

Aspects on passives

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In this paper, we propose that movement of the consequent state of a structurally complex event to a discourse-related position right above vP is the fundamental characteristic of passive constructions. This assumption is supported not only by the semantics of passives but also by the fact that it provides a natural account of many of their syntactic properties some of which are left unaccounted for in previous approaches. More generally we give a principled explanation, based on the availability of a consequent state reading, of why some predicates do not form good passives. Psycholinguistic data provide further arguments to support our hypothesis.

1. Introduction

Since early works in generative syntax (see Chomsky 1957) passivisation has been analysed as an operation on argument structure. Such analyses single out the most typical property of this construction, namely the inversion in the mapping of argument type and syntactic relation in actives and passives and especially the presence of the internal argument (the understood object) in the (syntactic) subject position and the demotion of the logical subject.

In this paper, we will defend a different perspective on passives, which puts the complex structure of events at the centre of this transformation and takes it to be responsible for determining not only the core properties but also the availability of passive formation. This change in perspective allows us to distinguish between predicates that can form good passives from those that cannot. We argue that passivisation is an operation on the event structure, more precisely a secondary predication referring to a transition into a consequent (result or inchoative) state. We propose that a semantic requirement, some kind of topicalisation, singles out this consequent state and assigns it a feature that will determine its movement to a discourse-related projection directly above vP . This projection is reminiscent of the low focal projection proposed by Belletti (2000). We support this claim by evidence from the syntactic and semantic properties of passives, some of which are unaccounted for in previous approaches.

The paper is structured as follows. Section 2 discusses previous approaches to passive formation and points out the main disadvantages of these. Section 3 outlines our own approach and argues that the position above vP , which the stative subevent moves to in

passive constructions, is needed independently also for actives, since it allows for the creation of a link between the atemporal complex event structure and the temporal and discourse domains of the clause. Empirical data as well as psycholinguistic data from comprehension patterns in agrammatic Broca's aphasics are provided in section 4 to support this analysis. Finally, section 5 concludes.

2. NP movement approaches to passives

Strong Crossover effects (1a), the availability of subject-controlled infinitival clauses (1b), and subject-oriented modifiers (1c), depictives (1d), binding (1e-f), and purpose-clauses (1g) provide strong empirical evidence for the assumption that the external argument is still present in verbal passives:¹

- (1) a. * They_i were killed by themselves_i.
 b. The book was written to collect the money. (Manzini 1980)
 c. The book was written deliberately. (Roeper 1983)
 d. The book was written drunk. (Baker 1988)
 e. Damaging testimony is always given about oneself in secret trials.
 (Roberts 1987)
 f. Such privileges should be kept to oneself. (Baker, Johnson & Roberts 1989)
 g. The book was written on purpose.

On the basis of these observations, Baker et al. (1989), elaborating on Jaeggli (1986), propose that the passive participle morphology is the external argument in passives. More precisely the *-en* morpheme of passive participle is claimed to be a clitic base-generated in the IP head and later on in the derivation lowered down to adjoin to the verbal stem. This operation is claimed to "absorb" the case assignment capacity of the verb making it necessary, given theta theory and legibility requirements, for the internal argument to move to the subject position.

The positive side of such an analysis is that it allows us to derive the transformation of passives without having to make use of any special rule. With some fairly simple assumptions and the interaction of syntactic principles and parameters the transformation could be seen as a necessity. While recognising these merits, we think there are reasons to criticise these assumptions already at their base.

A first problem posed by this analysis is that it is not clear on which basis the passive participle morpheme should be distinguished from the active past participle, which it is homophonous to. Put differently, why should only the former but not the latter be analysed as a clitic? Here we will reject this assumption as unmotivated and show that under our analysis there is no need to establish such a distinction.

A second problem comes from the assumption that the external theta role is assigned to the passive morpheme. This poses a problem for the explanation of how the NP in the *by*-phrase (the logical subject) receives its theta role. As shown by Marantz (1984) and Roberts (1985), it is clear that this NP is not assigned its theta role by the preposition, but that it receives it compositionally from the VP. To solve this problem, Jaeggli (1986) proposes a (fairly complex) mechanism of theta transmission while Baker et al. (1989) assume that the NP in the

¹ This holds for eventive passives; stative passives behave differently cross-linguistically in that German, for instance, does not allow an external argument whereas Greek does (see Anagnostopoulou 2003; Kratzer 2000).

by-phrase receives its theta role from the clitic via a non-movement chain like the one found in clitic doubling.

However, for reasons of economy of the system and uniformity we assume that there is a strict mapping between syntax and semantics along the lines of the Uniformity of Theta Assignment Hypothesis (UTAH) (Baker 1988). Then, both Jaeggli's (1986) and Baker et al.'s (1989) solutions are problematic since the external theta role in these two approaches is assigned in two different fashions in actives and passive constructions.

On the basis of the same arguments, Collins (2005) concludes that passive morphology does not absorb the external theta role or accusative case. Rather, the external theta role is assigned in Spec ν P in line with UTAH and accusative case is checked by the *by*-phrase in Voice^o directly above ν P.

An immediate problem that arises from this account is one of locality. Under current assumptions, the movement of the internal argument over the external argument should raise a minimality effect. Collins provides the following solution to this problem. "Smuggling" of the VP over the ν P makes the internal argument the closest to Spec TP allowing for its "promotion" to subjecthood without any violation of Relativised Minimality or its derivational counterpart. Smuggling is defined as follows:

(2) **Smuggling:**

Suppose a constituent YP contains XP. Furthermore, XP is inaccessible to Z because of the presence of W, some kind of intervener that blocks any syntactic relation between Z and XP. If YP moves to a position c-commanding W, we say that YP smuggles XP past W.



To derive the right word order, Collins argues that it is actually the participle which moves to the left of the *by*-phrase and that furthermore this movement is phrasal and thus drags along the internal argument.² Evidence supporting an XP-movement analysis over a head movement analysis comes from the following examples:

- (3) a. The coach summed up the argument.
 b. The coach summed the argument up.
 c. The argument was summed up by the coach.
 d. * The argument was summed by the coach up.
- (4) a. John was spoken to by Mary.
 b. * John was spoken by Mary to.

The examples in (3) show that, in English verb-particle constructions, the particle can appear before or after an internal argument. In the passive, however, only the order where the particle directly follows the participle is grammatical. Hence, the particle has to move along with the

² See Collins (2005) for arguments against alternative analyses in terms of right specifiers or extraposition of the *by*-phrase to the right.

participle which can be taken as evidence that more than just Part⁰ moves in passive constructions. The examples in (4) make a similar point with respect to *to*-phrases.

Even though this account seemingly solves the locality issue, it raises several problems, the most severe of which is that it poses serious look-ahead problems. The computational system is supposed to be able to apply an operation with an unclear status in order for the internal argument to move to the subject position without violating minimality. This leads to several other problems such as the following:

- i. What is the status of smuggling in the theory?
- ii. Is smuggling movement? And if so how is it triggered, i.e. what is the trigger for this movement?
- iii. What are the limits of smuggling and more generally of look-ahead computations? Doesn't it massively over-generate? Can it be used to avoid other potential interveners, for example in A'-movement?
- iv. How do we explain sentences like (5), where passivisation applies independently from movement of the internal argument to the subject position?

(5) There was a man killed.

Given these questions and problems and the overall *ad hoc* flavour of this solution, we will leave Collins' proposal aside.

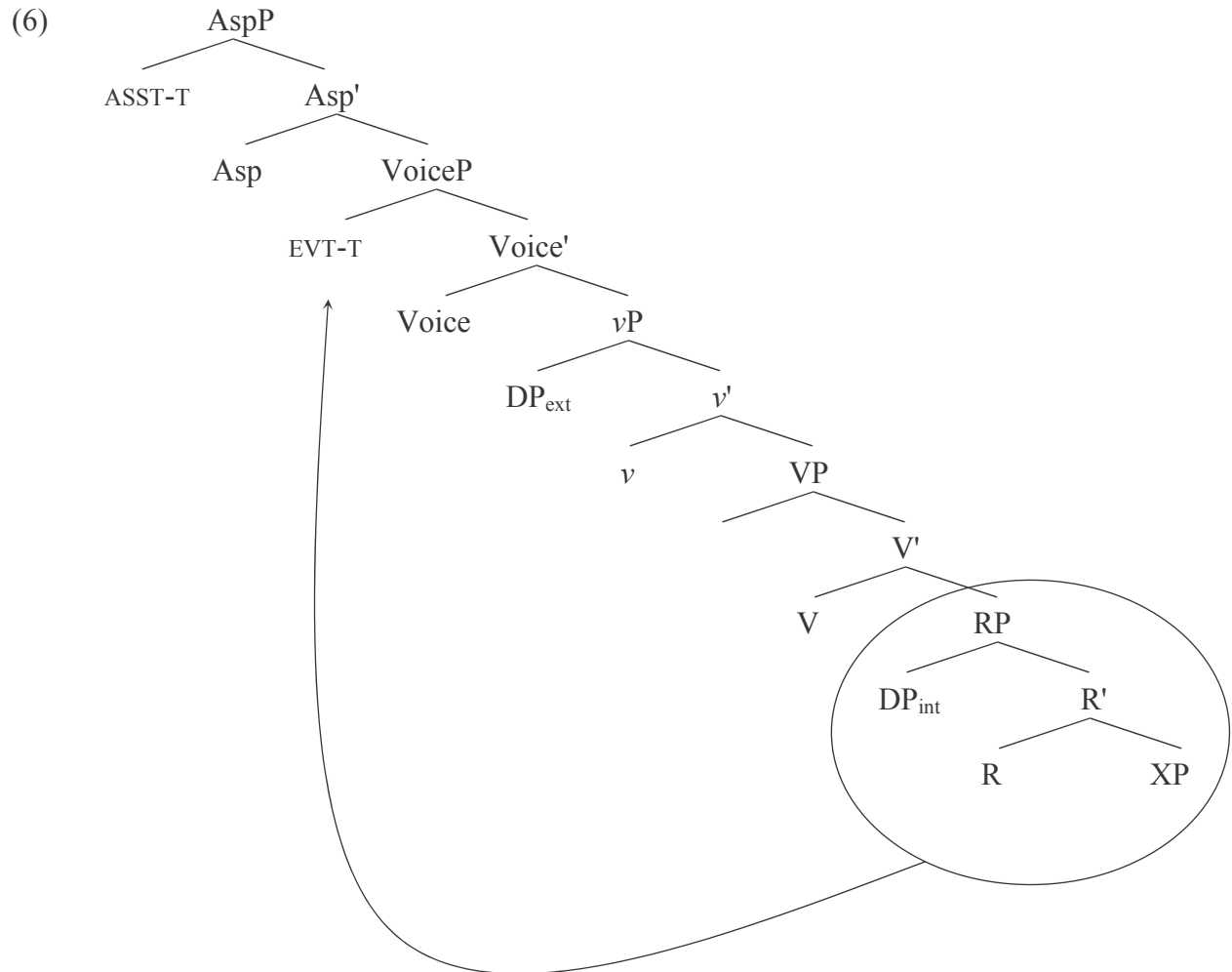
Nevertheless, we will see that the picture that emerges from the analysis we propose is similar in many, especially technical points to that of Collins and we will therefore refer to important observations of his work and integrate them in our approach in the remainder of the paper. However, we believe the approach developed here to be superior in that it does not pose any of the problems listed above. Furthermore, it solves the locality issue in a natural and less stipulative way. Finally, by shifting the perspective from argument structure to event structure it provides new predictions for and insights into the nature of passivisation.

3. The proposal

Grounding our analysis on the semantic and syntactic properties of passive sentences we propose that the promotion of a stative subevent of a complex event (RP in 6), see below for a more detailed characterisation of this projection) to a position above *v*P is a fundamental ingredient of the passive. Such a position is independently needed also for actives to form a basis for the event time that subsequently serves as the internal argument of Asp⁰ (in the sense of Demirdache & Uribe-Etxebarria 2000). In passives, then, the event time falls within this stative subevent.

The syntactic tree in (6) exemplifies the proposal. The RP (a consequent state of the event), which contains the verb in its head and the internal argument in its Spec, moves to Spec VoiceP where it is assigned temporal properties. Voice is responsible for grounding the event time in a particular way. In the case of passives the event time is anchored in the RP subevent. The feature that triggers movement to VoiceP has two properties, a discourse-related and a quantificational one. The discourse-related part chooses the element of the complex event that needs to be singled out whereas the quantificational part makes it readable for the next phase.

Thus, the main job of this feature is to single out an element of the atemporal event structure and to enrich its semantics by introducing temporality, thereby making it available to the temporal domain (and ultimately the discourse domain) of the clause.



Contrary to Collins, this operation is completely independent from the promotion of the internal argument to subject position. This is supported by the fact that the internal argument does not necessarily land in Spec TP in passives. Under standard assumptions EPP requirements on T can be satisfied in two ways: movement of the closest argument to Spec TP or expletive insertion. We propose that the same options are available in passives. If EPP is satisfied via movement, the closest argument (the internal argument given prior RP movement) will be attracted. If EPP is satisfied by an expletive we obtain (5). Hence, we take RP movement to be the only necessary condition to define passivisation.

There are several important issues we will not address in the present paper, of which the exact status of the *by*-phrase and an account of accusative case “absorption” are surely the most important ones. Nevertheless, the similarities between the syntactic configurations that surface in Collins’ (2005) analysis and our own, though in many respects simply epiphenomenal,³ allow us to make reference to that work and to provide a formal

³ As we already pointed out, there are several problems with Collins’ *smuggling* approach. However, it is important to stress that the distance between his analysis and the present work lies also in the fundamentally traditional view that he pursues. In his explanation passivisation is still treated as an operation on the argument

characterisation of many aspects of passivisation left aside here. Collins' account of the status of short passives and the PRO nature of the external argument in these constructions as well as his formal explanation of case absorption or the status of the *by*-phrase can all be assumed here for the time being, even if some of them might need slight adaptation. For example, throughout this paper we follow Collins' analysis of the *by*-phrase as the head of VoiceP which is responsible for assigning case to the external argument.

In section 3.1 we make precise what it means for an event to be structurally complex and particularly focus on the formation of consequent states. In section 3.2 we argue for the existence of a projection above *v*P and below AspP that is needed to provide the event time which subsequently serves as the internal argument of AspP.

3.1. Decomposing the event

Following Moens & Steedman (1988), Pustejovsky (1991), Higginbotham (2000), Ramchand (2004), among others, we assume that events can be structurally complex and consist of several subevents. Pustejovsky, for example, argues that events can be of three different types, namely states, processes and transitions:

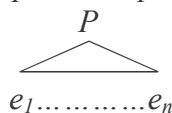
- (7) **State** (*S*): a single event, which is evaluated relative to no other event

Examples: *be sick, love, know*



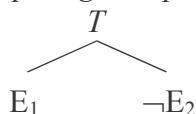
- (8) **Process** (*P*): a sequence of events identifying the same semantic expression

Examples: *run, push, drag*



- (9) **Transition** (*T*): an event identifying a semantic expression, which is evaluated relative to its opposition (with *E* as a variable for any event type)

Examples: *give, open, build, destroy*



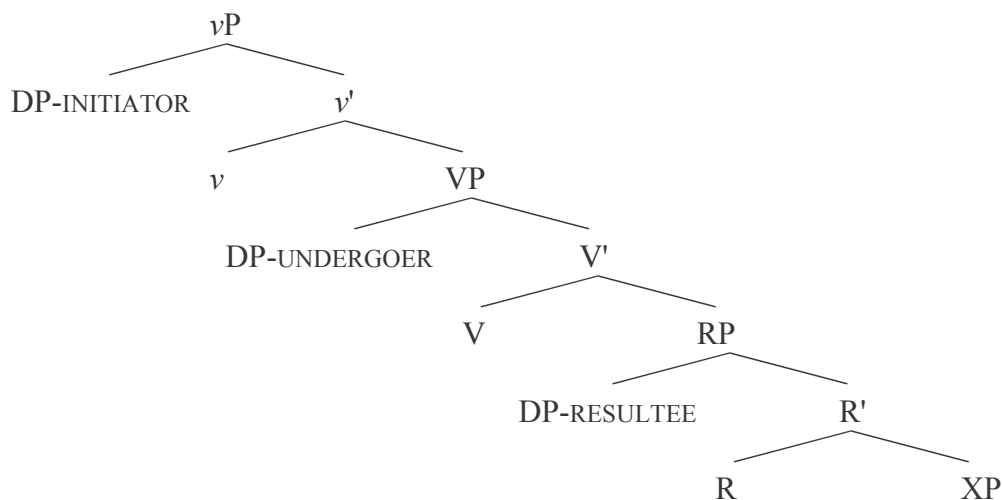
The transition type is the one we are interested in here. This type has at least two subevents, namely a state/process and an opposite state/process with a transition from one to the other. Similarly, Moens & Steedman (1988) assume an event nucleus of preparatory process, culmination, and consequent state.

A more syntactic implementation of the decomposition of events is found in Ramchand (2004). She proposes to decompose events into maximally three subevents, namely a state

structure and the whole mechanism of smuggling is motivated by the necessity to bring the internal argument closer to the subject position than the external argument. The novelty of the present approach is that we put event structure at the core of passivisation.

(the initial state, vP), a process (the dynamic part, VP) and another state (the result state, RP) (10). All dynamic verbs identify at least VP , since this is the dynamic part of each event. The causing subevent (vP) and the result state subevent (RP), however, are optional and not all verbs have the ability to identify these independently. DPs in the specifier positions of vP , VP and RP have the interpretation of INITIATOR, UNDERGOER and RESULTEE (holder of the result state), respectively, where one and the same DP can appear in several of these positions. This is so because a verbal lexical item can be associated with more than one position simultaneously thereby identifying various subeventive heads at the same time. Here, Ramchand follows Starke (2001) in assuming that lexical items do not necessarily insert under a single terminal node but rather that elements can merge and project and then remerge at a later stage of the derivation.

(10) **The syntax / semantics of the first phase** (Ramchand 2004)



The first two subevents are linked to one another by the ‘leads-to’ relation, where in the maximal structure a state leads to a process which in turn leads to a state again. Following the notation of Hale & Keyser (1993), this relation is defined as follows:

(11) **Principle of Event Composition** (Ramchand 2004:327)

If a head X which introduces an eventuality variable e_x , embeds a projection YP where Y introduces the eventuality variable e_y , then the structure is interpreted as $e_x \rightarrow e_y$ (e_x “leads to” e_y).

In general, the interpretation of states in the event structure as either initial or result state depends on their position in the hierarchical structure, i.e., embedded under a process they are resultative but embedding a process they compose the initial state, which is the causative part of the event.

What all of these approaches have in common is that they assume an ontology which contains a transition into a state, which we will call consequent state, following Moens & Steedman (1988). We will furthermore follow Ramchand’s syntactic structure of decomposed events. However, even though we will use the label RP , the state that comes about after a transition is not necessarily a resultant state and consequently such events are not necessarily telic (under any semantic definition of telicity such as Krifka, 1998 or others). This is a crucial departure from Ramchand who assumes that the VP and RP subevents participate in telic pair

formation (in the sense of Higginbotham 2000) so that an event containing these two subevents will always be telic. Instead, we assume that RPs can also be derived states, which share properties with result states of telic predicates in the sense that they involve a semantics of coming into existence. This could be thought of in terms of Dowty's (1979) BECOME-operator, which has also been used to capture the semantics of change-of-state predicates.

Finally, we assume that the event structure itself is atemporal in nature in the sense that there are no times associated with any of the subevents. Moens & Steedman (1988), for example, argue that the basic components that make up an event (i.e., the subevents in our terms) are not connected via temporal relations but rather by contingency.⁴ Therefore, there is also no immediate link between the (atemporal) event and the temporal domain of the clause. We will argue in the next section that this link has to be created at the boundary between vP (the atemporal event structure) and the TP/CP domain.

3.2. *Creating the link between the event structure and the temporal domain*

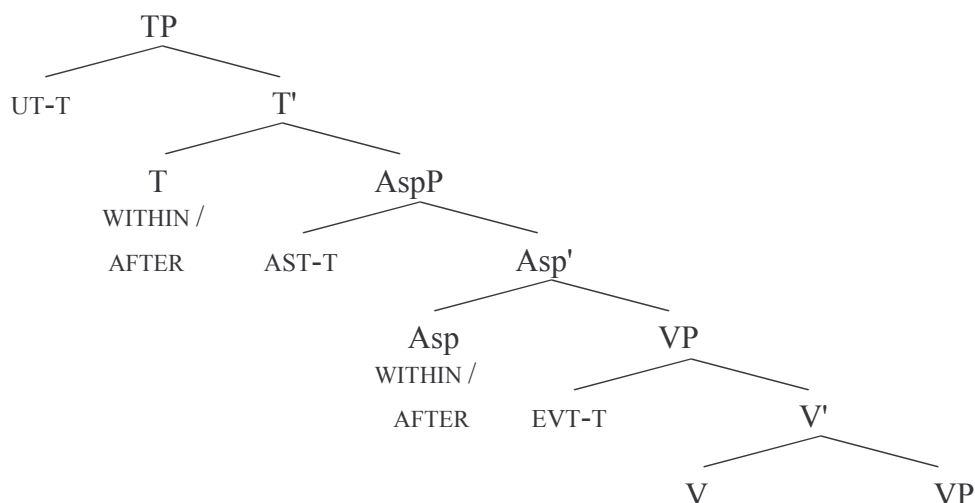
In this section, we argue that the position the participle in passive constructions moves to is independently needed, also for active sentences, to form a basis for the event time that subsequently serves as the internal argument of Asp⁰ (in the sense of Demirdache & Uribe-Etxebarria 2000). In passives, the event time falls within the consequent state subevent which is why this subevent has to move.

The syntax and semantics of tenses and aspects are commonly thought of as involving some reference to points or intervals in time (Partee 1984; Zagana 1990; Stowell 1996; Giorgi & Pianesi 1997; Demirdache & Uribe-Etxebarria 2000; among others). The point of departure for these accounts is usually Reichenbach (1947) who employs three temporal points, namely event time (E), speech time (S), and reference time (R). In his system, English simple tenses relate R to S with R before S with the past tense, R simultaneous to S with the present tense, and R after S with the future tense. English perfect tenses additionally express that E is before R.

Klein's (1994) model is similar to Reichenbach's but it uses intervals instead of points labelled event time (EV-T), assertion time (AST-T), and utterance time (UTT-T). Demirdache & Uribe-Etxebarria (2000) use Klein's terminology to capture the syntax of tenses and aspects in the following way:

⁴ See also Ramchand (2004). Recently, Zwarts (2006) argues for the need of an atemporal account for properties of events like, for instance, telicity in terms of generalised paths.

(12) The syntax of Tense and Aspect in Demirdache & Uribe-Etxebarria (2000)



In this framework, tenses and aspects are predicates that take temporal arguments (following Zagana 1990). An aspect head takes the event time as its internal argument and the assertion time as its external argument. With the imperfective aspect, the assertion time lies within the event time (WITHIN); with the perfective aspect, it lies after the event time (AFTER). Similarly, a tense head takes the assertion time as its internal argument and the utterance time as its external one. The utterance time can be placed WITHIN the assertion time (present), AFTER the assertion time (past) or BEFORE the assertion time (future) (the latter is argued for in Demirdache 2005).

In discussing a similar model, namely Stowell's (1996), Ramchand (2004) notes that there is a "crucial phase boundary between ν P and the temporal phrase structural domain" which "requires the establishment of a relation between the extended event topology which makes no direct reference to times, and the actual time variable which is only introduced at Asp" (Ramchand 2004:333). In other words, there is no event time in her model since ν P is crucially atemporal in nature. Rather, aspect introduces a time variable that is related to the event structure in a particular way.

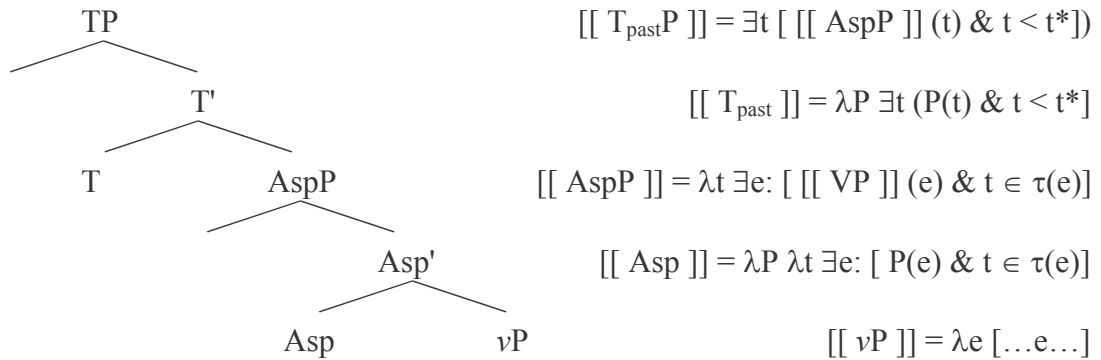
We can think of this time variable as being the counterpart to Demirdache & Uribe-Etxebarria's (2000) assertion time. Ramchand argues that the minimal denotation of Asp in the language she discusses in her paper, namely Russian, is the following (with $\tau(e)$ as Krifka's 1998 temporal trace function):

$$(13) \llbracket \text{Asp} \rrbracket = \lambda P \lambda t \exists e: [P(e) \ \& \ t \in \tau(e)]$$

This means that, if there is no particular aspect head in Russian,⁵ t (or the assertion time) falls somewhere within the entire time the event takes, which is provided by the temporal trace function.

The tree for Russian with this minimal denotation of Asp and the denotation of the other nodes involved is given in (14).

⁵ Russian productively expresses grammatical imperfective and perfective aspect by verbal prefixes and suffixes (see Gehrke forth. for a discussion of this). However, this approach can also be carried over to other languages, even such languages that do not have a morphological category Aspect.

(14) **The syntax / semantics of Aspect and Tense in Russian** (Ramchand 2004)

To draw the parallel between this tree and Demirdache & Uribe-Etxebarria's (2000) in (12), we can think of utterance time and assertion time as the direct counterparts to Ramchand's (2004) t^* and t , respectively. The crucial difference between both models, however, is that the event time is not existent in Ramchand's approach but is more or less replaced by Krifka's (1998) temporal trace function.

A problem that arises for Ramchand (2004), then, is that it is still not clear which part of the complex event the temporal trace function actually picks out. Furthermore, there is no strict mapping between syntax and semantics since AspP seems to provide both the temporal trace function as well as the assertion time (t in Ramchand's approach).

To solve these problems, we propose to split Krifka's temporal trace function and the introduction of the assertion time. In addition, the event time is needed because Asp needs a temporal internal argument. We assume that this event time is provided by Voice at the point of transition from the atemporal domain of the event structure to the temporal one and that Voice relates the event time to the atemporal complex event structure as in (6).

In the following, we summarise the ingredients that we view necessary to account for the way the atemporal event structure is linked to the temporal domain.

- i. Events are complex and consist of atemporal subevents (Ramchand 2004).
- ii. Voice provides an additional landing site for the part of the event structure that the event time is related to, and in this way it recalls Belletti's (2000) low focus projection.
- iii. Aspect and Tense heads project argument structure with the relevant arguments utterance time,⁶ assertion time, event time (Demirdache & Uribe-Etxebarria 2000).

These mechanisms are also needed for active sentences. We could think, then, that in the default case, nothing moves to the position above vP (or alternatively, the entire vP moves) and the event time is assigned locally. In other cases (e.g., where the event time has to be placed within a certain subevent) this subevent moves up. This could be the case if the perspective is on the process of an event rather than on its initial or final state (e.g. in the progressive). We will leave this for future research.

What is crucial for our approach to passives, then, is the additional landing site for the part of the event structure that the event time is related to. This could be thought of in terms of

⁶ Or in any case, some reference time which in many cases is the utterance time. See Stowell (1996) for this point.

some quantificational phrase such as Borer's (2005) QP since it clearly involves some kind of quantification over events. Similarly, Arsenijević (2006) argues that verbal predicates have some functional projection that basically picks out that part of the complex event structure that something is asserted about. In any case, whatever is asserted about the event has to move up; in that sense it could also be the case that it is used to focalise some particular subevent. Hence, in the case of passives, the consequent state moves up to serve as a basis for the event time.

4. Empirical evidence

4.1. Consequent states in passive constructions

An important prediction that this analysis makes is that all passive constructions should display some kind of resultative semantics since they, as a rule, involve the movement of a consequent state subevent. This is straightforward in some of the examples provided by Collins (2005):

- (15) a. The argument was summed up by the coach. (= (3), Collins 2005)
 b. * The argument was summed by the coach up.
 c. John was spoken to by Mary.
 d. * John was spoken by Mary to.

In these examples, RP moves taking along the particle in verb-particle constructions or a goal denoted by a *to*-phrase. This is accounted for if we follow Ramchand & Svenonius (2002). For example, a sentence like *Roberta threw the dead rat out* will have the structure of *Roberta causes the dead rat by throwing to be outside*, with *Roberta*, the causer of the whole event, in Spec ν P and with *the dead rat* simultaneously in Spec VP and Spec RP, since it is both undergoer of the process of throwing and resultee in the sense that it ends up outside the door. With Ramchand & Svenonius (2002), English particles like *out* are treated as particle phrases (prtPs) in complement of the result phrase and with the direct object as the specifier of prtP:

- (16) Throw the dead rat out
 $[_{\nu P} \text{ INTR throw-init } [_{\nu P} \text{ UNDRGR } t_V [_{\text{RP}} \text{ the rat } t_V [_{\text{prtP}} t_{\text{DP}} [_{\text{prt}} \text{ out }]]]]]]$

In order to identify the result phrase, it is assumed for English that either the particle moves and incorporates into the head of this phrase or the object moves into its specifier, which then leads to particle shift word order (as in (16)). Hence, these elements are direct complements to RP and there is no way to move the whole RP over ν P without moving the particle (or the *to*-phrase) along with it.

We can extend the same analysis to resultative secondary predicates:

- (17) a. The table was wiped clean by John. (Postal 2001)
 b. ?? The table was wiped by John clean.
 c. The metal was hammered flat by John.
 d. ?? The metal was hammered by John flat.

Again, the resultative is in the complement position of RP and thus has to move together with it in passive constructions.

This analysis allows us to make important predictions with respect to which transitive predicates can form passives. Postal (2001), among others, shows that not all transitive verbs can form passives. Under our analysis it follows straightforwardly that transitive verbs involving telic predicates can form passives since they contain consequent states (18), whereas those involving atelic ones cannot (19):

- (18) a. The lion killed the antelope.
 b. The antelope was killed (by the lion).
 c. He put the card on the table.
 d. The card was put on the table (by him).
- (19) a. This laptop weighed two kilos.
 b. * Two kilos were weighed (by this laptop).
 c. This chair cost 50 euro.
 d. * 50 euro were costed (by this chair).

Transitive verbs like the ones in (19) never have a consequent state reading and can never be part of an event structure containing a transition into a state. Hence, passive formation is not possible with these verbs.

4.2. *An apparent problem: passives involving stative predicates*

A potential problem for this account could be that a number of atelic predicates, that should not contain an RP under Ramchand's (2004) account, can still form passives. This is the case with predicates like *know*, *surround*, *own*, *believe*, among others:

- (20) a. The house is owned / surrounded by the army.
 b. The answer / myth is known / believed by the pupils.

The availability of passivisation however is not a common property of stative predicates. The difference between predicates that are otherwise similar in their stative characteristic opens up a possible solution to this problem. Belletti & Rizzi (1988) show that there are three kinds of psych-verbs, namely the *fear*-type (*temere*), the *worry*-type (*preoccupare*) and the *appeal*-type (*piacere*). They give ample evidence for the fact that only *fear*-verbs can undergo verbal passivisation, whereas *worry*-verbs can only derive adjectival passives and *appeal*-verbs cannot form passives at all (examples from Reinhart 2002):

- (21) a. The news worried / surprised / excited Max.
 b. Max was worried / surprised / excited (by the news).
- (22) a. The solution appeals to me / escapes me.
 b. * I am appealed / escaped (by the solution).

There is a clear intuitive difference between the class of stative predicates above and at least one class of psych-verbs (the *piacere/appeal* class): only the former can have an inchoative meaning of the state denoted by the verb so we can say, for instance, *Max got to know the answer/into a knowing state*, *Max got to own the house/into an owning state*. *Appeal*-verbs

cannot have this inchoative reading and we cannot have examples like **I got to escape the solution/into an escaping state*.

To put it in different terms, *know*-verbs allow a reading where the state denoted by the verb is a sort of consequent state, a state having come into existence, and this state is predicated over the internal argument and is thus a secondary predication. Passive formation, then, is possible if it involves promoting this kind of consequent state. *Appeal*-type verbs, on the other hand, cannot involve such a secondary predication and as a result cannot form passives.

As reported above, Belletti & Rizzi (1988) give ample evidence to support the claim that passives of *worry*-verbs are adjectival. The picture is more complex and deserves more careful examination once the *fear*-class is taken into account. The explanation cannot be extended to cover the availability of passives here in a straightforward way. There is, however, at least one piece of evidence that shows that passives of *fear*-type verbs are adjectival as well. Belletti & Rizzi show that the two auxiliaries that can be used to form passives, namely BE and COME / *venire*, can be used as a test to distinguish between adjectival and verbal passives. Whenever the COME auxiliary is present, the passive has to be verbal. In addition, the availability of adjectival morphology like the superlative suffix *-issimo* can be taken as a test to show that the passive is adjectival:

- (23) a. Gianni è / *viene apprezzatissimo dai suoi concittadini.
Gianni is comes appreciated-SUP by his fellow-citizens
'Gianni is very appreciated by his fellow-citizens.'
- b. Questa scelta è / *viene rispettattissima dalla maggior parte degli elettori.
this choice is comes respected-SUP by-the bigger part of-the voters
'This choice is very respected by the majority of the voters.'

The data show that the situation with these predicates is not so straightforward and their passivisability far from dismissing the present account. Only with the COME auxiliary the construction is undoubtedly a verbal passive. The fact that the semantic import of COME opens up the inchoative reading offers additional support for our claim that stative predicates can only form verbal passives if they can have an inchoative reading. In the case of psych-verbs this possibility is available only with the *fear*-type and only if the inchoative reading is obtained via the COME auxiliary.

Similarly, *love* is able to form passives:

- (24) a. Mary loved Max.
b. Max was loved (by Mary).

Again, *love* can have an inchoative meaning with the inchoative (\approx consequent) state predicated over the internal argument so Max getting into the state of becoming loved.

4.3. *Ditransitives*

For some speakers of English there is an asymmetry between goals and benefactives when it comes to passive formation. Postal (2001) (citing Fillmore 1965), for instance, provides the examples of the type in (25):

- (25) a. A radio was sold to Mary.
 b. Mary was sold a radio.
 c. A radio was bought for Mary.
 d. * Mary was bought a radio.
- (26) a. John sold a radio to Mary.
 b. John sold Mary a radio.
 c. John bought a radio for Mary.
 d. John bought Mary a radio.

Given that goals and benefactives behave alike in active constructions, as shown in (26), it is not clear how to account for this asymmetry under the traditional accounts of passives. Under our account, however, one could assume that for those speakers that do not allow benefactives to move to subject position in passives, only goals are part of RP and are thus dragged along when RP moves in passive constructions. Benefactives, on the other hand, appear somewhat higher in these speakers' grammar and it is even possible that they are just adjuncts for such speakers (but see Tungseth, 2006 for a different treatment).

4.4. *Floating Quantifiers*

A long-lasting problem for the analysis of Floating Quantifiers (at least since Sportiche 1988) comes from the observation that these are banned from the post-verbal position in passives, whereas both word orders are grammatical in the active counterparts:

- (27) a. John gave the boys both a good talking to.
 b. John gave both the boys a good talking to.
 c. The boys were both given a good talking to.
 d. * The boys were given both a good talking to.

This behaviour of Floating Qs is unexpected under previous approaches to passives, since then the Floating Q should be stranded in postverbal position where it is originally merged.

However, if there is additional movement of the RP, independent of any DP-movement to satisfy the EPP, the word order can be accounted for in the following way. The Floating Q moves together with the internal argument and the RP and remains stranded after the movement of the internal argument to Spec TP.⁷

⁷ Thanks to Ad Neeleman for suggesting to check these facts.

4.5. *Passive of existential constructions*

Additional evidence for the present analysis is provided by the behaviour of passives in the presence of *there*-expletives, as shown in (28):⁸

- (28) a. There was a man killed.
 b. * There was killed a man.

Given a traditional analysis of passives, it is not clear why the internal argument has to appear in preverbal position and why the postverbal position is ungrammatical. If we assume instead that in passive constructions the RP moves to some position above *v*P and furthermore that *kill* identifies RP with the internal argument appearing in Spec RP, the word order in *there*-passives is accounted for.

Our account assumes that regular passives involve two independent operations, first the movement of RP to form a basis for the event time and the second movement of a DP to Spec TP to satisfy the EPP. In *there*-constructions (both active and passive), then, this second movement does not take place but an expletive is inserted instead to satisfy the EPP. However, the first movement of RP still takes place in passive sentences since it is completely independent of the DP-movement to Spec TP.

As noted earlier, it is not clear how Collins (2005) could account for these data, since in his approach the participle moves in order to smuggle the internal argument and get it closer to SpecTP than the external argument. So in that sense, his approach is not much different from traditional accounts where the perspective really lies on the DP which in the end has to move to SpecTP. However, if there is no subsequent movement of a DP to SpecTP, the movement of the participle should also not take place in Collins' approach. This would predict the following word order with a *by*-phrase:

- (29) *There was by the police a man killed.

We take the ungrammaticality of this example as additional evidence for our account where the RP movement in passive constructions is needed for reasons independent of the need to satisfy the EPP.⁹

4.6. *On PRO as the external argument of short passives*

Drawing an interesting parallel between the ability to assign null case of the complementiser *for* and the passive *by*, Collins (2005) proposes that PRO is the external argument in short passives. Baker et al. (1989) already attempted to define the external argument in short passives as being of the same kind as PRO. However, commenting on data like (30), they notice that while PRO can relate to the first person in infinitives, silent arguments in passives cannot:

⁸ Thanks to Jutta Hartmann for pointing these facts out to us.

⁹ There is cross-linguistic variation with respect to the word order in expletive passives. In French, for example, the internal argument has to follow the participle: *Il a été tué un homme* vs. **Il a été un homme tué* (but still: **Il a été tué par la police un homme* vs. *Il a été tué un homme par la police*). The present analysis can be extended to cover these facts by the natural assumption that also in this case French participles raise higher than English ones.

- (30) a. PRO to shave ourselves is fun.
 b. * Love letters were written to ourselves.

This fact is surprising considering that PRO and the silent argument of passives seem to share all other properties. For example, their nature of arbitrary pronouns explains their inability to bind a non-arbitrary pronominal.

Baker et al. (1989) do not have much to say about this fact and are obliged to stipulate that the two elements are different despite most evidence. We believe the present account could hint at a possible explanation for this problem. We could speculate that at least part of the inflectional field is present in infinitive clauses, namely some of the agreement features, and that furthermore the local relation between PRO and TP (or AgrS for that matter) can provide PRO with the relevant person feature in active sentences (say, via Agree for concreteness). In passives, however, given RP movement to Voice this option is not available since all the features in the TP are checked by the internal argument that intervenes between PRO in *v*P and the functional field.

In sum, there is ample evidence for an approach to passive formation that involves promoting the result state subevent. In the next and final sub-section, we discuss data from agrammatic Broca's aphasics that display a deficitarian comprehension pattern when it comes to passive sentences, among others. We believe that our approach to passive formation combined with the second author's general approach to this deficitarian comprehension pattern can account for these facts.

4.7. *Comprehension patterns in agrammatic Broca's aphasics*

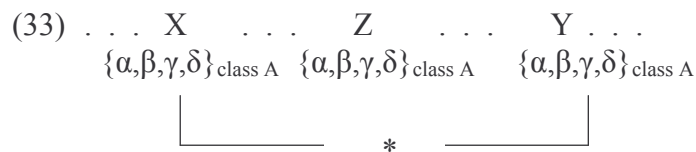
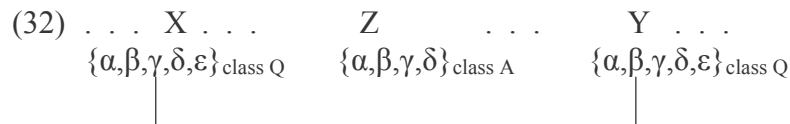
Additional evidence for the proposed analysis of passivisation comes from comprehension patterns in agrammatic Broca's aphasics. This population shows a selective comprehension problem in several areas. A summary of the main characteristics is given in (31).

- (31) **Agrammatic aphasia comprehension patterns** (Grodzinsky 2000, 2004; among others)

Above Chance Performance	Chance Performance
Subject relatives	Object relatives
Subject Clefts	Object Clefts
Actives	Passives
Adjectival Passives	Verbal Passives
Unaccusatives	Passives
SVO Hebrew Actives	OSV/OVS Hebrew Actives
Object Control	Subject Control
Unscrambled Object	Scrambled Object
...	...

Grillo (2005) argues that this selective comprehension problem is the consequence of minimality effects that arise when a dependency has to be built over an intervening element which shares part of its featural make-up with the goal. The main line of argumentation goes as follows.

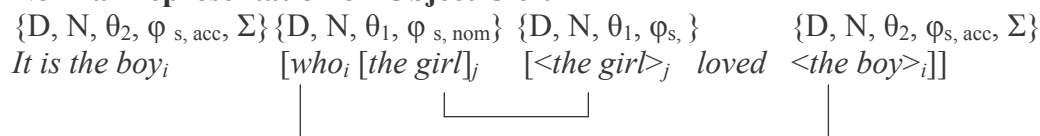
Grillo (2005) takes some recent developments of the Relativised Minimality (RM) approach to locality as a starting point (Rizzi 1990, 2004a; Starke 2001).¹⁰ Given the structure in (32) in which every node is associated with a particular feature set, RM should permit the formation of a relation Σ between X and Y. The presence of the element ε , say, a feature changing the class of the set from Argumental to Quantificational, suffices for RM to see the difference between X and Z and therefore to authorise the movement of Y over Z.



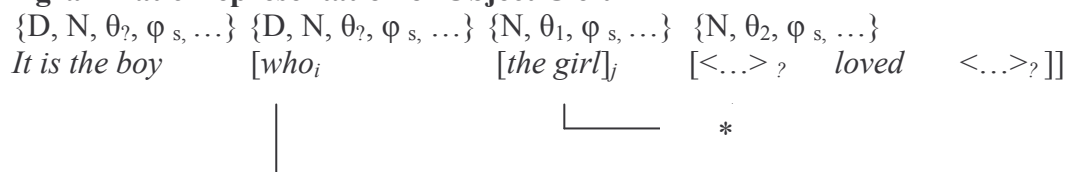
Given an impoverished structure as that in (33), RM fails to see any relevant distinction between X and Z and therefore disallows a relation between X and Y.

Our assumption is that agrammatic patients suffer from a limitation of their (syntactic) processing resources and therefore fail to maintain the activation of all the features normally associated with syntactic elements. Examples are provided in (34) and (35), where the feature Σ , which defines *<who>* as a member of the Operator's class and thus as distinct from the Argumental class to which *<the girl>* belongs, is present only in the normal representation.

(34) **Normal Representation of Object Cleft**



(35) **Agrammatic Representation of Object Cleft**



The impoverishment of the set of features leads to RM blocking chain formation: it is impossible to assign the correct theta role to each argument, which leads to poor comprehension.

This analysis correctly predicts a different pattern to arise with subject relatives, which are in fact correctly interpreted by agrammatic patients (see table in (31)). In these structures no DP intervenes between the moved constituent and its trace, hence no RM effects arise:

¹⁰ Throughout, we use a representational approach to locality, but it should be clear that the account can easily be recast in derivational terms.

(36) It is the boy [who_i [<the boy>_i loved the girl]]

□

The same analysis can easily be extended to cover the other asymmetries in (31). See Grillo (2005) for further discussion.

For our actual purposes, it is important to stress how the analysis sketched above interacts in a productive way with the present discussion of passivisation. We propose that agrammatic patients cannot maintain the activation of the discourse-related feature that triggers the movement of RP due to a limitation of their processing capacities.¹¹ Combining the two assumptions allows us to make the correct prediction that agrammatic comprehension of (eventive) passives with and without an overt *by*-phrase should be equally deficitarian whereas comprehension of unaccusatives and adjectival passives should not (see (31) and Grodzinsky 1999 and Piñango 1999, among others). Under our proposal only eventive passives involve movement of RP across *v*P, and this is independent of the overt presence of an external argument. Since *v*P has the external argument in its specifier (either overtly or covertly), a minimality effect between the moved RP and its trace arises.¹²

Hence, evidence from agrammatic Broca aphasia patients support our account of passivisation as involving the movement of the consequent state subevent to some projection right above *v*P. This movement is driven by some quantificational or discourse feature as was outlined in section 3.2.

5. Summary

In this paper we argued for a shift from an argument structure/DP perspective on passive formation to an analysis based on event structure. We showed that this shift provides a principled account for several syntactic and semantic properties of the passive construction, some of which remained unexplained under previous accounts. The general idea is implemented through movement of a consequent state (RP) to a discourse-related position at the edge of the *v*P phase. From this position the internal argument can further move to the subject position, though this is not a necessary feature of passivisation, as clearly indicated by *there*-expletive passives.

The tight relation between the availability of a consequent state and passivisation was highlighted by examples showing that the possibility to passivise a predicate depends on its event structure in a crucial way. Evidence from word order in constructions involving particle-verb constructions, secondary predicates, Floating Quantifiers, ditransitives, and *there*-expletives strengthened the idea that more than the internal argument moves in passives. Finally, the analysis proposed allowed us to make new predictions with respect to impoverished syntactic representation in agrammatic Broca's aphasia that turned out to be

¹¹ This is supported by the general difficulty for this population in dealing with discourse-related and quantificational features (see Avrutin 2004). Note also that the present approach to deficitarian comprehension could in principle be extended to cover comprehension patterns of other populations such as children and normal adult speakers in stressful situations that seem to display similar deficits (see Avrutin 2000; Dick et al. 2001; among others).

¹² Another possibility would be to think about the minimality effect arising between the two subevents (*v*P and RP). We won't pursue this idea any further here.

correct, and unify the treatment of some of the most typical deficitarian comprehension patterns in this syndrome.

We used this account of passive formation as an example of a view on the syntax/semantics interface that employs the Principle of Compositionality in its strongest version where semantics can be directly read off syntax. Furthermore, we argued that the position RP moves to is independently needed also for active derivations. In general, the movement of (part of) the atemporal and structurally complex event is necessary to single out an element of the verbal domain (RP in the case of passives) and to enrich its semantics by introducing temporality, thus making it available to the temporal (and eventually to the discourse) domain.

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