

In non-CF conditionals, the verb may bear either perfective or imperfective morphology, as in (8).

#### (8) Palestinian Arabic non-CF conditionals

- a. iza ṭileʕ mbaareh, (b-ikuun) wisel ʕa l-waʔt la l-muḥaadara.  
if leave.PST.PFV yesterday, (B-be.IMP) arrive.PST.PFV on the-time for the-lecture  
‘If he left yesterday, (it would be the case that) he arrived on time for the lecture.’
- b. iza b-yiṭlaʕ halaʔ/ burka, b-iwsal ʕa l-waʔt la l-muḥaadara  
if B-leave.IMP now/ tomorrow, B-arrive.IMP on the-time for the-lecture  
‘If he leaves now/tomorrow, he’ll arrive on time for the lecture.’

### 1.2. Zulu

Zulu CFs involve the past-imperfective marker *be-* in both the antecedent and consequent. This marker is used regardless of the actual temporal interpretation of the sentence, as shown by the possibility of non-past temporal adverbs in (9) below:

#### (9) Zulu CFs

- a. [ukuba **be-** ngi- phum- e izolo] **be-** ngi- **zo-** fik- ile ekuseni  
if PST.IMP- 1SG- leave- PFV- yesterday PST.IMP- 1SG- FUT- arrive- PFV LOC.dawn  
‘If I had left yesterday, I would have arrived at dawn.’ (PastCF)
- b. [ukuba **be-** ngi- phuma manje] **be-** ngi- **zo-** fika kusasa  
if PST.IMP- 1SG- leave now PST.IMP- 1SG- FUT- arrive tomorrow  
‘If I left now, I would arrive tomorrow.’ (PresCF)
- c. [ukuba **be-** ngi- **zo-** phuma kusasa] **be-** ngi- **zo-** fika ngo-Lwesihlanu  
if PST.IMP- 1SG- FUT- leave tomorrow PST.IMP- 1SG- FUT- arrive on.Friday  
‘If I left tomorrow, I would arrive on Friday.’ (FLV)

In non-CF conditionals, in contrast, the *be-* morpheme only appears in actual past-imperfective contexts, as shown in (10):

(10) **Zulu non-CF conditionals**

- a. [ukuba u- phum- e izolo] u- fik- ile ekuseni  
if S1- leave- PFV yesterday PST.IMP- 1S- arrive- PFV LOC.dawn  
'If he left yesterday, then he arrived at dawn.'
- b. [ukuba ngi- phuma manje] ngi- zo- fika kusasa  
if 1SG- leave now 1SG- FUT- arrive tomorrow  
'If I leave now, I will arrive tomorrow.'
- c. [ukuba **be-** wu- phuma ngesikhathi ngi- ku- bona] u- zo- fika ngo-7  
if PST.IMP- 2SG- leave LOC-7time 1SG- 2ND.O- see 2SG- FUT arrive at-7  
'If you were leaving when I saw you, then you'll arrive at 7.'

## 2. Tense/aspect coupling in Palestinian Arabic and Zulu

In section 1, we saw that while Zulu always requires imperfective in CF constructions, Palestinian Arabic does not. In this section, we will examine more closely what is being conveyed by the aspectual markers in the two languages, both in CF constructions and more generally. As we will show, in Palestinian Arabic, perfective is coupled with past tense meaning, while in Zulu, imperfective is coupled with past.

### 2.1. PA: perfective is past

In Palestinian Arabic, imperfective morphology is associated with habitual, future, or progressive interpretations, and cannot yield a past interpretation when it appears on the verb without an auxiliary, as shown in (11):

(11) **Palestinian Arabic imperfective**

- a. b-tuktob (\*mbaareh)  
B-write.IMP (\*yesterday)  
'She usually/will writes.' (habitual)/(future)
- b. ʔam tuktob (\*mbaareh)  
PROG write.IMP (\*yesterday)  
'She is writing.'

Instead, past imperfectives meanings in Palestinian require the past auxiliary *KAAN* in addition to an imperfective-marked main verb, as in (12):

(12) **Palestinian Arabic past imperfectives**

- a. kaanat tuktub  
be.PST write.IMP  
'She used to write.' (past habitual)
- b. kaanat ʔam tuktub  
be.PST PROG write.IMP  
'She was writing.' (past progressive)

In contrast to imperfectives, (non-CF) perfective verbs in Palestinian Arabic always receive a past interpretation:

(13) **Palestinian Arabic perfectives**

- a. ʔileʔ mbaareh  
leave.PST.PFV yesterday  
'He left yesterday.'

- b. ʔileʃ            halaʔ  
leave.PST.PFV now  
'He has just left.'
- c. \*ʔileʃ            bukra     / kaman shway  
leave.PST.PFV tomorrow / in a bit

From these differences in the behavior of imperfective and perfective aspect in Palestinian, we conclude that the perfective in Palestinian Arabic encodes past tense, while the imperfective does not.

## 2.2. Zulu: imperfective is past

In (9), we saw that CFs in Zulu always involve the morpheme *be-*. The *be-* morpheme always conveys imperfective interpretation outside of CFs, appearing only in progressive and habitual contexts:

### (14) Use of *be-* in imperfective contexts

- a. Ngesonto elidlule **be**-ngi-funda        “Inkinsela YaseMngungundlovu”  
LOC.5week REL5past PST.IMP-1SG-read 9gentleman 9POSS.LOC.Pietermaritzburg  
'Last week I was reading *The Gentleman of Pietermaritzburg*.'
- b. Nkonyaka odlule **be**-ngi-phuza        izinkomishi ezi-mbili ze-khofi        zonke  
LOC.12year REL12.past PST.IMP-1SG-drink 10cup        REL10.two poss.5coffee 10every  
izinsuku  
10day  
'Last year I drank two cups of coffee every day.'

In addition, in non-CFs, *be-* always has a past tense interpretation; it is incompatible with non-past readings, as shown by the unacceptability of non-past time adverbs with *be-* in (15):

### (15) Zulu *be-* as past

- be-**        ngi- phuma izolo        \*manje/ \*kusasa  
PST.IMP- 1SG- leave    yesterday/ \*now/    \*tomorrow  
'I was leaving yesterday/ \*now/ \*tomorrow.'

In contrast to *be-*, Botne & Kirchner (2000) analyze Zulu perfective (and perfect) as not specified with a past meaning. As (16) shows, perfective/perfect *-e/-ile* morphology can appear in non-past contexts:

### (16) Zulu perfective in non-past

- a. ngi- shabal-    ele manje  
1SG- disappear- PFV now  
'I disappear now.'
- b. ngi- phum- ile    manje  
1SG- leave-    PFV now  
'I have left now.'
- c. ngi- zo-    be ngi- phum- ile    ebusuku  
1SG- FUT- be 1SG- leave-    PFV in.evening  
'I will have left in/by the evening.'

The fact that perfective morphology in Zulu often corresponds to a past interpretation is not surprising from a cross-linguistic perspective: while perfective aspect tends to either anchor to past or present tense in a language, even in languages where the anchor is present tense, a present perfective typically receives a past interpretation (Comrie 1975, Dahl 1985). In Zulu, then, we essentially see the reverse of the Palestinian situation: Zulu imperfective morphology seems to necessarily encode past tense meaning, while perfective morphology does not encode past tense.



and consequent structures here, the existence of an ‘upper bound’ on ‘real’ morphology in (18b) is similar to what we find in Zulu CFs in the next section.

### 3.2. Zulu: no auxiliary, multiple ‘slots’

Zulu, in contrast to Palestinian, does not employ auxiliary constructions in CFs. Instead, the only opportunities to mark tense and aspect are with main verb morphology. As we saw, Zulu marks past-imperfective as a verbal prefix and perfective as a verbal suffix. Outside of CFs, predicates can’t bear both perfective and imperfective at the same time:

#### (19) \*Double-aspect marking in Zulu

- a. \*Be-     ngi- thimul- ile     izolo.  
PST-IMP- 1SG- sneeze- PFV- yesterday
- b. Be-     ngi- thimula amahora amabili namhlanje ekuseni  
PST-IMP- 1SG- sneeze 6hour 6two today LOC.morning  
‘I was sneezing for two hours this morning!’

However, in CF constructions, both imperfective and perfective aspect *can* appear at the same time, just in case the predicate receives a perfective interpretation, as in (20), where the antecedents host *both* imperfective and perfective but interpreted perfectly:

#### (20) Zulu perfective marking in CFs

- a. [ukuba u- **be-**     shad- **e**     nenkosazana,] u- **be-**     zo- ba nemali  
if     1S- PST-IMP- marry- PFV- with-9princess 1S- PST-IMP- FUT- be with-9money  
‘If he married the princess, he’d have money.’
- b. [ukuba **be-**     ngi- thimul- **ile**] **be-**     ngi- zo- dinga ithishi  
if     IMP- 1SG- sneeze. PFV- IMP- 1SG- FUT- need 5tissue  
‘If I had sneezed, I would have needed a tissue.’

Similarly, the future marker *-zo-* appears in yet a different part of the verbal inflection from *be-*. In an FLV, *-zo-* appears in conjunction with the CF marker *be-*:

#### (21) Zulu future marking in CFs

- [ukuba **be-**     ngi- **zo-** phuma kusasa] **be-**     ngi- **zo-** fika ngo-Lwesihlanu  
if     PST-IMP- 1SG- FUT- leave tomorrow PST-IMP- 1SG- FUT- arrive on.Friday  
‘If I left tomorrow, I would arrive on Friday.’ (FLV)

When a CF receives a past (imperfective) interpretation, however, there is no way to stack additional *be-* morphology on the verb, so *be-*marked CFs are ambiguous between past and present:

#### (22) Zulu past-imperfective CFs: no additional marking

- a. [ukuba **be-**     ngi- phuma ngesikhathi ngi- ku-     bona] **be-**     ngi- **zo-** fik-  
if     PST-IMP- 1SG- leave LOC-7time 1SG- 2ND.O- see PST-IMP- 1SG- FUT- arrive-  
ile ekuseni  
PFV- LOC.dawn  
‘If I had been leaving when I saw you, I would have arrived at dawn.’
- b. [ukuba **be-**     ngi- phuma manje] **be-**     ngi- **zo-** fika kusasa  
if     PST-IMP- 1SG- leave now PST-IMP- 1SG- FUT. arrive tomorrow  
‘If I left now, I would arrive tomorrow.’
- c. [ukuba **be-**     ngi- gula] **be-**     ngi- zo- thimula  
if     IMP- 1SG- be-sick IMP- 1SG- FUT- sneeze  
‘If I were/had been sick, I would be/have been sneezing.’

We summarize these facts as follows: when the ‘real’ tense or aspectual morphology would normally be realized in a different location than the CF *be-*, as in the perfective cases above in (20a) and (20b), we find both the ‘real’ and the repurposed morphology. In Zulu, therefore, the realization of ‘real’ aspect is limited to cases where the aspect morphemes are marked in different places on the predicate, as in (20a) and (20b).

#### 4. Discussion & Conclusion

In the previous sections, we saw the details of how Palestinian Arabic and Zulu use tense/aspect morphology in CFs, both to express counterfactuality and to yield the T/A interpretation of the sentence. We summarize these results in Table 1 below:

**Table 1:** Tense and aspect marking in Palestinian and Zulu counterfactuals

	<b>Palestinian Arabic</b>	<b>Zulu</b>
Past tense:	coupled with PERFECTIVE expressed by auxiliary KAAAN	coupled with IMPERFECTIVE
Tense/aspect stacking:	auxiliary structure available	no auxiliary limited aspect stacking on main V
CF strategy:	V-PST.PFV = nonpast pfv CF KAAAN + V-IMP = imp CF KAAAN + V-PST.PFV = past pfv CF	PST.IMP-V = imp non-future CF PST.IMP-V-PFV = perfective CF PST.IMP-FUT-V = FLV

Despite the differences between the languages, we have identified two points of commonality that drive morphological marking in CFs in the two languages: (1) both languages use past tense to mark CFs and (2) both languages attempt to maximize the morphological exponents of ‘real’ tense and aspect. The different ways in which each language implements these requirements are independently predictable from the specifics of their individual morphosyntactic properties.

In each language, past tense is coupled with a different aspect: perfective in Palestinian and imperfective in Zulu. To realize ‘real’ tense or aspect, the languages need a place for the real morphology to go. In Palestinian, the auxiliary structure with KAAAN hosts CF past, so real aspect (and past tense) can be realized on the main verb. Zulu has fewer options: without an auxiliary structure, only T/A morphology realized in a different slot on the verb can appear, so ‘real’ tense/aspect isn’t always marked.

The generalizations from these two cases allow us to enrich our understanding of the crosslinguistic realization of tense/aspect in CFs. In a language without morphosyntactic strategies to stack tense/aspect in CFs, only repurposed morphology will surface (ie. Greek in present CFs and FLVs). In a language with a consistent strategy to yield stacking, we see both repurposed and real morphology in CFs (ie. Hindi). A language like Palestinian Arabic comes close to Hindi in its ability to realize repurposed and real morphology, but hits an upper bound in past-imperfective CFs. Zulu gives a more dramatic illustration of the principle of maximizing exponents of tense and aspect, in that it allows stacking in a more limited range of contexts.

The way we have characterized Zulu here is that CF constructions require only past tense, but that imperfective morphology ‘comes along for the ride,’ since it is bundled with past in Zulu. While it is potentially problematic for theories of morphology to have a more highly specified morpheme inserted when only [past] is called for, we believe that the situation in Zulu may be such that the *be-* morpheme is only specified for past tense, but receives an imperfective interpretation as ‘default’ aspect (since perfective is realized by a separate morpheme that does not encode tense). If so, then the ‘imperfective’ in Zulu CFs is illusory. We hope that future research can clarify this point.

At this point, we cannot say whether these generalizations can be extended unproblematically to account for the differing CF strategies in other languages, but this analysis offers a first step toward a potential understanding of the cross-linguistic variation.

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