The Syntax and Semantics of Aspect
Rajesh Bhatt and Roumyana Pancheva
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Aspect and Modality

1 Imperfectives: Counterfactual and Habitual

In some languages, imperfective morphology appears in counterfactual/FLV (Future Less Vivid) environments as well as habitual environments (Iatridou (2000)).

(1) Modern Greek

  a. counterfactual wishes:

    O Kostas θa   iθele   na   oδiγuse   kokino aftokinito.
    Kostas   MOD want/PST/IMP PART drive/PST/IMP red   car

    'Kostas wishes he drove a red car.'

  b. counterfactual conditional:

    An ton aγapuse, θa   itan poli efti$\chi_1$ismeni.
    if   him love/IMP/PST FUT was very happy

    'If she loved him, she would be very happy.'

  c. Future Less Vivid (FLV) conditionals:

    An eperne   afto to siropi θa $\gamma_1$inotan   kala.
    if   take/PST/IMP this the syrup FUT become/PST/IMP well

    'If he took this syrup, he would get better.'

1.1 What goes with what?

MG is a language where imperfective morphology appears both in progressive environments and habitual environments.

But not all languages use the same morphological means for progressives and habituals. (Modern) Hindi, for example, uses what is sometimes called imperfective morphology only for habituals. The progressive is marked periphrastically with an auxiliary based on the verb *rah* 'stay'.

(2) Habitual $\neq$ Progressive (Hindi)

  a. Habitual:

    Yusuf   skuul **jaa-taa**   hai
    Yusuf.m school go-Impfv/Hab.MSg be.Prs.Sg

    'Yusuf goes to school.'

b. Progressive:

Yusuf skuul **jaa rahaa** hai
Yusuf.m school go Prog.MSg be.Prs.Sg

'Yusuf is going to school.'

The syncretism that we find in Hindi is between the marker of Habitual meaning and the marker of Counterfactual meaning, and not between the marker of Progressive meaning and the marker of Counterfactual meaning.

(3) wishes:

a. *-taa* habitual marker as counterfactual marker: ok

kaash Mona yahã: **aa-tii**
'wish' Mona.f here come-Hab.f

'(I) wish Mona came here.'

b. *rahaa* progressive marker as counterfactual marker: *

*kaash Mona yahã: aa **rahii** (hai/thii)
'wish' Mona.f here come Prog.f be.Prs/be.Pst.f

'*(I) wish Mona was coming here.'

(4) counterfactuals:

a. *-taa* habitual marker as counterfactual marker: ok

agar Mona yahã: **aa-tii**, to mÃ us-ke-saath foṭo khichvaa-taa
if Mona.f here come-Hab then I her-with photo draw.caus-Hab

'If Mona had come here, I would have had a picture taken with her.'

b. *rahaa* progressive marker as counterfactual marker: *

agar Mona yahã: aa **rahii** hai, to Sona-bhii aa-egii
if Mona.f here come Prog.f be.Prs then Sona.f-also come-Fut.f

'If Mona is coming here, then Sona also will.'
(Note: not counterfactual.)

Given that we have three distinct semantic environments, in principle we can have the following ways of marking these environments:

(5) (limiting ourselves that have clear morphological means for marking the following meanings)

a. one form for all three: MG

b. Prog, (Hab, Cfact): Hindi

c. **(Prog, Cfact), Hab: unattested**

d. *(Prog, Hab), Cfact: Kashmiri and Sindhi*

e. separate forms for all three: ??

What's with Kashmiri and Sindhi:

- they use a specialized marker, *-he* in Kashmiri, and *-hā* in Sindhi, which appears only in counterfactual environments. It may be that this specialized marker is a Complementizer whose presence blocks the appearance of any aspectual morphology - when the specialized marker is present, the verb cannot be further specified for aspect.

1.2   The (non-)contribution of Imperfective/Habitual Morphology

1.3   Background: 'Fake' Pasts

Background: past tense morphology in counterfactuals/Future Less Vivid conditionals does not contribute a past interpretation (Iatridou (2000)).

(6)   past tense, but desire about the present:
   a. I wish John smoked.
   b. I wish I had a car.

(7)   future continuations and future-oriented adverbs:
   a. If he took this syrup, he would get better, but I am certain that he will refuse to drink it when we ask him to do so.
   b. If she took this syrup five times in the coming week, he would get better.
   c. If you left tomorrow, you would get there next week.

(8)   Iatridou (2000)'s Proposal: Past Morphology contribute a meaning of the form:
$$T(x) \text{ excludes } C(x),$$
   where T(x) represents the Topic Time/Worlds, and C(x) the utterance time/world.

- so the past tense is counterfactual/FLV conditionals is not truly fake. It's just that it excludes the current world and not the current time.

1.4   'Fake' Aspect

What is the contribution of imperfective in counterfactual environments?

1.4.1   Perfective

'Perfective' interpretations:

(9)   An pi$\gamma_1$ene   sto   taχ_1iδromio θa   evlepe   ton Petro.
      if   go/PST/IMP to-the post-office   FUT see/PST/IMP the Peter

      'If he/she went to the post office, he/she would see Peter.'

A related point can be made in Hindi. Habitual morphology in in general incompatible with point adverbials like *kal* 'yesterday', but habitual morphology in a counterfactual is compatible with point adverbials like *kal* 'yesterday'

(10) a. *yesterday* ok with habitual morphology in counterfactual:

Agar Lata kal   ḍaak-khaane jaa-tii, to   ḍaak karamchaarii us-kaa
if   Lata.f yesterday post-office go-Hab.f then post workers   she-Gen
swaagaat kar-te
welcome do-Hab.MPl

'If Lata had gone to the post office yesterday, the postal workers would have welcomed
her.'

b. *yesterday* not ok with regularly interpreted habitual morphology:

#Lata kal   ḍaak-khaane jaa-tii   hai.
Lata.f yesterday post-office   go-Hab.f be.Prs.Sg

'#Lata used to go to the post office yesterday.'

c. *yesterday* ok with perfective/progressive:

Lata kal   ḍaak-khaane gayii/jaa   rahii thii
Lata.f yesterday post-office   go-Pfv.f/go Prog.f be.Pst.f

'Lata went/was going to the post office yesterday.'

• States in the perfective in MG have an inchoative reading:

(11) χθes   ton aγapisa.
      yesterday him love/PST/PERF

'Yesterday, I fell in love with him/came to love him.'

But stative predicates combine with the FLV/CF imperfect without any such change in meaning.

(12) An ton aγapuse   avrio,   θa   imun poli efti$χ_1$ismeni.
      if   him love/IMP/PST tomorrow FUT was   very happy

'If she was in the state of loving him tomorrow, she would be very happy.'

So it's problematic to assume a perfective interpretation.

1.4.2 Imperfective

Perfective interpretations aren't the only ones available for counterfactual conditionals with im-
perfective morphology; imperfective interpretations are also possible.

(13) a. A: I saw Mary on South Street. She must have been going to the post office.

b. B: That can't be.

An pi$γ_1$ene   sto   ta$χ_1$iδromio θa   pi$γ_1$ene apo alo   δromo.
if   go/PST/IMP to-the post-office   FUT went   from other street

'If she was going to the post office, she would be on a different street.'

4

In Hindi, progressive readings are not available but habitual readings are:

(14) Agar Lata roz   skuul jaa-tii, to   vo zaruur   paas ho jaa-tii
      if   Lata.f everyday school go-Hab.f then she definitely pass be GO-Hab.f

      'If Lata went to school everyday, she would definitely have passed.'

• But not always:

Individual Level Predicates (ILPs) in Hindi with proper name subjects cannot appear with habit-
ual aspect. With bare plural subjects, things are ok.

(15)   a. proper name + ILP + hab: *

           #Rohit   lambaa   ho-taa   hai.
           Rohit.m tall.MSg be-Hab.MSg be.Prs.Sg

           '??Rohit is habitually tall.'

       b. bare plural + ILP + hab: ok

           laṛke lambe   ho-te   hẼ:.
           boys tall.MPl be-Hab.MPl be.Prs.Pl

           'Boys are tall.' (Not: The/some boys are tall.)

       c. control:

           laṛke lambe   hẼ:.
           boys tall.MPl be.Prs.Pl

           'The boys are tall.'

In counterfactual environments, proper names, ILPs, and habitual morphology can happily com-
bine:

(16)   a. proper name + ILP + hab: ok

           agar Rohit   lambaa   ho-taa,   to   us-ko naukarii mil   jaa-tii
           if   Rohit.m tall.MSg be-Hab.MSg be.Prs.Sg then   he-Dat job.f get   GO-Hab.f

           'If Rohit had been tall, he would have gotten the job.'

       b. bare plural + ILP + hab: ok

           agar laṛke lambe   ho-te,   to...
           if   boys tall.MPl be-Hab.MPl be.Prs.Pl then

           'If boys/the boys were tall,...'

• Note that in (16b), the bare plural subject can be interpreted both as a generic statement about
boys and a statement about *the boys.*

1.4.3 What Contribution?

The imperfective is needed in the counterfactual but what semantic contribution it makes is hard to say.

• The simplest thing to say at this point is that the imperfective in the counterfactual is simply 'fake' - it does not make any semantic contribution.

• Given our overall assumptions about tense, aspect, and aktionsart, this means that there must be null Perfective/Imperfective/Habitual operators (e.g. in 16b).

1.4.4 Another Direction

Given that the imperfective in counterfactuals seems to make no semantic contribution, we cannot proceed with an assimilation with habituals on semantic grounds.

Iatridou (2000):260-263 explores an idea according to which imperfective morphology doesn't directly make a semantic contribution - it just appears in particular syntactico-semantic environments. The goal then becomes to identify a syntactico-semantic feature α that all (and only) the environments where imperfective morphology can appear share.

Under this approach, we would still have semantically contentful imperfective operators - but these would most likely be null.

• One such feature - having to do with being unordered with respect to the utterance time - is considered by Iatridou for the habitual/counterfactual syncretism.

2 Actuality Entailments and Aspect

2.1 Actuality Entailments with Ability Modals

was able to is ambiguous:

(17)   a. Yesterday, John was able to eat five apples in an hour. (past episodic)

     b. In those days, John was able to eat five apples in an hour. (past generic)

     - (17a) implicates that John actually ate five apples in an hour.

- implcature or entailment? Let's use 'implication' as a cover term.

(18)   a. Ability Attribution: $ABILITY\ (\mathcal{P})(x)$

     b. Actuality Implication: $\mathcal{P}(x)$

Cancellation of the actuality implication leads to a certain oddness.

(19) Last night, a masked assailant attacked me on my way home. I was able to wrestle him to the ground. #But I didn't do anything since I am a pacifist.

The two readings associated with *be able to* allow different interpretive possibilities for indefinite/bare plural subjects.

(20) A fireman was/Firemen were able to eat five apples.

    a. Yesterday at the apple eating contest, a fireman was/firemen were able to eat five apples. (Past episodic, actuality implication, existentially interpreted subject)

    b. In those days, a fireman were/firemen were able to eat five apples in an hour (Generic, no actuality implication, generically interpreted subject)

2.2 Connections with Aspect

In languages where imperfective aspect appears in generic/habitual statements, we find the following pattern (Bhatt (1999)):

• ability modals + perfective aspect → actuality implication.

• ability modals + imperfective aspect → no actuality implication.

Further, in these languages, the actuality implication seems to be uncancellable so we can call it the actuality entailment.

• Odd continuations:

(21) Modern Greek:

    a. Imperfective:

      Borusa   na sikoso   afto to trapezi ala δen to sikosa
      CAN.impfv.1s NA lift.non-pst-pfv.1s this the table   but NEG it lift.impfv

      '(In those days), I could lift this table but I didn't lift it.'

    b. Perfective:

      Boresa   na tu miliso   (# ala δen tu milisa)
      CAN.pst-pfv.1s NA him talk.non-pst-pfv.1s   but NEG him talk.pst-pfv

      'I was able to talk to John (but I did not talk to him).'

(22) a. Habitual:

      Yusuf havaii-jahaaz uṛaa sak-taa   hai/thaa   (lekin vo havaii-jahaaz nahīĩ
      Yusuf air-ship   fly CAN-impfv be.Prs/be.Pst but   he air-ship   Neg
      uṛaa-taa   hai/thaa
      fly-impfv be.Prs/Be.Pst

      'Yusuf is/was able to fly airplanes but he doesn't/didn't fly airplanes.'

b. Perfective:

Yusuf havaii-jahaaz uṛaa sak-aa (# lekin us-ne havaii-jahaaz nahĩĩ uṛaa-yaa)
Yusuf air-ship fly CAN-Pfv but he-erg air-ship Neg fly-Pfv

'Yusuf could fly the airplane, but he didn't fly the airplane.'

(23) French (from Hacquard (2005))

a. Imperfective:

Jean pouvait soulever cette table, mais il ne l'a pas soulevée.
Jean could-Impfv lift this table but he NE it-has Neg lifted

'Jean could lift this table, but he didn't lift it.'

b. Perfective:

Jean a pu soulever cette table, #mais il ne l'a pas soulevée.
Jean could-Pfv lift this table but he NE it-has Neg lifted

'Jean could lift this table, #but he didn't lift it.'

• Pragmatic Oddness:

(24) a. # O Yanis borese   na skotosi   ton Petro 3 fores
    the John CAN.pst-pfv NA kill.non-pst-pfv the Peter 3 times

'John managed to kill Peter three times.'

b. # Boresa   na aftoktoniso
  CAN.pst-pfv NA kill-self

'I managed to kill myself.'

(25) a. # Yunus Yakub-kaa tiin baar khoon kar sak-aa
    Yunus Yakub-Gen 3 times murder do CAN-Pfv

'Yunus could murder Yakub three times/on three occasions.'

b. # mE apne-aap-ko maar sak-aa
  I self-Acc kill can-Pfv

'I could kill myself.'

• Similar facts obtain in Bulgarian, Catalan, and many Indo-Aryan languages.

• The facts in Albanian, Basque, Galician, Brazilian Portuguese, and Spanish are substantially similar though not identical. Unlike the languages examined above, it seems to be possible to shift 'John can-Pfv lift the table' to a 'counterfactual' meaning 'John could have lifted this table'. Hacquard (2005)'s observation about the ambiguity of the French *passé composé* between a preterit (which yields an actuality entailment) and a perfect (which does not) is likely to be relevant here.

2.3 Implicative Verbs and Ability Modals

Ability modals in the perfective behave like *manage to*, which is an implicative verb (Karttunen (1971)).

(26) a. Past (Pfv(**CAN**) [VP]) = *managed-to*
      b. Past (Impfv(**CAN**) [VP]) = *had-ability-to*

• Copley (2005) notes similar facts for Tagalog with the difference that the ability modal in the perfective yields not just a 'managed to' reading but also what she calls an accidental reading.

2.4 The Actuality Implication and its relationship with Ability

Does an ability modal with an actuality implication still have an ability component to its meaning?

2.4.1 An Ability Component in the Actuality Entailment?

At first it seems that it does. Ability modal sentences with an actuality implication do not just mean that an event related to the embedded predicate took place. If they did, then the sentences in (27) would have been fine on the readings indicated in parentheses.

(27) a. *Yesterday, it was able to rain here. (Yesterday, it rained here)
      b. # The mailman was able to be bitten by a dog yesterday. (The mailman was bitten by a dog yesterday)
      c. (Hindi)

          #baarish ho sak-ii
          rain.f   be CAN-Pfv.f

          '# It was able to rain.'

Also, if all that was asserted was that an event related to the embedded predicate was actualized, the oddness of (28) would be puzzling.

(28) # A woman in Watertown was able to win 3 million dollars in the lottery yesterday.

A plausible explanation for the oddness of (27a, b) and (28) is that they do not constitute good ability attributions. This explanation presupposes that ability modal sentences with an actuality implication involve an ability attribution.

However, the oddness of (28) vanishes if the context makes it clear that winning the lottery involves some kind of sustained (non-minimal) effort.

(29) After buying lottery tickets regularly for several years, a woman in Watertown was finally able to win 3 million dollars in the lottery yesterday.

→ ability modals with an actuality implication do not necessarily involve an ability attribution.

→ what was wrong with (28) was not that no ability was involved but that the context did not

indicate that some effort went into the action. Once that was fixed, (28) (cf. 29) improved considerably.

• Ability is not necessarily part of the actuality implication reading.

(30)   (from Thalberg (1969))

    a. Yesterday, Brown hit three bulls-eyes in a row. Before he hit three bulls-eyes, he fired 600 rounds, without coming close to the bulls-eye; and his subsequent tries were equally wild.

    b. Brown was able to hit three bulls-eyes in a row.

    c. Brown had the ability to hit three bulls-eyes in a row.

2.4.2   Relationship with Implicative Verbs

(31)   a. # A woman in Watertown managed to win 3 million dollars in the lottery yesterday.

    b. After buying lottery tickets compulsively for several years, a woman in Watertown finally managed to win 3 million dollars in the lottery yesterday.

• (28) and (31a) became acceptable, if the context indicates that some effort went into the action. How is this component of the meaning of *be able to* and *manage to* represented?

→ as a conventional implicature (Karttunen and Peters (1979))

(32)   John managed to sit through the Chinese opera.

    a. Assertion: John sat through the Chinese opera.

    b. Conventional Implicature: Sitting through a Chinese opera requires some effort for John.

(33)   a. I just discovered that John managed to sit through the Chinese opera.

    b. I just discovered that John sat through the Chinese opera.

    c. I just discovered that sitting through a Chinese opera required some effort for John.

The facts with *was able to* with an actuality implication seem similar.

(34)   a. I just discovered that John was able to sit through the Chinese opera.

    b. I just discovered that John sat through the Chinese opera.

    c. I just discovered that sitting through a Chinese opera required some effort for John.

2.5   Compositional Treatment: $ABLE$ as an implicative verb

Let $ABLE$ be the element common to the implicative reading and the ability reading. I assume that it is a non-stative implicative verb with a conventional implicature somewhat similar to *manage to* (cf. Piñón (2003) for an alternate approach).

(35)   a.   implicative reading:
          LF: Past (Pfv ($ABLE$ (eat-5-apples)) (**fireman**))

       b.   ability eading:
          LF: Past (Gen ($ABLE$ (eat-5-apples)) (**fireman**))

• The problem of verifying instances:

Generic sentences typically require verifying instances:

(36)   a.   Miguel goes to school.
       b.   Bears hibernate.

But not all generic sentences require verifying instances (Carlson (1995)).

(37)   a.   This machine crushes up oranges and removes the seeds.
       b.   The Speaker of the House succeeds the vice president.
       c.   Sally handles the mail from Antarctica.

'Universal'/habitual vs. dispositional readings of generic sentences (Lawler (1973), Dahl (1975)):

(38)   John drinks beer.

'Universal'/habitual → require verifying instances
Dispositional → do not require verifying instances

2.6   Too and Enough

Hacquard (2005) notes that *too* and *enough* interact with aspect in a manner similar to ability modals.

(39)   *assez* 'enough', (from Hacquard (2005))
       actualization: P-enough to Q → Q

   a.   perfective:

       Jean a été   assez   rapide por s'enfuir (#mais il ne s'est pas enfui).
       Jean was-Pfv enough quick to   escape but   he NE SE-is Neg escaped

       'Jean was quick enough to escape (#but he didn't escape).

   b.   imperfective:

       Jean était   assez   rapide por s'enfuir (mais il ne s'est pas enfui).
       Jean was-Impfv enough quick to   escape but   he NE SE-is Neg escaped

       'Jean was quick enough to escape (but he didn't escape).

(40) *trop* 'too', (from Hacquard (2005))

actualization: too-P to Q $\rightarrow \neg$ Q

  a. perfective:

     Jean a été   trop lent por s'enfuir (#mais il s'est enfui).
     Jean was-Pfv too slow to escape but   he SE-is escaped

     'Jean was too slow to escape (#but he still escaped).

  b. imperfective:

     Jean était   trop lent por s'enfuir (mais il ne   s'est   pas enfui).
     Jean was-Impfv too slow to escape but he SE-is escaped

     'Jean was too slow to escape (but he still escaped).

• *too* and *enough* as implicatives that presuppose a sufficient and necessary condition for the realization of their complements.

(41) a. $[\![\text{enough}]\!] = \lambda x \lambda P_{dest} \lambda Q_{st}.$
$$[\iota d : \forall w \in \text{Acc}(w^*).Q(w) \leftrightarrow P(d)(x)(w)]P(d_1)(x)(w)$$
where $d_1 = \iota d : [\forall w \in \text{Acc}(w^*).Q(w) \leftrightarrow P(d)(x)(w)]$

  b. $[\![\text{to}]\!] = \lambda x \lambda P_{dest} \lambda Q_{st}.$
$$[\iota d : \forall w \in \text{Acc}(w^*).\neg Q(w) \leftrightarrow P(d)(x)(w)]P(d_1)(x)(w)$$
where $d_1 = \iota d : [\forall w \in \text{Acc}(w^*).\neg Q(w) \leftrightarrow P(d)(x)(w)]$

• When *too/enough* clauses combine with the Generic operator, their presuppositions get accommodated into the restriction of the Generic operator. Hacquard (2005) argues that this forces us to only consider situations that depend in the adjective. The actual situation may be different which is why we don't get an actualization.

2.7 Other cases of Actualization

(42) the Greek verb *epitrepo* 'permit' (Iatridou p.c.):

  a. perfective $\rightarrow$ actualization

     i   karta mu epetrepse   na xrisimopiiso tin vivliothiki
     this card me allow.pst.pfv   use   the library

     'This card permitted me to use the library.' (I used the library)

  b. imperfective $\rightarrow$ no actualization

     i   karta mu epetrepe   na xrisimopiiso tin vivliothiki
     this card me allow.impfv   use   the library

     'This card permitted me to use the library.' (I don't have to have used the library)

(43)   French 'have the courage to' (from Hacquard (2005))

    a. perfective → actualization

       Jean a eu   le   courage de parler à Marie, #mais il ne lui a   pas parlé.
       Jean had-Pfv the courage to talk   to Marie but   he NE her has Neg talked

       'Jean had the courage to talk to Mary, #but he didn't talk to her.'

    b. imperfective → no actualization

       Jean avait   le   courage de parler à Marie, mais il ne lui a   pas parlé.
       Jean had-Impfv the courage to talk   to Marie but he NE her has Neg talked

       'Jean had the courage to talk to Mary, but he didn't talk to her.'

Hindi has a passive that can only appear in NPI-licensing environments. This passive has a modal meaning which indicates inability. Like the ability modal, the inabilitative passive also displays the by now familiar actualization pattern.

(44)   Hindi inabilitative passives:

    a. perfective → actualization

       Mona-se   ek ghanṭ-me sirf tiin ghaṛe banaa-ye   gaye
       Mona-Instr one hour-in   only three pots.m make-Pfv.MPl Pass-Pfv.MPl

       'Mona was only able to make three pots in an hour.' (only three pots were made)

    b. imperfective → no actualization

       Mona-se   ek ghanṭ-me sirf tiin ghaṛe banaa-ye   jaa-te   hẼ
       Mona-Instr one hour-in   only three pots.m make-Pfv.MPl Pass-Hab.Mpl be.Prs.Pl

       'Mona is only able to make three pots in an hour.' (no pots necessarily made)

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