Evaluating Prospectivity in a Neo-Reichenbachian Aspectual System*

Sylvia L. Reed
University of Arizona
slreed@email.arizona.edu

Abstract
This paper pursues an analysis of prospective aspect and its similarity to the perfect. I adopt the term ‘prospective’ for any aspect whose semantics orders RT prior to ET, and propose a set of diagnostics for prospectivity. Then I discuss properties of perfects which might be shared by this aspect and propose tests for these properties within the prospective. Finally, I show that going to and about to in English, and a’ dol do and gu in Scottish Gaelic, pass tests for prospectivity and perfect-hood with varying degrees of success.

1 Introduction
This paper seeks to ask the following question: what would the “opposite” of perfect aspect

* This paper is part of work for my doctoral dissertation at the University of Arizona. Special thanks to my committee members: Andrew Carnie, Heidi Harley, Andy Barss, and Bridget Copley (CNRS/Université Paris 8); to Roumyana Pancheva, Hamida Demirdache, and the audience at ALC5 for their helpful comments; and especially to Muriel Fisher for always enthusiastically sharing her knowledge of Scottish Gaelic. All mistakes herein, of course, are my own. Research funded in part by NSF #BCS0602768A, and in part by a pre-doctoral grant from the University of Arizona Social and Behavioral Sciences Research Institute. I was also funded by a scholarship from P.E.O. International during a portion of this research.
look like, and what would its semantics be? I term such an aspect ‘prospective’ and seek to do the following: define this aspect in a time-relational system; examine the extent to which typical characteristics of (retrospective) perfects can be said to hold for prospectives; and examine how well English and Scottish Gaelic constructions line up with our conceptions of this aspect. I conclude that the “opposite” of perfect aspect is a definable and testable notion, and that Scottish Gaelic a’ dol a and gu are more clearly instances of prospective aspect than are English going to and about to.

2 Defining Prospectivity

2.1 Definitions

Perfect aspect is found in English sentences like the following:

(1) I have seen “Jurassic Park”.
(2) I have lived here since 2005.

Reichenbach (1947) proposed for the “tenses” of English (including the perfect) that there were three times: the “point of the event” (’E’), a “point of reference” (’R’), and the “point of speech” (S). The past perfect is analyzed as follows:

(3) At 10 o’clock, John had already left.
   E-R-S (leaving-10 o’clock-now [time of speech])

The present perfect, then, is analyzed as E-S,R—meaning the “point of the event” precedes the speech and reference points. This system overall produced more combinations than are distinguished (at least in English), and didn’t account for other aspects. In later Reichenbach-inspired views of tense and aspect, tense relates S and R while aspect relates R and E. The present perfect in such a system is typically analyzed as follows:

(4) E < R; R = S
This makes the division of labor between tense and aspect clearer. Other time-relational conceptions of tense and aspect (for instance, Demirdache & Uribe-Etxebarría (1997) and ff.) include containment relations; with these we can also get perfective and imperfective aspects.

Given this type of analysis for the present perfect, we might ask what happens if we have the following relation:

\[(5) \quad E > R; \quad R = S\]

Joos (1964), Binnick (1991), and others have characterized English *be going to* as the “reverse” of the perfect, the way that the future could be seen as the “reverse” of the past. E.g., “The meaning of *BE GOING TO*…turns out to be the exact reversal, in every detail as far as I can see, of the meaning of perfect phase: it simply exchanges ‘previous’ and ‘subsequent’” (essentially, in the ordering of reference time and event time) (Joos, 1964, p. 141). Demirdache & Uribe-Etxebarría (1997 and ff.) also refer to the time relation of reference time before event time as prospective. The term ‘prospective’ has been used in various ways for *about to* and *going to* in English and their equivalents in other languages. I adopt the term here to refer to any aspect which locates reference time before event time; that is, the “opposite” or “reverse” of the perfect. (Note that this term has sometimes been used to refer just to a construction like ‘about to’; I do not make this restriction. Ramchand (1993) calls Scottish Gaelic *gu* a ‘prospective’, but does not analyze it to any significant degree.) This means that we’re concerned with this relation of event and reference time, regardless of the ordering of speech time with respect to reference time—i.e., in any tense. So we should be able to have a past, present, and future prospective, just as we have a past, present, and future perfect (though of course English might or might not show the distinction). We can illustrate this aspect as follows (where I adopt the standard \([RT](reference\ time) = Reichenbach’s\ R, \quad ET (event\ time) = E, \quad and \ UT (utterance\ time) = S)\).

\[(6) \quad \left[ RT \right] \left[ ET \right]\]

In the present tense, reference time and speech time (utterance time) are cotemporaneous:

\[(7) \quad \left[ RT/UT \right] \left[ ET \right]\]
In what follows, I assume the following general formula for aspect:

$$\text{ASPECT} = \lambda P(v_t) \cdot \lambda t(i). \left[ \tau(e) \mathcal{R} t & P(e) \right]$$

$\mathcal{R}$ is a relationship to be determined by the particular instantiation of the aspect head, $t$ is a time (composed with tense, it will be saturated by the reference time that is grounded by the time of speech), $\tau$ is Krifka’s run-time function, and $e$ is an event(uality), existential closure of which occurs at the sentential level. For the prospective, then, I propose the following formula:

$$\text{PROSPECTIVE} = \lambda P(v_t) \cdot \lambda t(i). \left[ t \prec \tau(e) & P(e) \right]$$

$$(t \prec \tau(e) \iff \text{there is no } t' \subset \tau(e), \text{ s.t. } t' \leq t)$$

The prospective, then, conveys that a time precedes the runtime of the event (where $t$ will be saturated by the $\text{RT}$ grounded by the $\text{UT}$; existential closure of $e$ occurs at the sentential level). While a modal semantics is probably needed for this aspect at least in English I focus here on the time relations involved. (See e.g. Copley (2009) for a modal treatment of ‘be going to’.)

To look for a prospective in a given language, then, we want to look for a morphosyntactic distinction that is distributionally aspectual, and which has the time ordering as in (9). In the next section, I consider whether English and Scottish Gaelic have morphosyntactic distinctions of prospective aspect.

### 2.2 Prospectives in English and Scottish Gaelic?

First, let us consider whether English *be going to* and *be about to* show the characteristics we’ve been discussing. The first question was whether the construction is a distinction of aspect rather than tense. I test this by looking for occurrence across tenses, and incompatibility with the progressive and the perfect (without a second verb ‘be’). These two diagnostics indicate that the perfect in English is aspectual. As seen in (10) and (11), *be going to* passes some of the tests, while *about to* passes them all.
(10) Aspectual distribution: across tenses

a. ✓I was going to watch “Jurassic Park.”
b. ✓I am going to watch “Jurassic Park.”
c. ?? I will be going to watch “Jurassic Park” when you get here.
d. ✓I was about to watch “Jurassic Park.”
e. ✓I am about to watch “Jurassic Park.”
f. ✓I will be about to watch “Jurassic Park” when you get here.

(11) Aspectual distribution: incompatible with other aspects

a. *John is going to running a marathon tomorrow.
b. *John is going to has run(ing) a marathon tomorrow.
c. *John has (is) going to run a marathon tomorrow.
d. *John is about to running a marathon tomorrow.
e. *John is about to has run(ing) a marathon tomorrow.
f. *John has (is) about to run a marathon tomorrow.

Next, it is clear that sentences with going to and about to describe eventualities that have not happened yet (within a contextually appropriate amount of time):

(12) Valerie is going to write her second book next year.
    ⊨ her second book is not yet written

(13) Valerie is about to make dinner.
    ⊨ (tonight’s) dinner is not yet made

---

1 Past tense ‘going to’ and ‘about to’ sentences often seem to imply the non-occurrence of the eventuality, but this is not an entailment. For example, note the following:

F1 I was going to watch “Jurassic Park” over the weekend—and I did, five times!
F2 The ficus was going to die no matter what I did, so I ignored it and took care of the other trees.
F3 Peter was about to leave when I showed up, so I gave him the report and left instead of staying to chat.
Furthermore, we know that it is ET that is ordered after RT (and not (just) UT) because UT and RT can stand in a different relation, as shown in (10). For example, in (14) RT precedes UT (‘was’), but ET still follows RT (at RT (6 p.m.) the quiche is not made yet).

(14)  At 6 p.m., Valerie was going to make a quiche (but by 7 p.m. she had decided to make spaghetti instead).

Next we can see whether Scottish Gaelic a’ dol a and gu show these characteristics. Again, we first look at their distributions across tenses and with known aspects (Ramchand (1993) and Reed (Forthcoming) analyze air as a marker of perfect aspect, and a’/ag as a marker of progressive/imperfective aspect).

(15)  Aspectual distribution: across tenses

   a. ✓ Bha/✓ tha/✓ bithidh  Calum a’ dol a  phòsadh  Mairi.
      be.past/be.pres/be.fut Calum A’ DOL A  marry.ptcpl  Mairi
      ‘Calum was/is/will be going to marry Mairi.’

   b. ✓ Bha/✓ tha/✓ bithidh  Calum gu  phòsadh  Mairi.
      be.past/be.pres/be.fut Calum GU  marry.ptcpl  Mairi
      ‘Calum was/is/will be about to marry Mairi.’

(16)  Aspectual distribution: incompatible with other aspects

   a. *Tha  Iain a’ dol a  ag/air  ithe  marag  a-màireach.
      be.pres  Iain A’ DOL A  IMPV/PERF eat.ptcpl  pudding  tomorrow

   b. *Tha  Iain ag/air  a’ dol a  ithe  marag  a-màireach.
      be.pres  Iain IMPV/PERF A’ DOL A  eat.ptcpl  pudding  tomorrow

   c. *Tha  Iain gu  ag/air  ithe  marag  a-màireach.
      be.pres  Iain GU  IMPV/PERF eat.ptcpl  pudding  tomorrow
d.  *Tha Iain ag/air gu ithe marag a-màireach.
    be.pres Iain IMPV/PERF GU eat.ptcpl pudding tomorrow

Next, sentences with a’ dol a and gu describe eventualities that have not happened yet (within a contextually appropriate amount of time):

(17)  Bha i a’ dol a dhol dhan a’ bhaile an dè...
    be.past 3sf A’DOL A go.ptcpl to the.sf town yesterday
    ‘She was going to go to town yesterday…’

This does not entail that there had been a going-to-town event by her at RT, as shown by the following possible completion of the sentence:

(18)  …ach cha robh tide aice.
    but not be.past.dep time at.3sf
    ‘…but she didn’t have time.’

(19)  Tha i gu bàsachadh.
    be.pres 3sf GU die [of an animal].ptcpl
    ‘It [the animal] is about to die.’
    ⊨ the animal is still alive at UT

Scottish Gaelic a’ dol a and gu quite clearly pass our tests for prospectivity so far, as does English about to; English going to does so a bit less clearly. Note that going to and possibly a’ dol a also probably deserve a modal semantics to account for the planning/intent readings available (it’s not clear whether these readings exist in Scottish Gaelic). In addition, English has a use of about to under negation that Joos (1964) describes as “signif[y]ing that the [speaker] is not the sort of person from whom such a deed can be expected” (p. 24)—e.g.,

(20)  Listen, I’m not about to fire my best worker just because of a little misunderstanding.

Scottish Gaelic gu does not have this reading, and I don’t account for such semantics here.
Having examined the distributional evidence for the existence of prospectives in English and Scottish Gaelic, I now turn to an investigation of the similarities between prospectives and perfects.

3 Prospectives as a Type of Precedence-Relation Aspect

We have the idea of an aspect that is the “opposite” of a perfect in terms of the time relations involved. If we take it that these time relations do semantic work (and I suggest we do), we might divide up the aspectual pie according to their type:

(21)

A. containment relation aspects (RT within or outside of ET)
   ex.: imperfective, perfective
B. precedence relation aspects (RT after or before ET)
   ex: perfect, prospective

If prospectives are fundamentally more like perfects in this way, we might ask whether this fact is reflected in their behavior elsewhere. There are several characteristics that, when combined, set (retrospective) perfects apart from other aspects (see e.g. Katz (2003b), Vlach (1993), ter Meulen (1995), Pancheva & von Stechow (2004), Giorgi & Pianesi (1998)). I offer possibilities for how we might understand these characteristics when the relationship between event and reference times is reversed.

Before we look at these diagnostics, though, I want to establish what the difference is between constructions like going to or a’ dol a and about to or gu. If they are both prospectives, and both have the same basic time relation, where does their difference in meaning come in? I argue in Reed (Forthcoming) that the latter constructions have a restriction on how far away the event time can be from the reference time. The size of this interval is determined by the semantics and pragmatics of the verb phrase. I also argue that gu and to a less clear extent about to are instances of restricted prospective aspect, where the denotation of gu (for example) would look like this:
This says that \( gu \) requires the interval between the reference time and the event time to be less than a certain amount, which is determined by the context.

To continue with our objective, the diagnostics of retrospective perfects I focus on “translating” for use with the prospective are: (1) a continuing result (state), (2) infelicity with certain adverbials in the present tense, and (3) two slots for time adverbials in the past tense.

### 3.1 Continuing Result Of Eventuality

Since the eventuality will not have occurred by reference time, the “result” of a prospective perhaps cannot be thought of in exactly the same way as that of a perfect. However, there is still a way to approach this. With a retrospective, the (circular) “result” of meeting Cher is that you have met Cher. The statement ‘I have met Cher’ will be true at all times following the Cher-meeting; that is, at all times between ET and RT. With a prospective, the “result” is similar: if there is to be a Cher-meeting event, then ‘I am going to meet Cher’ is true at all times between RT and ET—that is, until you meet Cher. The retrospective gives us a state that continues indefinitely into the future (that is, until the reference time), and the prospective gives us a state that continues indefinitely into the past (at least until reference time) from the initial moment of the event time. While the simple past and future in English have the same ability to make similar statements after (or before) the fact, present perfects and present prospectives say something about this state in the RT, which puts it in the UT for present tense. This gives the “present relevance” of the present perfect and prospective.

English \textit{be going to} has this continuing “result”:

\begin{align}
(23) & \quad \text{I’m going to meet Cher tomorrow. [‘going to } x \text{’ true for 1 day]} \\
(24) & \quad \text{I’m going to be a teacher when I grow up. [‘going to } x \text{’ true for many years]} \\
(25) & \quad \text{If you have a daughter, she’s going to grow up to be president. [‘going to } x \text{’ true from before the birth of the subject]} 
\end{align}
Scottish Gaelic *a’ dol a* shows the same pattern. Here we can see that with the present tense, the state will be true from speech time to event time; with past and future prospectives, it is true from the reference time to the event time. The “result” holds here from (at least) the time it is uttered until the wind breaks the branch:

(26) *Tha a’ ghaoth a’ dol a bhriseadh a’ mheanglan ‘ud.*
be.pres the.sf wind *A’ DOL A* break.ptcpl the.sf branch yon
‘The wind is going to break that branch.’

In a past tense example, the state of ‘being going to marry Mairi at noon’ is true from (at least) the time that Calum discovers or declares his intent to have the wedding held at noon:

(27) *Bha Calum a’ dol a phòsadh Mairi dìreach aig meadhon-latha,*
be.past Calum *A’ DOL A* marry.ptcpl Mairi directly at mid-day
*sin an uair a bha an solas nas fhéarr anns an eaglais.*
there the.smhour WhComp be.past the.sm sun best in.the church
‘Calum was going to marry Mairi at noon—that was when the light was best in the church.’

And in the future, the state of ‘being going to get married the next day’ is true from the reference time (‘that night’):

(28) *’S docha nach bu chòir dhuinn am pàrtaidh a dhèanamh*
cop.pres probability not cop.past right to.1p the.smparty AgrO do.ptcpl
*an oidhche sin— bithidh thu a’ dol a phòsadh an ath latha.*
the.smnight there be.fut you.s *A’ DOL A* marry.ptcpl the.sm next day
‘Maybe we shouldn’t have the party that night—you’ll be going to get married [lit.: going to marry] the next day.’

*About to* and *gu* act similarly, with the added restriction on the length of time between reference time and event time.
3.2 Infelicity With Past Positional Adverbials In The Present Tense

The so-called “present perfect puzzle” (Klein 1992) is that in English (but not in, say, German), the present perfect is incompatible with certain past adverbials:

(29) #I have walked yesterday.
(30) #I have lived there last year.

This is a puzzle especially for those who assume the present perfect is a marker of past tense along with the “simple” past in English, since sentences with the latter do not show the same infelicity:

(31) ✓I walked yesterday.
(32) ✓I lived there last year.

I argue in Reed (Forthcoming) that the infelicity of these adverbials with the present perfect is due to a simple incompatibility of the past adverbial with present tense. The sense of anteriority arises from ET preceding RT, but since RT is coextensive with UT rather than being prior to it, past adverbials are rendered incompatible. Note that other present tense propositions are also incompatible with past positional adverbials:

(33) #I know French yesterday.
(34) #I am walking home yesterday.
(35) #I recognize Emily this morning.

If we reverse this pattern for prospectives, we might expect infelicity of future positional adverbials in present tense prospectives. English be going to and Scottish Gaelic a’ dol a do not show this, however, nor does Scottish Gaelic gu:

(36) ✓I’m going to drive to Phoenix tomorrow.
However, for many speakers, English *about to* does not permit this type of temporal modification:

(39) ??I’m about to leave in five minutes.

Future adverbials are not generally incompatible with the present tense morphology in either language, so this lack of a “present prospective puzzle” might not surprise us as much:

(40) ✓John is leaving tomorrow.

(41) ✓John leaves tomorrow.

(42) Tha Iain a’ falbh a-màireach.

be.pres Iain IMPV leave.ptcpl tomorrow

‘Iain is leaving tomorrow.’

So here we have an asymmetry between perfects and prospectives. I would argue that the interaction between the aspects and their “related” tenses (that is, with past tense being ‘retrospective’ in a way and future tense being ‘prospective’) can account for this asymmetry, but I will not present a full account here.

---

2 See e.g. Copley (2009) and the work reviewed therein for a fuller picture of these “futurate” uses of the present tense.
3.3 Two Slots For Adverbials

In perfects, one of the characteristics we see in English (McCoard, 1978, a.o.) and Scottish Gaelic (Reed, Forthcoming) is the existence of two locations for time adverbials in past tense sentences. In these sentences, having an adverbial in a pre-verbal position yields only a reference time reading, while having one after the verb can yield both reference time and event time readings.

(43) She had married Carl at noon.
   ✓ET reading: The marrying happened at noon
   ✓RT reading: By noon, the marrying had already happened

(44) At noon, she had married Carl.
   #ET reading: The marrying happened at noon
   ✓RT reading: By noon, the marrying had already happened

With prospectives, then, we should likely look in both present and future tenses. English present be going to and be about to show the same pattern:

(45) a. She was going to marry Carl at noon. (ET or RT)
    b. ✓She was going to marry Carl (exactly) at noon, because that was when the light hit the gazebo just right. (ET)
    c. ✓She was (still) going to marry Carl at noon; by 1 she had changed her mind. (RT)

(46) a. At noon, she was going to marry Carl. (RT only)
    b. #At noon she was going to marry Carl, because that was when the light hit the gazebo just right. (ET)
    c. ✓At noon she was (still) going to marry Carl; by 1 she had changed her mind. (RT)

 Except perhaps with a topicalized reading.
(47)  
   a. She was about to marry Carl at noon. (ET or RT)  
   b. ✓She was about to marry Carl (exactly) at noon, because that was when the light  
      hit the gazebo just right. (ET)  
   c. ✓She was (still) about to marry Carl at noon; by 1 she had changed her mind. (RT)  

(48)  
   a. At noon, she was about to marry Carl. (RT only)  
   b. #At noon she was going to marry Carl, because that was when the light hit the  
      gazebo just right. (ET)  
   c. ✓At noon she was (still) going to marry Carl; by 1 she had changed her mind. (RT)  

Scottish Gaelic a’ dol a shows the same patterns, as seen in (49) and (50) and their possible  
extensions:  

(49)  
   Bha Calum a’ dol a phòsadh Mairi aig meadhon-latha.  
   be.past Calum A’DOL A marry.ptcpl Mairi at mid-day  
   ‘Calum was going to marry Mairi at noon.’ (ET or RT)  

(50)  
   Aig meadhon-latha, bha Calum gu Mairi a phòsadh.  
   at noon be.past Calum GU Mairi AgrO marry.ptcpl  
   ‘At noon, Calum was about to marry Mairi.’ (√RT, #ET)  

POSTVERBAL ADVERBIAL  

(51)  
   ✓Bha Calum fhathast a’ dol a phòsadh Mairi aig meadhon-latha,  
   be.past Calum still/yet A’DOL A marry.ptcpl Mairi at mid-day  
   ach aig uair gabh e an t-eagal.  
   but at hour take.past 3sm the.sm fear  
   ‘Calum was still going to marry Mairi at noon, but at 1 he got scared.’ (RT)
In these cases, then, prospectives seem to act just like perfects. I claim that it is because prospectives share a type of time relation (precedence) with perfects that the two aspects share the characteristics that they do.

The state (or “result state”) that is sometimes described as holding at the reference time for perfects can also be seen with prospectives. We don’t need to introduce a state separately in the semantics. If we think of a state in terms of Bennett & Partee (1972/1978) or Dowty (1979), namely, in terms of a homogeneous interval of time, the time relation itself provides the state for us. (See Katz (2003b) and Copley (2009) for some ideas along these lines.) With perfects and prospectives, we effectively have such a homogeneous interval, which begins at
event time and continues to the reference time. During this interval, nothing changes with respect to the eventuality. This gives us the “result” state. The separation of $RT$ and $ET$ also allows for the two readings of adverbials.

So prospectives, like perfects, convey a continuing result (and act like states, though I haven’t gone through those data here), and they show similar syntactic patterns; but they seem to interact with adverbials differently than do perfects. Having claimed that their similarities are due to their aspectual similarities, I would postulate that their differences are due to their interactions with tense.

4 Conclusion: Prospectivity in English and Scottish Gaelic?

We have seen here that be going to and be about to in English, and $a’$ dol a and gu in Scottish Gaelic pass, to a large extent, the tests we established for an aspect with a time relation that is the “opposite” of that of the perfect. What might account for the differences we do see, though? For going to and $a’$ dol a (which show an asymmetry in the future tense), I would postulate that $a’$ dol a is simply farther along in the grammaticalization process as a morphosyntactic distinction of aspect than going to is.

For gu and about to, for those speakers (including myself) for whom I am about to leave in [time period] is bad, about to seems to not only come with a semantic specification that the interval between event and reference times be short, but also come with a syntactic restriction on modification.

Here I have defined an aspect that is the “opposite” of the perfect, and shown that constructions in Scottish Gaelic and English align with this proposed aspect with varying degrees of success. The constructions in Scottish Gaelic are more clearly distinctions of prospective aspect than those in English. Going to and about to, while they certainly have many of the necessary characteristics to qualify as prospectives, have more than just prospective meaning in several cases, and are more restricted than we would expect from simple prospectives in others. Of course, these kinds of constructions are found in a number of other languages; closer consideration of data from these languages would help us refine our theory of prospective aspect.
Prospective aspect, though forward-referring, still relates ET and RT in a perfect-like manner (namely, in a precedence rather than in a containment relationship), and I claim that it is due to this fact that it displays many characteristics typically found in perfects. The diagnostics I establish in this paper are applicable cross-linguistically in the categorization of aspectual distinctions as prospectives.
References


