Proceedings of the Edinburgh Linguistics Department Conference '96 pp. **125–134**

Aspectual composition and our (linguistic) interpretation of the world

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Abstract

People can describe the same object in different ways, according to their needs. This fact can be used in the field of aspectual composition, since there are cases when a noun phrase determines the sentence aspectuality, whereas in other cases this interaction does not happen. In this paper a solution to the problem of aspectual composition is proposed. Here, verbs are considered event descriptions, and noun phrases are object descriptions. The aspectual properties are properties applying to these descriptions, and a link between the domain of events and that of objects is established. This link reflects our linguistic interpretation of world structure, and this is what controls the aspectual behaviour of any sentence.

1 Introduction

Consider a deck of cards. The same object, the deck of cards, can also be considered a pack of cards, or just playing cards. Furthermore, if we look at the substance that makes up the cards, this very same object can be considered as cardboard. We see then that the same object in the real world can be interpreted in very different ways, and we can also describe it in very different ways.

The same can be said of an object's structure: one can describe the structure of a real-world object in different ways, depending on what properties we want to express of the object. For example, a deck of cards can be said to be the composition of 55 entities (one entity for every card);[1] But it can be said to be only one entity, if we consider the whole of the 55 cards as one entity in itself. Typically, if we call it 'a deck of cards' we are specifying that it is only one entity, whereas if we call it 'fifty-five cards' we are saying that it is the composition of fifty-five elements.

A similar behaviour can be noted with respect to the structure of events. To quote an example given by Moens (1987:57), the following sentences may refer to the same event:

(1) a. *I wrote two letters last night*
b. *I wrote letters last night*
c. *I was writing letters in my office*
d. *I have written two letters*

[1]The deck of cards I used at the conference had 52 playing cards plus three jokers.

In this paper, this simple fact is going to be used to solve a problem in the field of aspectual composition. In order to do so, in Section 2 an intuitive definition of telicity and atelicity will be introduced. Some data will be introduced in Section 3 which pose a serious problem to any attempt of describing aspectual composition. In Section 4 a model of our interpretation of the world will be provided, together with a refined definition of telicity and atelicity, and finally the data of Section 3 will be explained in Section 5, according to our model of Section 4.

This paper is aimed at thinking about the cognitive side of aspectual composition, without giving a formal support to it. A more formal approach can be seen in Mollá Aliod (1996).

2 Telicity and atelicity

Inside the area of Aspectual Composition, we will focus on the distinction between telicity and atelicity. **Telicity** involves describing an end to the event. For example, if we say *John ran a mile,* it is clear that after John runs the mile the event of running a mile is over. Of course, John may run more than a mile. But even so, although the running event may still continue, the event described by the sentence will be over.

There are several tests for telicity (Dowty 1979). The most typical one is based on attaching an *in*-adverbial as opposed to a *for*-adverbial. Consider the following examples:

(2) a. *John ran a mile in five minutes*

b. **John ran a mile for hours*

Sentence (2a) is fine, whereas (2b) is awkward: it can be understood only under an iterative reading, that is, if John repeatedly ran a distance of a mile for hours, say, as a training exercise.

In contrast, **atelicity** involves no end for the event. Again, as is the case with telicity, this does not mean that the event will never end. Depending on our knowledge of the situation we may infer that the event will end or not, but this information is not encoded in the sentence. For example, if we say *John ran,* we are not specifying that he has stopped running.

The same test as for telicity can be used to test atelicity, but in the opposite direction. Consider the following sentences:

(3) a. **John ran in five minutes*

b. *John ran for hours*

Now, it is (3b) that is the acceptable sentence. Sentence (3a) can be accepted only if the running is coerced into an accomplishment — or a 'culminated process', if we follow Moens & Steedman (1988). That is, if telicity is implied.

3 Data

Before showing the relevant data, a short comment on what we are going to classify is due. As we have seen in (1), different sentences can describe the same event. As another example, these two sentences may describe the same event: :

(4) a. *John ran*

b. *John ran a mile*

Note, however, that now (4a) is atelic whereas (4b) is telic. Depending on which sentence we are using, therefore, the result may be telic or atelic. If we were to classify events, then, we would arrive at the odd conclusion that the event referred to is both telic and atelic at the same time! In order to avoid this contradiction, instead of classifying events, what we want to classify is **event descriptions.** For the purpose of this paper we will take sentences as being event descriptions, though see Mollá Aliod 1996 for a more accurate definition of what we are to classify, where first-order predicates are used.

The aspectual properties (telicity/atelicity) may depend on several components of the sentence, in such a way that the aspect acquires a 'compositional nature' (Verkuyl 1972). In this paper we will focus only on the object of a transitive verb. Consider the following examples:

(5) a. *John drank beer*

b. *John drank a pint of beer*

While (5a) is atelic, (5b) is telic. That is, the noun phrase may decide the aspectual property of the sentence. But this interaction does not always happen. Consider now the following sentences:

(6) a. *John watched beer*

b. *John watched a pint of beer*

c. *John saw beer*

d. *John saw a pint of beer*

Now, both (6a) and (6b) are atelic and both (6c) and (6d) are telic even when we have the same NPs as in (5). In these examples, therefore, the NPs do not determine the aspectual property of the sentence.

It may be argued that in examples like (6) it is the verb which decides the aspectual property. Thus, *watch* is atelic whereas *see* is telic. The same can be said of Verkuyl's (1993) *PUSH-verbs,* of which I introduce two examples here which are atelic:

(7) a. *John pushed a cart*

b. *John drove a car*

However, even with the PUSH-verbs we may find cases where the NP affects the aspectual properties of the sentence. Consider the following sentences:

(8) a. *John drove two cars*

b. *John drove cars*

In Sentence (8a), John must finish driving the first car before starting to drive the second one. That is, the first driving subevent must be limited in time, therefore telic. Furthermore, if we say *John drove two cars for hours* the only interpretation we can have is that John drove first one car, then the other, then again the first car, then again the second, and so on. That is, the event is iterated in the same way as with our interpretation of (2b). In this example we see that, while *drive* is atelic, *drive two cars* is telic. Somehow, the NP determines the aspectual property of the sentence again.

Finally, there are cases where depending on how we interpret it, the same sentence may be telic or atelic. Consider the following sentences:

(9) a. *John pushed two carts* (at the same time).

b. *John pushed two carts* (one after the other).

Now we have a single sentence which may describe two different events. If we are referring to a situation in which John pushes two carts at the same time, John is doing only one push and the result is an atelic sentence. However, if what we are saying is that John pushed one cart and then he pushed the other cart, we are in a situation like the one represented by (8a), which we have already seen is telic.

Example (9) is perhaps the most difficult to explain. My aim with this paper is to try to show that (9) is actually the most important of all the examples presented here, from which the real explanation for aspectual composition can be extracted: it is our interpretation of the sentence that will decide whether the NP affects the general aspectual properties or not.

4 Our interpretation of the world

We as humans have an interpretation of the world suitable to our needs. In the case of structure we need to express the possibility for an object to be made of other objects. In our example of the cards, we need a way to specify that an object is the composition of other objects, or that an object is part of a more complex one. Nothing is to be said here about the details of how to model this interpretation (though see Mollá Aliod 1994 and 1996).

This model will have to take in account the fact that the same real-world object can have different structures assigned to it, depending on several extralinguistic factors. As I have said in the introductory section, the same object can be described as either *cards* or *a deck of cards* (see Figure 1). If we call it *a deck of cards* we are referring to one entity which represents all the cards in a whole. If we call it *cards,* however, the same object is

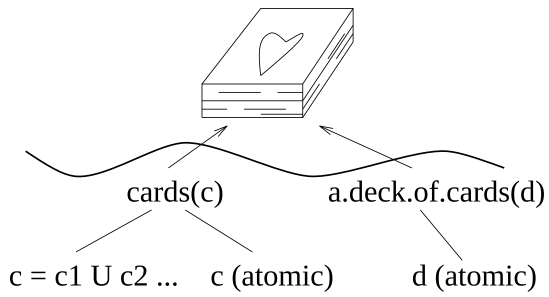

Figure 1: *Different interpretations of the same object.*

presented as being a bunch of entities, in which case the object would be the collection of 55 cards. But there can be still another interpretation of *cards:* we can also refer to only one entity. When we do it we are using a **collective** interpretation of the NP *cards.* With this I want to say that, in the same way as a sentence may have different interpretations (as it has been pointed out with 9), we can give different readings to an NP.

4.1 Telicity and atelicity revisited

If we want to express how different kinds of NPs affect the aspectual properties of the sentence it is advisable to find a set of properties which can apply both to descriptions of objects (NPs) and to descriptions of events (verbs, VPs, sentences). It has already been suggested that the domains of objects and events are not as different as one might think (Partee 1984; Hinrichs 1985). It has also been argued that verbs and NPs share many properties (Mourelatos 1981). Following this insight, it has been attempted to model the behaviour of NPs and verbs by using the same properties for them (Krifka 1989). Two of these properties will be introduced here: quantisation and homogeneity.

As has been said already, telicity implies the specification of an end to the event, that is the event is described as having clear temporal boundaries. We can establish a parallelism with object descriptions (NPs) and space. Thus, an NP is **quantised** if the NP cannot apply to subobjects of an object falling under the NP. For example, *two miles* is quantised because any object which is part of two miles will not be two miles but less. The same can be said of quantised masses: *a pint of beer* is quantised because no part of a pint of beer is a pint of beer but less.

Coming back into the realm of events, *run two miles* is quantised because no event which is part of an event of running two miles is itself a running of two miles, since the run will be over a shorter distance. In the same way, *drink a pint of beer* is quantised because any subevent of drinking a pint of beer will be a drinking of less than a pint of beer. It can easily be seen that any quantised event description is telic (Krifka 1989).[2]

If we want to find a property for atelicity we must provide a way of defining the fuzzy

[2]However, there are problematic sentences (Eberle, forthcoming).

NP	VP	property
two miles	*run two miles*	QUA
a book	*read a book*	QUA
a pint of beer	*drink a pint of beer*	QUA
miles	*run miles*	HOM
water	*drink water*	HOM

Table 1: *The same properties for NPs as for VPs when the NPs are allowed to modify the aspectual properties.*

boundaries characteristic of this kind of event description. The concept of **homogeneity** will suffice here (Bunt 1979). In the realm of objects, homogeneity (also called divisibility by Krifka 1989 and Naumann 1995) will apply to NPs like *water:* any subobject of an object which can be named as *water* can be named as *water* as well.

Homogeneity, however, has a problem: the **minimal parts** problem (Taylor 1977). Consider a fruit cake. We can find very small parts of fruit cake which are not fruit cake because they are just fruit, for example. This feature led several researchers to define a concept of granularity such that objects are not considered beyond a minimal context-dependent size (Taylor 1977 Eberle, forthcoming). The resulting analysis is rather complex, and it is arguable whether this kind of analysis will manage to describe all the possible cases which may happen in the real world. But any analysis of this type is missing the point. What we are to model is *not* the real world but its linguistic interpretation. Bunt formulates this by means of the 'homogeneous reference hypothesis':

> A mass noun refers in such a way that no particular articulation of the referent into parts is presupposed, nor the existence of minimal parts.
>
> (Bunt 1979:256)

Linguistically, therefore, any mass noun is homogeneous, and we can extend this to bare plurals as well: *cards* is homogeneous, even when we can find subobjects which are not cards but only one.[3]

These two properties, quantisation and homogeneity, can be used to model the structure of descriptions over events and predicates in a uniform way. Furthermore, in the cases where the NP determines the aspectual properties of the sentence, the final sentence will borrow the NP's property, using the same property but this time applied to the domain of events. Some examples are shown in Table 1.

[3]Note, incidentally, that there are semantic theories of plurals which consider singular objects as falling also under a plural predicate as a default (Link 1983; Landman 1989).

5 Linking objects and events

Apart from having similar properties for object and event descriptions, a link between the domain of events and that of objects is also needed so that their respective descriptions may interact. There is such a link in language, and it has already been studied in the literature. Fillmore (1968), for example, established an in-depth analysis of the possible semantic cases linking verbs and their arguments. However, it has been argued (Dowty 1991) that such an analysis in terms of agent, patient, theme and so on leads to many problems, the first being how to define them. But this analysis is still feasible and practical if we restrict the domain to the telic/atelic distinction. This has already been performed by Krifka (1989), and more recently by Tenny (1994). In these two works a classification of several thematic relations is established and the effect of such a classification on aspectuality is analysed. In this paper we will do the analysis in the reverse direction: we will start from the different types of aspectual interactions and determine the properties the relevant thematic relations will need. It must be said that we are not going to use the concept of thematic relations in the sense of Fillmore: in this paper, very much like Krifka (1989), thematic relations are just links between the domain of events and that of objects. And these links will be analysed here only in how they affect aspectual composition.

5.1 Aspectual transference and distributivity

Whenever the NP determines the final aspectual property of the VP it is because the NP aspectual properties (quantisation or cumulativity) are transferred to the final NP, as we have seen in Table 1. This transference is the result of having the same structure for events as for objects. Consider the following examples:

(10) a. *John drove three cars*

b. *Mary drank a pint of beer*

c. *2000 people gathered at Edinburgh*

In (10a) there are three driving events and three cars such that for every driving event there is one car assigned to it. This is the typical distributive interpretation (see, for example, Scha 1984). Furthermore, there is also a parallelism between the event and the object structure in (10b). In this case there is only one drinking event, but this event can be considered as consisting of an indeterminate number of drinking subevents such that for every drinking subevent there is a different portion of the beer which is drunk. This property has been called **graduality** (Krifka 1989; Naumann 1995). Again, as in distributivity, the event structure and the object structure are the same, the only difference being that the final drinking event is an individual drinking event, as opposed to the plural driving event in (10a).

Our interpretation of the structure therefore is not clearly determined by the syntactic structure of the sentence. As further evidence, consider (10c). Now, there are not 2000 gatherings, since the verb *gather* only allows for groups to gather and not individual persons. But there may be several gatherings happening at the same time, and (10c) can be used to describe them if the total amount of people gathering at Edinburgh amounts to 2000.

5.2 Aspectual blocking and collectivity

The other possibility is when the NP cannot transfer its properties to the VP. In such a case, as we have seen before, it is the verb which decides the VP aspectuality. In this case the NP effect is blocked because the object structure is not considered at all, as happens with the **collective readings** — which are treated here as in Landman's (1989) book. Consider the following sentences:

(11) a. *Three people lifted a piano*

b. *John watched three cars*

c. *John drove a car*

In a collective reading of (11a), the three people form a group which is involved in the lifting process. In such a sentence we are not concerned with the structure of the actual group itself: it can be seen as an atomic entity, very much in the sense as when we use the expression *a pack of cards*. The same can be said of (11b), where the three cars forms an unstructured group which is watched. In other words, even when it is explicitly said that three cars have been watched, the watching event does not focus on every car. In (11b), even when the watching event can be structured into subevents, every subevent of the main watching event will be an event of watching of all three cars, very much in the same way as that every part of fruit cake is fruit cake.

Since there is no interpretation of the object structure, it is possible to find collective readings involving singular NPs. Sentence (11c) is an example, where for every subevent of the driving event, the object involved is one and the same car.

6 Conclusions

Depending on how we interpret a sentence it will have assigned to it one or other property. This general insight can apply also to the domain of aspectuality. Thus, it is possible to find different aspectual properties to the same sentence.

There are two main types of aspectual interactions: either the NP decides the VP aspectuality or it is the verb which transfers its properties. These two aspectual interactions correspond to a distributive or a collective reading of the link between the event and the object, respectively.

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