Crossing different ontological domains: the case of *appena*

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Abstract

This paper investigates the semantics of the Italian multi-faceted particle *appena*, which can be interpreted as an adverb (namely *barely, only, just*) and as a temporal connective (*as soon as*). We argue for the presence of the same underlying pattern for all its interpretations, and develop its formalisation in a (neo) Davidsonian event-based semantics.

1 Introduction

Appena admits various interpretations with different syntactic configurations, from an adverb to a temporal connective. Its first meaning coincides with *barely, hardly* (1) (Magni 2017). However, it also translates as *just*, both with quantitative (2) and temporal (3) meanings. It can also be used as a temporal complementiser, namely, *as soon as* (4).

(1) Alice cammina appena.
Alice walk.PRES.3SG appena.
'Alice *barely* walks.'

(2) Alice mangia appena una fetta di torta.
Alice eat.PRES.3SG appena a slice of cake.
'Alice eats *only/just* a slice of cake.'

(3) Alice è appena arrivata.
Alice aux.PRES.3SG appena arrive.PTCP.PST.F.SG.
'Alice has *just* arrived.'

(4) Alice cucina appena Luisa esce di casa.
Alice cook.PRES.3SG appena Luisa leave.PRES.3SG of house.
'Alice starts cooking *as soon as* Luisa leaves the house.'

In (1)–(3), *appena* is an adverb, but it displays both semantic and syntactic differences: e.g. in (1) it appears after an intransitive verb, and it intuitively affects the quality of the event predicate; in (2), similarly, it appears post-verbally but before the complement, and it specifies the quantity of the theme of the predicated event; in (3), it is a temporal adverb and it is placed between the auxiliary and the participle, a typical environment for these adverbs (Cinque 1999), and it specifies a proximity between the event time and the topic/utterance time. In (4), *appena* is a complementizer and expresses the fact that the matrix event is in the immediate posteriority of the embedded one.

Our goal is to capture the pattern that underlines all of *appena*'s interpretations, and to provide a coherent formalisation. This will give us a better understanding of its semantic evolution, from an adverb of quality to a temporal connective.

2 Background: other works on *appena*

Tovena and Schaden (2009) discussed a rich range of readings and properties of *appena*, noting first of all that it expresses a temporal relation of immediate anteriority, with a verb in the perfect form, like the German *gerade*.[1] In such interpretations, as in (3), they argue that the contribution of the particle is to narrow down the possible temporal location of an eventuality relatively to a time preceding and close to the Reference Time (RT), introduced by the perfect form. *Appena* can also be a degree modifier, like in (1). In general, they argue that *appena* works like an approximator by excess, the opposite of *almost*, an approximator by defect, as for Jayez and Tovena (2008). This means that, given a reference value that can be a minimal degree of a gradable property or a point in time, the element under discussion is positioned higher but close to this reference, within a range of indiscernible values. In fact, they argue that the reference and the element under discussion are so close that they are indistinguishable in the context. We share most of their intuitions but propose a new formalisation intended to cover all of *appena*'s interpretations in a systematic way.

2.1 Similar particles

The case of *appena* is not isolated among Romance languages. There are studies on particles with similar etymology and evolution, from manner adverbs to negative evaluative adverbs to particles of temporal proximity, c.f. (Bat-Zeev Shyldkrot 2010, i.a.) on French *à peine*, (Maldonado and Guzmán 2014) on Mexican Spanish *apenas*, and (Amaral 2006) on the counterpart *mal* in European Portuguese. Generalizing, it can be observed that the semantic change undergone by the particles consistently involves a change in their syntactic status, from adverbs to adverbial subordinators. The positions that correspond to the more recent meanings have scope over the position corresponding to the oldest and original ones, with the temporal interpretations as the latest ones. Interestingly, none of the meanings was lost through this process, resulting in particles that are multifaceted and versatile. In our work on *appena*, we attempt to account for this complexity by showing what is the at-issue component that unifies all its senses and that has hypothetically survived through its evolution.

3 Our proposal: an underlying pattern

As the examples (1)–(4) show, *appena* is a particle that can convey information about elements of different ontological domains, namely events and time intervals. We think that all interpretations point to the following pattern. *Appena* works as a particle that connects an event or an interval under discussion b with a reference a_1. a_1 is a set of events or an interval positioned at the beginning of a bigger and abstract ordered structure A, which is a superset of a_1. *Appena* states that b occurs after the elements of a_1 in the ordered structure A. The set A is ordered along a specific dimension, with respect to which it can be subdivided into ordered units. Assuming that the set a_1 identifies the first unit, b is then placed after it, in the second unit, to ensure its proximity to a_1.

To associate intervals/events to a position on an abstract structure, we assume the existence of the contextually determined degree function *deg*, in (5).

(5) *deg* is a function of signature $D \times Dim \rightarrow \mathbb{R}^+$, where D is either the domain of events D_v or intervals D_i^2 $(D_i \times D_i)$, and Dim is a set of dimensions along which A can be ordered.

[1] Note that *appena* does not exhibit the emphatic reading associated to *gerade*, and also the English *just*, and which would be an instance of approximating a high value. For instance, 'This dress is *just* beautiful'.

We assume that, for each unit a_n in A, the elements $e \in a_n$ are such that $deg(e, dim) \in [n\text{-}1, n)$. We argue that this function is at the core of the at-issue component of *appena*, and is present in all its interpretations. We argue, however, that the not-at-issue component is different. We will not deal with this aspect in detail in this paper, but we will briefly present two conversational implicatures (CI) observed with the non-temporal readings. In the next sections, our primary goal is to show how the described pattern works for all the provided interpretations.

3.1 A function targeting *events*

3.1.1 Appena as *barely*

In example (1), A is the set of possible walking events by Alice. They are ordered on a degree-like dimension (e.g., efficiency). Which dimension is relevant in a given sentence depends on the context. Assuming that the speaker cares about efficiency (an efficient walk being one that successful leads the walker to their intended location), a_1 is the subset of A that contains events that have the lowest value of efficiency in A (i.e., the first unit), so low that they can be regarded as not efficient at all (e.g., all the walking events where the agent is not able to reach the target of their walking). b is the event under discussion (the event described by the prejacent *Alice walks*). *Appena* then states that this event is positioned right after the elements in a_1, i.e., in the second unit. In our example, this could mean that Alice's walking is such that she is *barely* able to reach a target, because she takes a lot of time and has to stop multiple times. A further specification is needed as the sentence in (1) can have two readings. The first, *episodic*, reading is about a specific walking event performed by Alice; the second, *habitual*, reading is about Alice's general ability to walk. In this paper, we will consider just the first reading, leaving the analysis of the habitual one for future works. As for the episodic one, we argue for the existence of a conversational implicature (CI), which states that there is an expectation towards the performance of the subject along all the dimensions in which we can evaluate the event under discussion. In fact, for every dimension, the predicated event should display a low degree, in the proximity of a_1. In (6), we display the cancellation of such CI, in a scenario where Alice is an old woman that walks very slowly (i.e., the relevant dimension is speed) but elegantly.

(6) Guarda, Alice cammina appena, *anche se lo fa con molta eleganza.*
'Look, Alice barely walks, *even if she does it with very much elegance.*'

Formalisation In our work, we adopt a minimalist approach to grammar (Chomsky 1995), and we assume that the semantic composition is fed in by the Logical Form (LF) of a sentence. For the purposes of this work, we will not go into details about the transformational rules needed to derive the actual Phonetic Form (PF). To derive (1), we assume that *appena* merges with a full vP-shell, which contains also the subject of the predication. The semantic contribution of *appena* is to state that the event described by the clause is positioned in the second unit of A with respect to the salient dimension. The function *deg* in (7), of signature $D_v \times Dim \to \mathbb{R}^+$, is applied to the event described by the vP-shell, and the salient dimension, *dim*. Adopting a standard (neo) Davidsonian semantics, we propose (7) as the semantic contribution the particle makes in (1). Its CI is provided in (8). In these formulas, P varies over a predicate of events and *dim* is a placeholder for the salient dimension ordering A, e.g., efficiency. The semantic representation of (1) is in (9).

(7) $[\![\text{ Appena}_1]\!] = \lambda P \lambda e[P(e) \wedge deg(e, dim) \in [1, 2)]$

(8) CI: $\underline{\forall dim[dim \in Dim \to \neg[deg(e, dim) \geq 2]]}$

(9) $[\![\text{ Alice cammina appena }]\!] = \exists e[walk(e) \wedge ag(e) = a \wedge deg(e, dim) \in [1, 2) \wedge$
$\underline{\forall dim[dim \in Dim \to \neg[deg(e, dim) \geq 2]]}$

3.1.2 Appena as *only/just*

In examples like (2), similarly, *deg* applies to events. A is the set of possible events of eating by Alice where the theme are slices of cake. This set is ordered according to the size/quantity of the themes, which sets the granularity of the units, from eating events with zero slices to eating events with an increasing number of slices. The event under discussion, b, is described by the prejacent (*Alice mangia una fetta di torta*). *Appena* states that b is right after the first unit a_1 (corresponding to eating less than one slice); it is thus an event of eating one slice of cake by Alice.
Uttering *appena* has a double role: to state (i) that the subject eats a precise quantity and (ii) that such a quantity is not much with respect to what it could have been. A speaker can also felicitously utter *Alice ha mangiato appena quattro pasticcini* (Alice ate just four pastries), if they knows that this is really a low number for Alice, who has a remarkable sweet tooth and was never seen eating less than ten pastries at the time.[2] With (2), the speaker is also implying that Alice didn't perform any other eating event with whatsoever theme. This implicature is very strong, and it is not trivial to cancel. In (10), we propose a scenario in which a cancellation is still acceptable, leading us to analyze it as a conversational implicature.

(10) Alla festa, Alice ha mangiato appena una fetta di torta, *anche se per fortuna ha mangiato anche un panino.*
'At the party, Alice ate just a slice of cake, *although luckily she also had a sandwich.*'

Formalisation We assume that the events in each unit are characterized by the same amount of theme. Function *deg* applied to elements in the first unit will return the same value, zero, that coincides with eating no slices; *deg* applied to the elements in the second one will return the same value, one, that coincides with *eating a slice*. This is due to A's structure, but the function introduced by *appena* remains the same, just reducing to $deg : D_v \times Dim \to \mathbb{N}$; in (2), the salient dimension along which we order events in A is the the quantity of the theme.
As before, *appena* merges with a full vP-shell. The semantic contribution of the particle in (2) is shown in (11), with the CI in (12). The formula in (11) is the same as that in (7), with the only change being the salient dimension taken into account. In these formulas, P varies over a predicate of events (which is of type $\langle v, t\rangle$), *dim* is a placeholder for the salient dimension ordering A and P' is identical to P but with an unspecified theme (i.e., the set of eating events by Alice). The meaning of (2) is formalized in (13).

(11) $[\![\text{ Appena}_2]\!] = \lambda P \lambda e[P(e) \wedge deg(e, dim) \in [1, 2)]$

(12) CI: $\forall x[x \in D_e \setminus \{th(e)\} \to \neg\exists e'[P'(e') \wedge th(e') = x]$

(13) $[\![$ Alice mangia appena una fetta di torta $]\!] = \exists e[eat(e) \wedge ag(e) = a \wedge \exists y[slice(y) \wedge th(e) = y] \wedge deg(e, dim) \in [1, 2) \wedge \forall x[x \in D_e \setminus \{th(e)\} \to \neg\exists e'[eat(e') \wedge ag(e') = a \wedge th(e') = x]]$

3.2 A function targeting *intervals*

3.2.1 Appena as *just*

In (3), A is an ordered set of instants oriented towards the past dimension; its right boundary is given by the end of the topic time (TT) (Klein 1994) and extends toward $-\infty$. The first unit of A, a_1, is the TT itself (which we assumed to be an interval). The interval under discussion, b, is

[2] For this work, we leave aside ironic uses of *appena*. These uses differ from the standard ones just for the presence of a intonational focus on the particle. For instance, uttering *Alice ha mangiato* appena *otto pasticcini* (Alice ate *just* eight pastries) can be used to mark the fact that, from the speaker's perspective, she ate a very high amount of pastries.

the event time (ET) of the arrival event. *Appena* states that b is placed right after the interval a_1, providing information about the relationship between the ET and the TT, in a *retrospective* way. We assume this information is computed at the AspP projection, as for (Cinque 1999). We argue that no CI is involved with these uses of *appena*.
At the beginning of section 3, we mentioned that A is divided into ordered *units*. In temporal interpretations, units are intervals with a specific length of time. We argue that this length depends on the potential duration of the resultant state of the event one consider. For instance, in (3), the resultant state (i.e., Alice's being here) should not be very long, typically no more than a few hours. The sentence is then felicitous if it is uttered at most, say, 20 minutes after the arrival event happened; units are then of 10 minutes each. If one utters *ho appena preso la patente* (I've just got my driving license), the resultant state (i.e., the state of having a license) will potentially last for many years. As a result, a speaker could felicitously utter this sentence even months after the acquisition of the license (units of, say, at least one month each).

Formalisation In this case, *appena* merges with a full AspP-shell, resulting in another AspP projection, where the relationship between the ET and the TT is further specified.The function *deg* is of signature $D_i^2 \times Dim \rightarrow \mathbb{R}^+$; the salient dimension along which we order A in (3) is temporal precedence. We use the function τ to associate each event with its runtime: a pair $\langle t_1, t_2 \rangle \in {D_i}^2$ such that $t_1 \leq t_2$. For convenience, $\langle t_1, t_2 \rangle$ is also noted $t_{1,2}$. The contribution that *appena* makes in (3) is in (14). P is a variable of type $\langle vi^2, t \rangle$, which is the semantic type of complete AspP-shells; *dim* is the dimension along which A is ordered, and $t_{t'}$ is the right boundary of the TT. The semantic formalisation of (3) is in (15). *now* is a special indexical constant that stands for the TU, an interval, while t_t is a variable that stands for the TT, an interval as well. As said above, no CI is involved with these temporal uses.

(14) $[\![\text{ Appena}_3]\!] = \lambda P \lambda e \lambda t_{1,2}[P(e)(t_{1,2}) \wedge deg(t_{1,2}, dim) \in [1, 2)]$

(15) $[\![\text{ Alice è appena arrivata }]\!] = \exists e \exists t_t \exists t_{1,2}[t_t = now \wedge t_{1,2} < t_t \wedge arrive(e) \wedge th(e) = a \wedge \tau(e) = t_{1,2} \wedge deg(t_{1,2}, dim) \in [1, 2)]$

3.2.2 Appena as *as soon as*

In (4), similarly to (3), *deg* applies to an interval. A is an ordered set of instant oriented towards the future. Its left boundary is given by the onset (Landman 2008) of the embedded event — the leaving by Luisa — and it extends toward $+\infty$. The first unit a_1 is identified with the TT, which is the ET of the leaving event. Interval b is the ET of the event predicated in the matrix clause. *Appena* states that b is right after a_1, in the second unit, hence providing information about the temporal relationship between two different events. Its semantic role is also mirrored in its syntactic status as a temporal complementizer, from which it follows that *appena* merges at the CP-level. All the considerations about the (absence of) CI and the concept of proximity in the previous subsection apply to this reading as well.

Formalisation As a complementizer, *appena* is saturated by two full TP-shells. It specifies a relationship of proximity between the TT (the embedded ET) and the ET of the matrix clause. The function *deg* maintains the signature of the previous reading; the salient dimension along which we order A in (4) is temporal succession. The semantic contribution that the particle makes in (4) is in (16). P and Q are variables of type $\langle \langle vi^2 \rangle, t \rangle$ (for the interpretation of TP-shells, respectively of the matrix and the embedded clause); *dim* is the dimension along which A is ordered. The semantic formalisation of (4) is in (17), where *now* is as specified in the previous reading. Note that this is a simplified derivation, where we specified the temporal information (both the event times are after the TU), but we left aside the aspectual information.

(16) $[\![\text{Appena}_4]\!] = \lambda Q \lambda e' \lambda t_{3,4} \lambda P \lambda e \lambda t_{1,2} [P(e)(t_{1,2}) \wedge Q(e')(t_{3,4}) \wedge deg(t_{1,2}, dim) \in [1, 2)]$

(17) $[\![$ Alice cucina appena Luisa esce di casa $]\!] = \exists e \exists t_{3,4} \exists e' \exists t_{1,2} [now < t_{3,4} \wedge [exit(e') \wedge ag(e') = l \wedge \tau(e') = t_{3,4}] \wedge [cook(e) \wedge ag(e) = a \wedge \tau(e) = t_{1,2}] \wedge deg(t_{1,2}, dim) \in [1, 2)]$

4 Conclusions

The behaviour of *appena* has been represented as a pattern where the element under discussion b is positioned in the proximity of a set of elements a_1 of a bigger structure A. This pattern is present in all of its semantic contributions and has been formalised with a degree function *deg* that can apply to elements of different ontological domains, namely events and intervals. In our work, the variability of meaning depends on such ontological difference and, consequently, on the dimension we are identifying a_1 against and placing b on. Eventually, we have proposed a formalisation for all readings in a (neo) Davidsonian event-based semantics. Further work has to be done, especially regarding the not-at-issue component of the particle, the cross-linguistic comparison with other languages, and other readings of *appena*, such as spatial ones like "*L'ufficio è appena dietro l'angolo*" (The office is just around the corner).

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