How to become passive

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Abstract

In this paper, we propose that movement of a stative subevent of a structurally complex event to a discourse-related position at the edge of the verb phrase is the fundamental characteristics 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]

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. The internal argument (the understood object) appears in the (syntactic) subject position, whereas the logical subject is demoted and (optionally) surfaces in a *by*-phrase.

In this paper, we will defend a different perspective on passives. It places the complex structure of events at the centre of this transformation and takes it to be responsible for determining not only core properties of passive formation but also its availability in general. This change in perspective allows us to distinguish predicates that can form good passives from those that cannot. In particular, we argue that passivisation is an operation on 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

Spec, VoiceP, projected by *by* at the edge of the verb phase, which we take to be endowed with discourse-related properties reminiscent of the low focal projection proposed by Belletti (2004a). We support this claim with 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 NP-based approaches to passive formation that treat it as an operation on argument structure and points out some of their disadvantages. Section 3 outlines our own proposal, according to which a stative subevent moves to a position above VP in passive constructions. To support this analysis, empirical data and psycholinguistic data from comprehension patterns in agrammatic Broca's aphasics are provided in section 4. In section 5, we propose that the position which the stative subevent moves to in passives, is needed independently also for actives, since it allows the creation of a link between the genuinely atemporal event structure and the temporal and discourse domains of the clause. Finally, section 6 concludes.

2   NP movement approaches to passives

Strong Crossover effects (1-a), the availability of subject-controlled infinitival clauses (1-b) and subject-oriented modifiers (1-c), depictives (1-d), binding (1-e,f), and purpose adverbials (1-g) provide empirical evidence for the assumption that the external argument is still present in verbal passives.[2]

(1)   *Presence of the external argument in verbal passives*
    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 et al., 1989)*
    g.   The book was written on purpose.

On the basis of observations like these, Baker et al. (1989), elaborating on Jaeggli (1986b), propose that the passive participle morphology is the external argument in

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[2]This holds for eventive passives. Stative passives behave differently cross-linguistically. For instance, German does not allow an external argument whereas Greek does (see Kratzer, 2000; Anagnostopoulou, 2003). Although recent works on the semantic properties of different kinds of participles have payed increasing attention to subtle differences in event structure (see, for example, Embick, 2004; Anagnostopoulou, 2003; Kratzer, 2000; Travis, 2005), an alternative analysis of passivisation as an operation on event structure has to our knowledge not yet been proposed. A more careful analysis of the issues discussed in these works has to be left for future research.

passives. More precisely the *-en* morpheme of the 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 argued 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.

Such an analysis 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 at their base. One issue to be raised, for instance, 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. Why should only the former but not the latter be analysed as a clitic, whose lowering absorbs the verb's case assignment capacity? Here we reject this assumption as unmotivated. Moreover, under our analysis there is no need to establish such a distinction.

Even more problematic is the assumption that the external theta role is assigned to the passive morpheme, since it 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 (1987), 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 (1986a) proposes a (fairly complex) mechanism of theta transmission while Baker et al. (1989) argue that the NP in the *by*-phrase receives its theta role from the clitic via a non-movement chain like the one found in clitic doubling. For reasons of economy of the system 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). Given UTAH, both Jaeggli's (1986a) 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 active and passive constructions.

On the basis of this argument, Collins (2005) concludes that passive morphology does not absorb the external theta-role or accusative case. Instead, the external theta role is assigned in Spec vP in line with UTAH and accusative case is checked by the *by*-phrase (*by* itself being the head of VoiceP) merged directly above vP. An immediate problem that arises under 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 vP 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 in (2).

(2)   *Smuggling (Collins, 2005)*

    a.   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.

    b.   Z $\ldots$ [$_{YP}$ XP] $\ldots$ W $\ldots$ $<$[$_{YP}$ XP]$>$
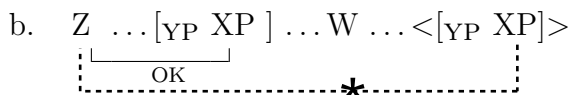
To derive the right word order, Collins proposes that it is actually the participle that moves to the left of the *by*-phrase. This movement is argued to be phrasal, dragging along the internal argument. Collins (2005) argues convincingly against alternative analyses in terms of right specifiers or extraposition of the *by*-phrase to the right.[3] Evidence supporting an XP-movement analysis over a head movement analysis comes from (3).

(3)   a.   The coach summed up the argument.
             The coach summed the argument up.
    b.   The argument was summed up by the coach.
             ∗The argument was summed by the coach up.

Example (3-a) shows that in English active 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 (3-b). Hence, the particle has to move along with the participle which can be taken as evidence that more than just the participle head moves in passive constructions. In (4) and (5) we provide examples that make a similar point with respect to different kinds of goal phrases.

(4)   a.   Jutta was spoken to by Eric.
    b.   *Jutta was spoken by Eric to.

(5)   a.   Tom zipped the sleeping bag all the way up to the top.
    b.   *The sleeping bag was zipped by Tom all the way up to the top.

Even though Collins' account seemingly solves the locality issue, it raises several new ones, 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 questions such as those in (6).

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[3]See Collins (2005) for details on this point and on the formation of the participle. Collins assumes that the participle morpheme -*en* heads a PartP and that the head of V raises and adjoins to Part^o.

(6)　　*Questions raised by a smuggling approach to passive formation*
　　　　a.　What is the status of smuggling in the theory?
　　　　b.　What are the limits of smuggling and more generally of look-ahead computations? Doesn't smuggling massively over-generate? Can it be used to avoid minimality effects with other potential interveners, for example in A'-movement?
　　　　c.　How do we explain sentences like (7), where passivisation applies independently of movement of the internal argument to the subject position?
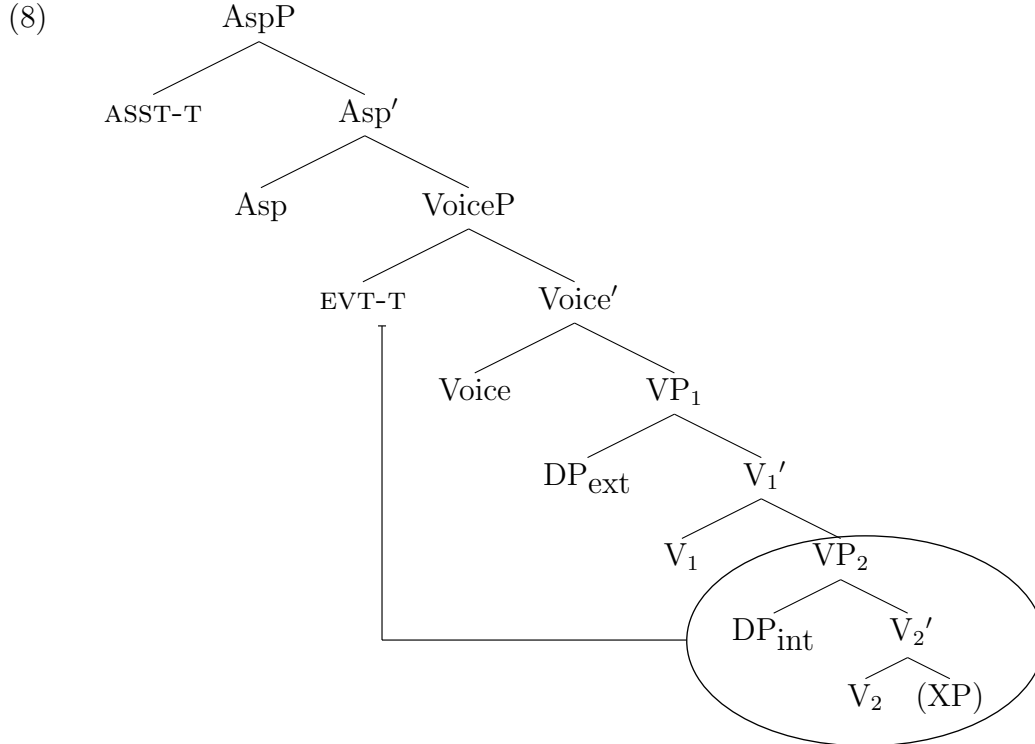
(7)　　There was a Suabian killed.

Given these questions and problems and the overall ad-hoc flavour of this solution, we will leave Collins' proposal aside and develop a different approach by shifting the perspective from argument structure to event structure. This shift will provide new predictions for and insights into the nature of passivisation and will solve the locality issue in a natural and less stipulative way. Unlike Collins, we will dissociate the movement of part of a complex event structure, which is taken to be the essential characteristics of passivisation, from the movement of some argument DP to Spec TP to satisfy EPP. By doing so, we will provide a semantically motivated trigger for the movement involved in passive formation and will also be able to account for cases like (7).

In essence, then, our proposal will not be a smuggling approach, and the questions in (6) do not arise. It is important to stress that the distance between Collins' analysis and the one to be proposed here lies also in the fundamentally traditional view that he pursues. In his explanation passivisation is still treated as an operation on argument 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. 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 (2005). We will therefore refer to important observations of his work and at times integrate them in our proposal.

3　Shifting the perspective on passives

Grounding our analysis on the semantic and syntactic properties of passive sentences we propose that the promotion of a consequent state subevent of a complex event to a position above VP is a fundamental ingredient of the passive. In the spirit of Travis (2000, and subsequent work), we employ a VP shell account for the syntactic representation of event structure. In Travis' model, V_2 introduces the theme argument (DP_{int}) as well as the endpoint of the event, whereas V_1 corresponds to the causing sub-event and introduces the external argument (DP_{ext}). Thus, a con-

sequent state is structurally represented as a lower VP shell with the VP-internal argument DP in its specifier. In section 5, we will propose that the position the lower VP moves to is independently needed for actives as well, since it forms a basis for the event time that subsequently serves as the internal argument of Asp (in the sense of Demirdache and Uribe-Etxebarria, 2000). In passives, then, the event time falls within this stative subevent. The syntactic tree in (8) exemplifies the proposal.[4]

(8)

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                    AspP
                   /    \
              ASST-T     Asp′
                        /    \
                     Asp      VoiceP
                             /      \
                        EVT-T        Voice′
                                    /      \
                                Voice       VP₁
                                           /    \
                                      DP_ext     V₁′
                                                /    \
                                             V₁       VP₂
                                                     /    \
                                                DP_int     V₂′
                                                          /    \
                                                        V₂      (XP)
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We propose that a semantic requirement, some kind of topicalisation, singles out this consequent state and assigns it a feature that will determine the movement of the lower VP to a discourse-related projection at the edge of the VP phase, represented as VoiceP. Voice is responsible for grounding the event time in a particular way. In the case of passives the event time is anchored within the consequent state 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 to the next phase. Thus, the main job of this feature is to single out an element of the atemporal event structure associated with the VP phase and to enrich its semantics by introducing temporality, thereby making it available to the next phase, the temporal domain (and ultimately the discourse domain) of the clause. Contrary to Collins, this operation is completely independent of the promotion of

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[4]XP in this structure represents further elements like, for instance, PPs or APs, which can be complements to V_2.

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 (see (7) and section 4.2). Hence, we take movement of VP_2 to be the only necessary condition to define passivisation.

Let us make precise what it means for an event to be structurally complex, particularly focusing on the formation of consequent states. We are following Dowty (1979) in assuming that verbal predicates, associated with Vendler's (1967) event types, can be decomposed into particular atomic predicates CAUSE, DO and BECOME and combinations of these. Here we will concentrate on event types that involve the BECOME predicate, namely accomplishments (9) and achievements (10), and we will abstract away from the other predicates DO and CAUSE (see Dowty, 1979, for discussion and formal definitions).[5]

(9) *Accomplishments (Dowty, 1979, 124)*
     DO(α_1, $[\pi_n(\alpha_1, ..., \alpha_n)])$)]CAUSE[BECOME $\rho_m(\beta_1, ..., \beta_n)$]]].
     e.g. John broke the window.

(10) *Achievements (Dowty, 1979, 124)*
     BECOME[$\pi_n(\alpha_1, ..., \alpha_n)$].
     e.g. John discovered the solution.

The definition of the predicate BECOME relative to an interval I is given in (11).

(11) *Original definition of* BECOME *(Dowty, 1979, 140)*
     [BECOME ϕ] is true at I iff there is an interval J containing the initial bound of I such that $\neg\phi$ is true at J and there is an interval K containing the final bound of I such that ϕ is true at K.

With this definition, then, event types containing BECOME such as accomplishments and achievements are associated with definite change of state predicates. The state denoted by π_n in (9) and (10) comes into existence, since it is false at interval J and true at some later interval K.

Dowty's (1979) idea of decomposing predicates has been reformulated in event semantic terms, where an event (the macroevent) is viewed as potentially structurally complex and decomposable into particular subevents. Such subevents, in turn, are associated with CAUSE, DO or BECOME predications, or related notions such as preparatory phase, process, transition, culmination, consequent or result state and the like (Moens and Steedman, 1988; Parsons, 1990; Pustejovsky, 1991; von Stechow, 1995; Rapp and von Stechow, 1999; Higginbotham, 2000; Kratzer, 2000, 2005; Rothstein, 2004; Ramchand, 2004; Beck, 2005, among many others).

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[5]In the following, α_i and β_i stand for arbitrary individual terms, π_n and ρ_n stand for arbitrary n-place (stative) predicates, and ϕ and ψ are arbitrary formulas, either atomic or complex.

What event structure approaches have in common is that they capture the semantics of predicates involving change, a (durative or instantaneous) change from $\neg\phi$ to ϕ, by assuming an ontology which contains a transition into a state. Let us call this state a *consequent state*, using the terminology of Moens and Steedman (1988). This state is directly related to (an atemporal version of) Dowty's (1979) BECOME-operator. In (12) we provide McIntyre's (2006) (informal) reformulation in event semantics terms.

(12)   BECOME *in event semantic terms (McIntyre, 2006)*
        $\lambda e \lambda s \lambda P$ BECOME$[P(s)](e)$
        'e is an event of coming-into-existence of a situation s with property P, where 'coming-into-existence' is a conceptualised entry / arrival of s in the domain of existing things'

In the following, we will focus on accomplishments in particular, since these are most relevant for the issues discussed in this paper. According to Dowty, all accomplishments have the logical structure $[\phi$ CAUSE $\psi]$ where ϕ in most cases contains an activity predicate and ψ is a BECOME sentence. The underlying activity (ϕ) can be quite general, which is the case with lexical accomplishments such as *kill* (13).

(13)   John kills Bill.   *(Dowty, 1979, 91)*
        $[[$*John does something*$]$ CAUSE $[$BECOME $\neg[$*Bill is alive*$]]]$

It can also be quite specific, especially with accomplishments that are syntactically created. Syntactically created accomplishments are generally assumed to involve some kind of secondary resultative predication.

Among the constructions that have been analysed in terms of secondary resultative predication are those involving verbal prefixes (e.g. German, Slavic) or verbal particles in, for instance, English (14-a), resultative adjectives (14-b), and (some) directional PPs (14-c).[6]

(14)   *Secondary (resultative) predicates*
        a.   Boban took off his hat.
        b.   Mai hammered the metal flat.
        c.   Kriszta and Maaike danced into the house.

Note that we are not necessarily concerned here with telic events but rather with complex event structures that rely on some form of the BECOME operator.[7]

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[6]There is some debate in the literature as to whether directional PPs should be treated on a par with other secondary resultative predicates or rather as mere (e.g. Davidsonian) event modifiers (see Gehrke, in progress, for discussion).

[7]In general, we follow Rothstein (2004) in separating a theory of event types and the creation of such types at the VP level, from the effect that the quantificational properties of the internal argument DP can have on the interpretation of the VP as bounded or unbounded.

For example, Dowty (1979) provides the following semantic representation of a syntactically created accomplishment:

(15)   He sweeps the floor clean.   *(Dowty, 1979, 93)*
         [[*He sweeps the floor*] CAUSE [BECOME [*the floor is clean*]]]

Here, *the floor* undergoes two predications, first the verbal predication (the floor is being swept) and the result state predication (the floor is clean). Both predications are connected by the predicates CAUSE and BECOME, namely the sweeping of the floor causes the floor to become clean.

With resultative secondary predicates, the main (verbal) and the secondary predicate form a complex predicate (at least from a semantic point of view). It is generally the internal argument of the verbal predicate that undergoes the secondary predication.[8] There are different approaches in the literature as to how the two predicates in syntactically created accomplishments are combined semantically to form one complex predicate and refer to a single event. Something extra is needed to make this link such as von Stechow's (1995) Principle (R) adding a CAUSE BECOME component that glues the two predications together, Doetjes' (1997) inchoative auxiliary mediating between the two predications, Rothstein's (2004) accomplishment type shifting operation, or Snyder's (2005) Rule C. For the purpose of this paper, it is not relevant which one we choose so we will leave it open (see also Gehrke, in progress, for discussion).

Our proposal for passivisation, then, is that this formation necessarily involves the zooming in on a consequent state subevent, which is the result of a transition associated with the BECOME component. Syntactically, the BECOME component is associated with the lower VP shell (VP$_2$), whereas the CAUSE component correlates with VP$_1$. The prediction of our proposal is that only with event structures that contain a BECOME component, represented by means of a lower VP shell, passivisation is possible. Supporting evidence that this is the case will be provided in section 4.

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, allow us to make reference to that work and provide a formal characterisation of many aspects of passivisation left aside here. Collins' account of the status of short passives and the PRO nature of the external

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[8]Secondary predication has been analysed as small clause structures (e.g. Stowell, 1981; Kayne, 1985; den Dikken, 1995; von Stechow, 1995; Doetjes, 1997) or in terms of complex predicate formation in syntax (e.g. Williams, 1980; Baker, 1988; Neeleman, 1994; Zeller, 2001). This paper will not commit itself to either position but rather tries to remain agnostic in this respect by employing a VP shell account.

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 *by* as the head of VoiceP which is responsible for assigning case to the external argument.

The following section provides empirical evidence for our proposal.

4 Empirical evidence

Having outlined the main ideas underlying our approach to passivisation, we now move on to the empirical evidence in favour of the complex structure involving BECOME and the interpretation associated with consequent states.

4.1 Consequent states in passive constructions

An important prediction that our analysis of passive formation in terms of the obligatory movement of a consequent state subevent (the lower VP shell) makes is that only those predicates which involve a BECOME component (verbal or complex) should allow passivisation. Hence, all predicates with some kind of resultative semantics should allow passivisation. This is straightforward in examples involving secondary resultative predication, as those provided by Collins (2005) and others (16), (17).

(16)　a.　The argument was summed up by the coach.　　*(= (3), Collins 2005)*
　　　　　∗The argument was summed by the coach up.
　　　b.　Jutta was spoken to by Eric.　　　　　　　　　　　*(= (4))*
　　　　　∗Jutta was spoken by Eric to.

(17)　a.　The table was wiped clean by John.　　　　*(from Postal 2004)*
　　　　　??The table was wiped by John clean.
　　　b.　The metal was hammered flat by John.
　　　　　??The metal was hammered by John flat.

Under our account, the lower VP shell in these examples, which represents the consequent state, moves obligatorily taking along the particle in verb-particle constructions (16-a), *to*-phrases in ditransitives (16-b), and resultatives (17). These elements are part of the lower VP shell because they relate to the BECOME event (either they are in complement to V_2 or they are directly inserted in V_2), and there is no way of moving VP_2 over VP_1 without moving the particle, the *to*-phrase, or the resultative along with it. This is why the *by*-phrase cannot intervene between the verb and the secondary predicate in the passive sentences.

Postal (2004), among others, shows that not all transitive verbs can form passives. The analysis proposed allows us to make important predictions with respect

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to which transitive predicates can form passives and which ones cannot. Under our proposal, it is predicted that unless a secondary predicate is supplied syntactically, only those transitive verbs that are associated with an accomplishment or achievement event structure (involving BECOME) should be able to form passives. This prediction is borne out when we compare the examples in (18), which are generally assumed to be accomplishment structures, with those in (19).[9]

(18)   *Transitive transition structures allow passives*
   a.   The lion killed the antilope.
        The antilope was killed (by the lion).
   b.   He put the card on the table.
        The card was put on the table (by him).

(19)   *Transitive verbs associated with simple event structures do not allow passives*
   a.   This laptop weighed two kilos.
        *Two kilos were weighed (by this laptop).
   b.   This chair cost 50 euro.
        *50 euro were costed (by this chair).

It is commonly assumed that transitive verbs like the ones in (19) are not associated with an event structure containing a transition into a state. Hence, our approach correctly predicts that passive formation is not possible with these verbs.

4.2   Passives of existential constructions

Recall from example (7) in section 2 that the behaviour of passives in the presence of *there*-expletives poses a problem for Collins' (2005) smuggling approach. The data, however, support our proposal, which shifts the perspective from argument structure to event structure (20).[10]

(20)   a.   There was a Swabian killed.
       b.   *There was killed a Swabian.

Given a traditional analysis of passives, it is not clear why the internal argument has to appear in preverbal position, whereas the postverbal position is ungrammatical. If we assume instead that in passive constructions VP_2 moves to some position above VP_1, dragging along the internal argument, the word order in *there*-passives is accounted for as follows.

Our proposal assumes that regular passives involve two independent operations. First, the lower VP shell moves to Spec VoiceP to form a basis for the event time, and second, a DP moves to Spec TP to satisfy the EPP. In *there*-constructions (both

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[9]See Postal (2004) for more equivalent examples.
[10]Thanks to Jutta Hartmann for pointing these facts out to us.

active and passive), this second movement does not take place but an expletive is inserted instead to satisfy the EPP. However, the first movement of VP$_2$ still takes place in passive sentences since it is completely independent of the DP-movement to Spec TP.

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 movement of VP$_2$) will be attracted. If EPP is satisfied by an expletive we obtain (7).

As noted in the beginning, it is not clear how Collins (2005) can account for these data since under his approach the participle moves in order to smuggle the internal argument to get it closer to Spec DP than the external argument. So in that sense, his approach is not much different from traditional accounts where the perspective lies on the DP which in the end has to move to Spec TP. However, if there is no subsequent movement of a DP to Spec TP the movement of the participle should also not take place in Collins' approach. This would predict the word order with a *by*-phrase in (21).

(21)   *There was by the police a Swabian killed.

We take the ungrammaticality of this example as additional evidence for our account where movement of VP$_2$ in passive constructions takes place for reasons independent of the need to satisfy the EPP.

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 (22).

(22)   a. Il a   été tué   un Souabe.
              it has been killed a   Swabian
              'There was a Swabian killed.'
         b. *Il a   été un Souabe tué.
              it has been a   Swabian killed

The present analysis can be extended to cover these facts by the natural assumption that also in this case, as is standard for verb movement in active sentences, French participles raise higher than English ones. In fact, the French passive participle possibly raises higher than the active participle. The past participle used in French perfect tenses can be shown to appear quite low in the inflectional field, which contrasts directly with Italian, for instance (23).

(23) *French active participle is lower than Italian one*

    a.   Tanya a   (tout) compris   (*tout).
       Tanya has (all)   understood (*all)
       'Tanya has understood everything.'   Fʀᴇɴᴄʜ

    b.   Andrea ha (*tutto) capito   (tutto).
       Andrea has (*all)   understood (all)
       'Andrea has understood everything.'   Iᴛᴀʟɪᴀɴ

In French, the past participle obligatorily follows floated quantifiers and other adverbial material (23-a), whereas in Italian it is the other way around (23-b). In addition, past participle agreement is not required with a clitic left dislocated object (24-a), whereas in passives, the agreement is obligatory (24-b) (examples from Guasti and Rizzi, 2002).

(24) *French active participle is lower than passive participle*

    a.   La   voiture, il l'a   mise / mis   dans le garage.
       the.Fᴇᴍ car,   he it.Fᴇᴍ-has put-Fᴇᴍ put-ᴍᴀsᴄ in   the garage
       'What concerns the car, he put it into the garage.'

    b.   La   voiture a   été mise / *mis   dans le garage.
       the.Fᴇᴍ car   has been put-Fᴇᴍ put-*ᴍᴀsᴄ in   the garage
       'The car was put into the garage.'

We take the obligatory presence of passive participle agreement in French to explain the word order difference between English and French. In French, the passive participle has to raise higher than in English, at least as high as AgrOP to check agreement and this explains the word order difference.

    Independently of the position of the participle, the crucial facts concerning the relative position of *by*-phrases, which cannot intervene between the verb and the DP, still remain the same (25).

    a.   *Il a   été tué   par la police un Souabe.
         it has been killed by the police a   Swabian

    b.   Il a   été tué   un Souabe par la police.
         it has been killed a   Swabian by the police
         'There was a Swabian killed by the police.'

4.3   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 (25), whereas both word orders are grammatical in the active counterparts (26).

(25) a. The boys were both given a good talking to.
      b. *The boys were given both a good talking to.

(26) a. Ad gave the boys both a good talking to.
      b. Ad gave both the boys a good talking to.

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

   However, if there is additional movement of the consequent state (VP$_2$), independent of any DP-movement to satisfy the EPP, the word order is straightforwardly accounted for as follows. The floating Q moves together with the internal argument in Spec VP$_2$ and remains stranded after the movement of the internal argument to Spec TP.[11]

4.4   Passives involving states

A potential problem for our account is that a number of states can still form passives. These are generally considered not to involve BECOME, since they consist of only one sub-event, namely a state (or alternatively they have been considered not to be eventive at all). This is the case with stative predicates like *know, surround, own, believe*, among others (27).

(27) *States that passivise*
      a. The house is owned / surrounded by the army.
      b. The answer / myth is known / believed by the pupils.
      c. Adriana is loved (by Luigi).

The availability of passivisation, however, is not a common property of stative predicates in general. The difference between predicates that are otherwise similar in their stative characteristics opens up a possible solution to this problem. Belletti and Rizzi (1988), for example, show that there are three kinds of psych-verbs, which are generally considered stative verbs, namely the *fear*-type (*temere*), the *worry*-type (*preoccupare*) and the *appeal*-type (*piacere*). Only *fear*-verbs can undergo verbal passivisation (28-a). *Worry*-verbs, on the other hand, can only derive adjectival passives, whereas *appeal*-verbs cannot form passives at all (28-b).

(28) *Different kinds of psych-verbs (examples from Reinhart, 2002)*
      a. The news worried / surprised / excited Max.
          Max was worried / surprised /excited (by the news).
      b. The solution appeals to me / escapes me.
          *I am appealed / escaped (by the solution).

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[11]Thanks to Ad Neeleman for pointing out these facts to us.

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) in the sense that only the former can have an inchoative meaning of the state denoted by the verb. 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 do not lend themselves to 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 re-interpreted as a consequent state, a state having come into existence, and this state is predicated over the internal argument. We propose that this reading is derived by means of some kind of type shift from states to achievements, which adds a BECOME predication with the interpretation defined in (12). As a consequence, there is a secondary predication over the internal argument, represented by a lower VP shell with the internal argument in its specifier. Adding BECOME to an otherwise structurally simple state allows this predicate to passivise. A semantic restriction on the possibility to add BECOME is that the state has to be interpretable as a consequent state, otherwise the addition of BECOME is not possible. 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 by BECOME and as a result cannot form passives.

Similar cases of type shift operations are discussed in the literature. For example, de Swart (1998) argues for a coercion operator in e.g. French, in case stative predicates are combined with the *passé simple*, whose input cannot be a state or a process (activity) but has to be an 'event' (subsuming what we have labeled accomplishment or achievement) by definition. A semantic effect of this type shift is that the state is interpreted as an inchoative state, i.e. a transition into a state. Following upon de Swart's analysis of this type shift as involving covert aspectual operators, Travis (in preparation) proposes to represent these operators in the syntax by means of a VP shell account.

Furthermore, it is often assumed that accomplishments differ from achievements in their ability to derive progressives (Vendler, 1967, among many others). The fact that there are nevertheless many cases where achievements actually form progressives (29), in turn, has been taken as an argument for collapsing both accomplishments and achievements into one group (e.g. Bach, 1981; Verkuyl, 1993).

(29)   *Progressive achievements*
        Jonathan was reaching the summit.

Rothstein (2004), however, makes a point for maintaining the distinction between achievements (which merely contain BECOME) and accomplishments (which contain DO, CAUSE and BECOME under Dowty's system) by discussing semantic pecularities that clearly distinguish progressive achievements from progressive accomplishments.

As a result, she assumes that in order for an achievement to combine with the progressive, some kind of type shift has to take place that shifts the achievement into an accomplishment by adding an activity (associated with Dowty's DO predicate), which is interpreted as an activity that can be the preparatory process of e.g. reaching a summit. Again, this addition is semantically constrained in the sense that it has to be possible to construe some appropriate activity.

In this spirit, we assume that there is a more general mechanism to add subevents to the event structure in order to enable certain operations such as passives (adding BECOME to states) or progressives (adding DO to achievements), and that this mechanism is subject to strict (semantic) constraints. The precise implementation of this idea has to be left for future research.

4.5   Passivisation in the DP domain

Additional evidence that a more complex structure (i.e. one containing a BECOME predicate) needs to be provided in the syntax for these kinds of predicates comes from the restricted availability of passivisation in the DP domain. Relevant examples are given in (30).

(30)   *Restricted passivisation in the DP domain*
    a.   Giorgos feared Roberta.
    b.   Roberta was feared by Giorgos.
    c.   Giorgos' fear of Roberta
    d. *Roberta's fear by Giorgos
    e.   the enemy's destruction of the city
    f.   the city's destruction by the enemy

The crucial difference between the nominal in (30-d) and (30-f) is that only the latter is lexically specified with a complex event semantics which crucially involves some sort of BECOME predication (similar to *kill*). For pure stative elements like *fear*, however, the only possible way to introduce this semantics is the formation of a complex predicate in the syntactic structure via merge of additional verbal structure with the nominal head. However, we know independently that nominals do not allow this option. As (31) shows, nominals are banned from taking SC as complements, a possibility which is nevertheless granted to verbal heads.[12]

(31)   a.   I consider [Sharon a good writer].
     b. *My consideration [Sharon a good writer].

This asymmetry between Ns and Vs is only one example from a set of constructions and has been associated with verbs having a tighter (selectional) link with their

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[12]On this point see Haegeman and Guéron (1999).

complements. Nominal heads are not able to assign Case to a DP in the Spec of their complement, nor to incorporate the complement's head, as illustrated by (32).

(32)   a.   I consider [Sharon to be a good writer].
        b.   *My consideration (of) [Sharon to be a good writer].

(32-b) shows that a nominal head is not able to assign case to a DP in the Spec of its complement. The inability of nominals to combine with particles (33) supports the assumption that a complex nominal with the same properties of complex verbs is not a grammatical option in English.

(33)   a.   Hamida gave the book away.
        b.   Hamida gave away the book.
        c.   *the gift away of the book
        d.   *the gift of the book away

Given the impossibility for nominals to combine with a SC, which is in many ways similar to a lower VP shell, we take it that the only option available for them to undergo nominal passivisation is to be endowed with a complex eventive semantics already in the lexicon. The need for stative nominals to combine with a BECOME operator can only be satisfied via a categorical change, their only option is to be projected as verbal elements. This solution is maximally simple in supporting our assumptions about stative predicates and in explaining the asymmetric behaviour of nominals with respect to passivisation.

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 *by* in passives, Collins (2005) proposes that PRO is the external argument in short passives. Baker et al. (1989) already attempt to define the external argument in short passives as being of the same kind as PRO. However, commenting on data like (34), they notice that while PRO can relate to the 1st person in infinitives, silent arguments in passives cannot.

(34)   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 can 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 VP_2 movement to Voice, this option is not available since all the features in TP are checked by the internal argument that intervenes between PRO in VP_1 (vP in Baker et al.) and the functional field.

In sum, there is ample empirical data to support an approach to passive formation that involves promoting a consequent state subevent. In the next section, we discuss evidence in favour of our proposal from the comprehension patterns in agrammatic Broca's aphasics.

4.7 Agrammatic Broca's aphasia

In this section, we provide additional psycholinguistic evidence in support of our analysis of passives. Agrammatic Broca's aphasics have been reported to have particular troubles in comprehending sentences in which the 'canonical order' of thematic roles has been inverted. Deficitarian comprehension of passive sentences in this population is a prototypical case at hand which, among other syntactic structures, has been widely studied and important discussion have been raised on this topic at the intersection between neurolinguistic data and theoretical syntax (see, for instance, Grodzinsky, 1990, ch. 4). We believe that our account of passive formation combined with the approach to this deficitarian comprehension pattern proposed in Grillo (2005, forthcoming, in progress) opens new intriguing perspectives on the interpretation of these facts.

4.7.1 Comprehension patterns and Relativised Minimality

A turning point in the study of Broca's aphasia came about with the discovery in the mid seventies that, contrary to what was generally assumed at the time, their linguistic deficit is not restricted to production (e.g. the prototypical *telegraphic/elliptic speech* characterised by omission and substitution of functional material) but extends to comprehension. In particular they have a deficit in the ability to comprehend movement derived sentences displaying a *non-canonical* order of thematic roles (Caramazza and Zurif, 1976) (for an overview of these and other issues connected to agrammatic aphasia see Zurif and Swinney, 1994; Kolk, 1998; Grodzinsky, 2000; Avrutin, 2001, among many others). A summary of some of the crucial comprehension asymmetries is given in Table 1.[13]

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[13]Table 1 should be read as a comparison between two structures at a time. In each row a comparison is made between two structures, the crucial difference between which is that only the structures in the right column involve movement of a DP over an intervening DP. Note that the hypothesis developed in Grillo (2005, forthcoming) is based on the assumption that a processing

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

Table 1: Agrammatic aphasia comprehension patterns. Grodzinsky (2000)

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 probe.

Grillo takes some recent developments of the Relativised Minimality (RM) approach to locality as a starting point (Rizzi, 1990, 2004b; Starke, 2001). A formal definition of RM is given in (35) (from Rizzi, 2004a).

(35)   MINIMAL CONFIGURATION: ...X ...Z ...Y ...
        Y is in a Minimal Configuration (MC) with X iff there is no Z such that
    i.   Z is of the same structural type as X, and
    ii.   Z intervenes between X and Y.

Intervention in (35-ii), is defined in terms of c-command. The exact characterisation of 'sameness' in (35-i) has been the object of debate and modifications since the first discussion in Rizzi (1990).

The definition of 'same structural type' we adopt is taken from Rizzi (2004a). Rizzi's definition of 'sameness' is based on the empirical observation that only features belonging to the same class, in the sense defined below, block each other. Different classes of features are identified on the basis of their intrinsic properties and their distribution by taking as a point of departure the hierarchy of positions in the syntactic tree as studied in detail in recent cartographic studies (see Rizzi, 1997, 2004b; Cinque, 1999, 2002; Belletti, 2004b, among others). Each of these positions, in fact, can be defined by its particular set of morphosyntactic features, and such features can be cataloged in virtue of the 'class' they belong to (36).

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problem is at the base of the comprehension deficit described here (see Avrutin, 2006, among others, on this issue). This assumption allows us to deal with variation in the degree of severity of the deficit which can significantly modify the performance of an agrammatic patient with respect to the pattern indicated in the table. Nevertheless, notice that, with the important exception of Druks and Marshall (1995) (on which, however, see Zurif, 1996), the inverse pattern was never found. Variation could be more complex to handle for 'knowledge based approaches', i.e. approaches that take part of the linguistic knowledge to be lost in agrammatism. In depth discussion of this and other important issues on agrammatic comprehension in relation to the present hypothesis can be found in Grillo (in progress).

(36)   a.   Argumental: person, gender, number, case
            b.   Quantificational: *wh-*, Neg, measure, focus . . .
            c.   Modifiers: evaluative, epistemic, Neg, frequentative, celerative, measure, manner . . .
            d.   Topic

By virtue of this classification, we can define 'same structural type' as in (37).

(37)   'Same structural type' = Specifier licensed by features of the same class in (36).

Given the above formulation, we expect RM effects to be generated by intervening elements whose set of features belong to the same class, but not by feature sets that belong to a different class.[14]

4.7.2   Agrammatic Minimality

Grillo (2005, forthcoming, in progress) hypothesises that a (temporal or permanent) processing deficit can lead to an underspecification/impoverishment of the morphosyntactic feature sets normally associated with the elements in the syntactic tree. A slower than normal activation of the syntactic information associated with lexical items (Zurif et al., 1993; Piñango, 1999, among others), a slowed-down building up of this information into well formed syntactic constituents, or a faster than normal decay of syntactic representations (see Haarmann and Kolk, 1991; Kolk, 1995, 1998) can be at the base of this impoverishment. Grillo claims that features belonging to the Quantificational class, and more generally those related to the periphery of the clause *and* of the VP, are more likely to be compromised in this kind of scenario. Selective minimality effects can be expected to arise as a natural consequence of this underspecification. Given the structure in (38) in which every node is associated with a particular feature set, RM should permit the formation of a relation Q between X and Y. The presence of the element δ, say, a *wh*-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.

(38)   *Successful extraction*
$$\mathbf{X}(\alpha,\beta,\gamma,\delta)_{\text{ClassQ}} \ \ldots \ \underbrace{\mathbf{Z}(\alpha,\beta,\gamma)_{\text{ClassA}} \ \ldots \ \ \mathbf{Y}(\alpha,\beta,\gamma,\delta)}_{Q} \ {}_{\text{ClassQ}}$$

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[14]Note that the definition in (37) allows to avoid the excess of restriction on movement generated by the simple A/Ā-distinction (of the system developed in Rizzi, 1990) on the one hand, and the excessive freedom generated by the Minimal Link Condition (see Chomsky, 1995) on the other. See Rizzi (2004a) for extensive discussion of this point.

(39) *Minimality Effect*
$\mathbf{X}(\alpha,\beta,\gamma)_{\text{ClassA}}$ ... $\underbrace{\mathbf{Z}(\alpha,\beta,\gamma)_{\text{ClassA}} \; \cdots}_{*}$ $\mathbf{Y}(\alpha,\beta,\gamma)_{\text{ClassA}}$

Given an impoverished structure as that in (39), RM fails to see any relevant distinction between X and Z and therefore disallows a relation between X and Y.

A more concrete example will be helpful in clarifying the hypothesis. In (40) the *wh-* feature, 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 in the normal representation.

(40) *Normal representation*
$(D,N,\theta_2,\phi_{s,acc},wh)_{\text{ClassQ}}$ $(D,N,\theta_1,\phi_{s,nom})_{\text{ClassA}}$ $(D,N,\theta_2,\phi_{s,acc},wh)_{\text{ClassQ}}$
It is the boy$_i$ [who$_i$ [the girl]$_j$ [$\underbrace{\text{<the girl>}_j \text{ kissed } \text{<the boy>}_i}_{Q}$]]

In the agrammatic representation, on the other hand, the feature Q is absent (41).

(41) *Agrammatic representation*
$(D,N,\theta_?,\phi_{s,\dots})_{\text{ClassA}}$ $(D,N,\theta_?,\phi_{s,\dots})_{\text{ClassA}}$ $(D,N,\theta_2,\phi_{s,\dots})_{\text{ClassA}}$
It is the boy$_i$ [who$_i$ [the girl]$_j$ [$\underbrace{<\dots>_? \text{ kissed } <\dots>_?}_{*}$]]

The impoverishment of the set of features (and subsequent the change of class of the moved element from Quantificational to Argumental) makes it impossible for agrammatic patients to distinguish the moved element from the intervening subject and RM blocks chain formation. Given that the chain is not built, it becomes impossible to assign the correct *theta*-role to each argument. This in turn 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 1). In these structures, no DP intervenes between the moved constituent and its trace, hence no RM effects arise (42).

(42) *Subject clefts*
It is the boy$_i$ [who$_i$ [<the boy>$_i$ loved the girl]]

The same analysis can be extended to cover the other asymmetries in Table 1 (see Grillo, 2005, forthcoming, in progress, for further discussion).[15]

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[15]Grillo (in progress) extends the present explanation to comprehension difficulties in language development and discusses its more general application to the case of normal adult speakers in stressful situations. Both populations have often been compared to agrammatic Broca's aphasia

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 have troubles with activating (or maintaining active for long enough) the discourse-related feature that triggers movement of the consequent state due to a limitation of their processing capacities. This assumption is supported by the general difficulty of this population in dealing with discourse-related and quantificational features (see Avrutin, 2006), both in comprehension and production. Additional work is needed to identify exactly which features are more problematic. However, evidence from omission/substitution of Det or Tense by Broca's aphasics as well as their problems with embedding, *wh*-questions and other elements typically related to the CP field(on which see Friedmann and Grodzinsky, 1997) are open for a unified explanation which takes edge /peripheral material to be more problematic to compute.

Combining this assumption with our account of passivisation allows us to make the correct prediction that agrammatic comprehension of (eventive) passives with and without an overt *by*-phrase should be equally problematic whereas comprehension of unaccusatives and adjectival passives should not be (see Table 1 and Piñango, 1999; Grodzinsky, 2000, among many others). Under our proposal only eventive passives involve movement of a complex subevent (the lower VP shell) across another verbal projection, VP_2. In the standard situation grammaticality is ensured by the presence of the discourse-related feature that allows the system to distinguish between the two subevents (the two VP shells) thus avoiding minimality. If the activation of this feature is delayed or decays faster than normally, a minimality effect between the moved VP_2 and its trace arises.

As a final note we should add that passives involving psych-verbs have been shown to be more difficult for agrammatics to comprehend than those involving actional predicate (see Grodzinsky, 1995). We take this data to further support our analysis. As pointed out in section 4.4 passivisation of a psych-verb is an option available only through the construction of a complex event structure on top of a stative predicate. This step is necessary in order to generate a BECOME operator. We will assume that this additional requirement raises the overall complexity associated with the derivation of psych-verb passives with respect to their actional counterpart. This increment in processing complexity, then, is expected be observable in populations suffering from syntactic processing deficit.[16]

for the similarities in comprehension deficits (see Grodzinsky 1990, chapter 4, among others Avrutin 1999; Dick et al. 2001).

[16]As noted above, the present explanation can in principle be extended to child language, under the natural assumption that the child processing system is not fully developed. The data from psych-verbs are particularly interesting from this perspective. It is a fairly established characteristics of child language that actional passives are mastered much earlier than passives of non-actional/stative predicates (on passives in child language see Borer, 1989; Fox and Grodzinsky, 1998, among others). A proper discussion of these facts would lead us too far from the scope

Hence, the deficitarian comprehension patterns of agrammatic Broca aphasia patients support our account of passivisation as involving the movement of a verbal projection associated with a consequent state subevent to some projection right above the higher VP shell. In the final section of this paper, which has a more speculative character than the previous sections, we propose that the movement is driven by some quantificational or discourse feature in order to create a link between the VP (the atemporal event structure) and the TP/CP domain. This link is assumed to independently be needed also in active sentences.

5   Anchoring the event structure in the temporal domain

Roughly following Moens and Steedman (1988) who argue that the basic components that make up an event (the subevents in our terms) are not connected via temporal relations but rather by contingency (similar points are made in Rothstein, 2004; Ramchand, 2004), we assume that event structure itself is atemporal in nature in the sense that there are no times associated with any of the subevents.[17] As a consequence, there is no immediate link between the (atemporal) event and the temporal domain of the clause. In this section, we propose that the position VP_2 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 Asp (in the sense of Demirdache and Uribe-Etxebarria, 2000). As a result of this movement, the interpretation is that the event time falls within the consequent state.

The syntax and semantics of tenses and aspects are commonly thought of as involving some reference to points or intervals in time (Partee, 1984; Zagona, 1990; Stowell, 1996; Giorgi and Pianesi, 1997; Demirdache and 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 E to S with E before S with the past tense, E simultanous to S with the present tense, and E after S with the future tense. English complex tenses additionally express a relation between E and R, with E before R in perfect tenses and E simultaneous to R with the progressive.
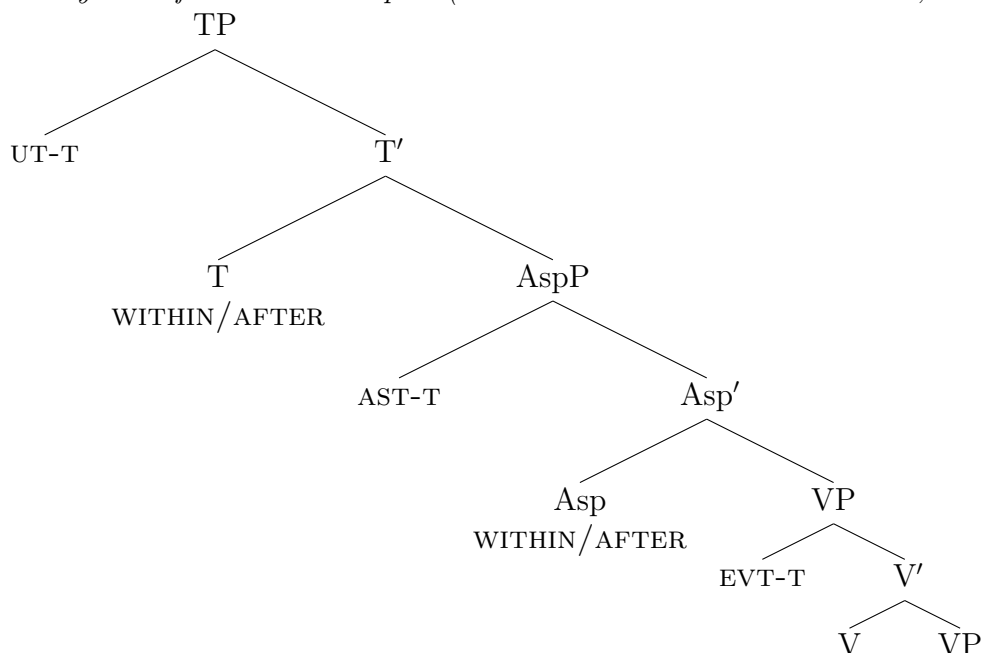
Klein's (1994) model is similar to Reichenbach's but it uses intervals instead of points labelled event time (EV-T), assertion time (AST-T), and utterance time (UTT-T). Demirdache and Uribe-Etxebarria (2000) use Klein's terminology to capture the

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of the present paper. It should be noted, however, that these asymmetries could be amenable to a natural explanation along the lines sketched above (see also Grillo, in progress, on this issue).

[17]Recently, Zwarts (2006) argues for the need of an atemporal account for properties of events like, for instance, telicity in terms of generalised paths.

syntax of tenses and aspects in the following way (43).

(43)   *The syntax of Tense and Aspect (Demirdache and Uribe-Etxebarria, 2000)*

```
                              TP
                          ╱        ╲
                      UT-T          T′
                                ╱        ╲
                              T            AspP
                        WITHIN/AFTER    ╱        ╲
                                    AST-T         Asp′
                                              ╱        ╲
                                           Asp           VP
                                     WITHIN/AFTER      ╱     ╲
                                                    EVT-T      V′
                                                            ╱    ╲
                                                          V       VP
```

In this framework, tenses and aspects are predicates that take temporal arguments (following Zagona, 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 vP 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 vP 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 and Uribe-Etxebarria's (2000) assertion time. Ramchand argues that the minimal denotation of Asp in the language she discusses in her paper, Russian, is the one given in (44).

(44) *Minimal denotation of Asp (Ramchand, 2004)*
       $[\![\text{Asp}]\!] = \lambda P\ \lambda t\ \exists e : [P(e) \text{ and } t \in \tau(e)]$

She relies on Krifka's (1998) temporal trace function τ, which is defined in Krifka as a function from E (the domain of events) into the extension of T (the domain of times) to map an event to its temporal trace (its 'run time'). According to Ramchand's analysis, in cases where there is no particular aspect head in Russian[18], t (or the assertion time) falls somewhere within the entire time the event takes, which is provided by the temporal trace function. The tree and the semantics of tense and aspect that Ramchand assumes are quite similar to those of Demirdache and Uribe-Etxebarria (2000). The crucial difference between the two proposals, however, is that the event time is non-existent in Ramchand's approach but is more or less replaced by Krifka's temporal trace function.

An issue that arises under Ramchand's proposal is that it still remains unclear which part of the complex event the temporal trace function actually picks out. Furthermore, under the assumption that there is a strict mapping between syntax and semantics (which is generally assumed by Ramchand), AspP problematically seems to provide both the temporal trace function (or alternatively the event time in Demirdache and Uribe-Etxebarria, 2000) as well as the assertion time (t in Ramchand's approach).

To solve these problems, we propose to dissociate the introduction of the assertion time from some counterpart of Krifka's temporal trace function or the precise conditions on how the event time is related to the complex event. In addition, we view the event time to be necessary, since Asp needs a temporal internal argument.

We propose that the event time is provided by Voice at the point of transition from the atemporal domain of the event structure to the temporal one, i.e. from one phase to the other. Voice is responsible for grounding the event time in a particular way. In the case of passives the event time is anchored within the consequent state subevent, because VP_2, which is semantically associated with the transition into a consequent state, moves to Spec VoiceP where it is assigned temporal properties.

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

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[18]Russian productively expresses grammatical imperfective and perfective aspect by verbal prefixes and suffixes (see Gehrke, forthcoming, for discussion). We assume, however, that this approach can also be carried over to other languages, also those that do not have a morphological category Aspect.

In (45), we summarise the ingredients that we view necessary to account for the way the atemporal event structure is linked to the temporal domain.

(45)   *Ingredients for creating the temporal link with events*
    a.   Events can be complex and consist of (atemporal) subevents.
    b.   Aspect and Tense heads project argument structure with the relevant arguments utterance time[19], assertion time, event time (Demirdache and Uribe-Etxebarria, 2000).
    c.   Voice introduces the event time.
    d.   Voice provides an additional landing site for the part of the event structure that the event time is related to.

The precise implementation, especially the compositional account, still needs to be worked out but the general idea should be clear. We assume that these mechanisms are also needed for active sentences. We could think, then, that in the default case, nothing moves to the position above VP_1 and the event time is assigned locally, or alternatively, the entire VP moves. In other cases, e.g. where the event time has to be placed within a certain subevent, the projection associated with this subevent moves up.For example, we could think of the progressive as focusing on the process of an event rather than on its initial or final state. We will leave this for future research.

What is crucial for our approach to passives, then, is the point in (45-d), i.e. the additional landing site for the part of the event structure that the event time is related to. In this way, Voice is reminiscent of the low focal projection proposed by Belletti (2004a). This could also be thought of in terms of some quantificational phrase such as Borer (2005)'s 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 or that part of the event the focus lies on has to move up. In the case of passives, the consequent state moves up to serve as a basis for the event time.

6   Conclusion

This paper 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 accounts for several syntactic and semantic properties of the passive construction, some of which remained unexplained under previous proposals. The general idea is implemented through movement of a consequent state subevent to a discourse-

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[19]Or in any case, some reference time which in many cases is the utterance time (see Stowell, 1996, for discussion).

related position at the edge of the VP. 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 secondary resultative 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, which were borne out, and unify the treatment of some of the most typical deficitarian comprehension patterns in this syndrome.

In a more speculative vein, we proposed that the position the lower VP shell moves to is independently needed 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 (the consequent state subevent in the case of passives), associated with the VP, and to enrich its semantics by introducing temporality, thus making it available to the next phase, the temporal (and eventually to the discourse) domain.

Let us conclude with another speculation. We said in the beginning of section 2 that one problem of particular NP approaches to passivisation is that they draw a formal distinction between the past participle used in active sentences (in perfect tenses) and that in passives, although from a morphological and semantic point of view this distinction is not to be expected. Under our approach, both participles can in principle be treated as the same, since reference to a consequent state is often also used in the analysis of perfect tenses. In discourse theories like Kamp and Reyle (1993), for instance, perfect tenses are generally analysed in terms of a state that abuts an event, which is similar to the idea of a consequent state coming into existence. We will leave this for future research.

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