The Impact of Nominalization on Passive, *-able* and Middle: Burzio's Generalization and Feature-Movement in the Lexicon[*]

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1.　Introduction

　　Structure and Movement operations have become prominent features of lexical analysis (see Vergnaud (1973), Roeper and Siegel (1978), Spencer (1991), Lieber (1992), Halle and Marantz (1993), Hale and Keyser (1993)). But how far does the identity between syntax and lexical derivations go? The next logical question to ask is:

(1)　　Do lexical rules obey syntactic constraints?

We argue that they do and in that sense syntax and lexical rules coincide completely.

　　We shall show that Burzio's (1986) constraint is unmistakably present in the derivation of *-able* structures. We propose a syntactic account of this effect of passive in nominals arguing for a particular view of passive as literal dethematization of the subject position. We then proceed to give a more refined presentation of middles. Finally we argue that within the Minimalist Program our argument leads naturally toward Feature-movement in the lexicon. An interesting question then arises: is the movement a kind of category movement or can we capture the data with movement of a thematic role represented as a Formal Feature?

　　We believe that it is an important discipline, particularly when theories are abstract, to provide a data point at every step of the derivation. We shall therefore demonstrate that 1) a VP must be projected within the lexicon, 2) *-able* is a lexical affix with passive properties, 3) the passive properties entail a dethematized subject position and 4) the empty Possessor in a nominalization carries an implicit object, which has been moved by the same rule that moves the object to subject position passives.

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2.   VP projects within lexical derivations

Fu, Roeper and Borer (1998) provide support from ellipsis and adverbial interpretation for the argument that lexical derivations have a VP within them. First, we see that *do so*, the VP pronoun, in a nominalized verb (*resignation* in (2a)) contrasts with a Asimple event@ noun (*trip* in (2b)).[1]

(2)   a.   John's resignation suddenly and Bill's doing so too
         b.   *John's trip and Bill's doing so too
                                                      (Fu, Roeper and Borer 1998)

Second, we find that VP-nominals allow adverbs, (3a) and (3c), but others do not, (3b) and (3d).

(3)   a.   John's departure quickly
         b.   *John's trip quickly
         c.   John's explanation of the facts to the tenants immediately
         d.   *John's version of the problem immediately

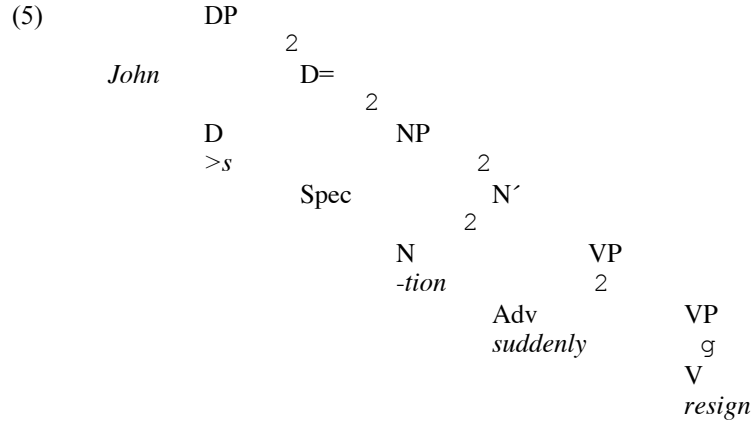Finally, we find a sharp contrast where the adjective/adverb alternatives are present, (4).

(4)   a.   the everyday massacre
         b.   the massacre everyday

Prenominally *everyday* is an adjective with the reading of >normal, usual= in (4a), but in (4b) post-nominal *everyday* modifies the event nominal like an adverb and has its literal meaning of >every day=.

In the Appendix we have included further data from Fu et al. that suggest the VP character of nominalizations. These facts can all be analyzed as the result of a verb-raising operation from a full-fledged VP below to a higher nominalizing marker, as illustrated in (5).

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[1] While (2a) is ? for some speakers, (2b) is * for all speakers.

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(5)   DP
                    2
    John   D=
                          2
        D   NP
        >s   2
                Spec   N´
                                    2
                    N   VP
                    -tion   2
                            Adv   VP
                            suddenly   g
                                             V
                                             resign

　　　　While one can imagine Alexical versions@ of this operation, see Ackema and Schoorlemmer (1995) (see also Reinhart (1996)), we believe that a separate set of lexical primitives is unnecessary in light of these facts (see also section 9 below). But a more important point is involved: if syntactic constraints apply in the lexicon, then they should be represented in a single transparent system that operates within lexical as well as syntactic derivations.

3.　　　Burzio's generalization in morphology

　　　　Burzio (1986) argued that there is an interesting cross-modular generalization: whenever the object is no longer case-marked, the subject is dethematized, or, in effect, no longer allows the projection of the Agent argument. The operations involve case, movement, and thematic roles in the following mechanism, (6).

(6)　　　- Case-absorption by passive verb forces movement of object to receive case. Theme becomes subject.
　　　　- Subject position loses Agent projection, which creates a landing site for the object.
　　　　- Agent is free to re-appear in an adjunct PP-projection.

The set of data in (7) demonstrates that the suffix *-able* is like passive *-ed* with respect to subject dethematization (see Di Sciullo (1995), Roeper (1993)).

(7)　　a.　　　　The child learns the grammar.
　　　　b.　　　　The grammar is learnable.
　　　　b=.　　　The grammar is learnt.
　　　　c.　　*The child is learnable.
　　　　c=.　　*The child is learnt.

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d.   The grammar is learnable by the child.
d=.   The grammar is learnt by the child.

The properties of passive in fact percolate higher up to a nominalization of the *-able* adjective with *-ity*. Compare the data in (8). Note that the Possessor position - which we take to be the subject of the nominal - can only host the Theme in (8b), but, crucially, can no longer host the Agent in (8d).

(8)   a.   the learnability of grammar
        b.   the grammar's learnability
        c.   the learnability of grammar by children
        d.   *children's learnability of grammar

Examples with the trio *resist - irresistible - irresistibility* demonstrate the same point in (9) and (10). Only the Theme can appear in the Possessor position of the nominal in (10a) which has a similar meaning as the passive in (9c). The Agent, however, cannot appear there; (10b) does not have the active reading of (9a).

(9)   a.   We cannot resist John.
        b.   John is irresistible.
        c.   John cannot be resisted.

(10)   a.   John's irresistibility
        b.   *our irresistibility of John

Nominalization of passive *-ed* forms with *-ness* similarly keeps the passive pattern. Consider (11) and (12). The Agent cannot appear in the Possessor position in (11d) and (12d).

(11)   a.   The team excluded John.
        b.   John was excluded by the team.
        c.   John's excludedness (by the team)
        d.   *the team's excludedness of John

(12)   a.   Everybody loves him.
        b.   He is beloved by everyone.
        c.   his belovedness (by everyone)
        d.   *everyone's belovedness of him

We conclude that the passive pattern of *-ed* extends to *-able*, and moreover that the passive properties of *-ed* and *-able* are inherited by *-ness* and *-ity*. The fact that not only lexical properties -thematic arguments- but also syntactic ones -argument projection effects- are preserved across category-changing affixation is an important feature of the lexicon in its own right. Although it is not our primary focus here, it raises the question of whether and

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where barriers exist in the lexicon for the percolation of argument structure. We simply observe again that the nominalization affixes are transparent to the thematic and argument projection properties of the *-able* and *-ed* affixes.

To strengthen our argument, consider how one might claim that *-able* is an adjective with thematic properties that are *not* parallel to passives. First, adjectives and non-deverbal nouns can take arguments, so, one might argue, the argument projection pattern of deverbal *-able* and *-able* plus *-ity* derivations follows from some general properties of these other nouns and adjectives. Consider some *-ity* and *-ness* nominals that are not derived from verbs: their Theme can appear in an *of*-phrase in (13) or in the Possessor position in (14).

(13)   a.   the ability of John to learn
        b.   the humility of John
        c.   the homelessness of John
        d.   the tiredness of John

(14)   a.   John's ability to learn
        b.   John's humility
        c.   John's homelessness
        d.   John's tiredness

Compare these with an *-ity* nominal which is derived from a verb, *learnability*: the Agent cannot appear in the Possessor position in (15b).

(15)   a.   John's ability to learn French
        b.   *John's learnability of French

This indicates that the Possessor of *ability* can take the argument *John*, but the same word (having essentially the same semantic content) cannot be the Possessor, or, as we argue, the subject, when an underlying verb is involved as with *learnability*.

In the same vein, the examples in (16) show the same restriction on the Possessor position of *decipherability* in (16a) and lack of restriction for *ability* in (16c).

(16)   a.   *the machine's decipherability of the secret code
        b.   the decipherability of the secret code by the machine
        c.   the machine's ability to decipher the secret code

Or compare a nominalization with *-ance* such as *inheritance* in (17c) with an *-able* plus *-ity* nominal like *heritability* (17a).

(17) a. *orphans' heritability of IQ
  b. the heritability of IQ by orphans
  c. the orphans' inheritance of IQ

The Agent is blocked in the Possessor of *-ity* nominals precisely when an underlying verb occurs. For other *-ity* nominals there are no restrictions on the thematic role that can appear in subject position, but as we show in the next section there are scope restrictions on interpretation.

4. The Possessor position

Can we point to the Possessor position as the locus of this restriction on interpretation? Roeper (1987) (also Chomsky (1986)) argues that control properties indicate the presence of an Agent in the subject position of nominals. (18a) is analyzed as in (18b). The Theme argument cannot appear in the subject/Possessor position when there is a control clause, as (18c) shows. The controlling PRO Agent blocks this.

(18) a. the use of drugs to go to sleep
  b. the PRO_i use of drugs [to PRO_i go to sleep]
  c. *drug's use to go to sleep

Two arguments were advanced against this claim: 1) not the PRO Agent, but the whole clause is the subject (Williams (1994)), and 2) the nominalization denotes a result (Grimshaw (1990)). The first argument can work for the original cases like (19a), as (19b) demonstrates.

(19) a. the destruction of the city to prove a point
  b. The destruction of the city proved a point.

But the whole clause clearly cannot work for the case above, as the ungrammaticality of (20b) shows. Only Agents can fall asleep, not activities.

(20) a. the use of drugs to go to sleep
  b. *The use of drugs went to sleep.

While some predicates allow a sentential controller (*to prove a point*), all specific action verbs take an Agent and not a clause, (21).

(21) a. the use of a car to pull a trailer / pick up children / carry groceries / to go home
  b. *The use of a car pulled a trailer / picked up children / carried groceries / went home.

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Note that pro-arb subjects, which appear with *-ing* complements, will again allow a connection to sentential clauses, but not as controllers, (22).

(22)   the use of a car for picking up children

The subject of *picking up children* in (22) is pro-arb , i.e., >the car-user=s picking up children=. The Ause@ cannot function as the subject of picking up.

The second argument from Grimshaw (1990) and Williams (1994) claims that nominals with preposed objects are results and therefore have no implicit Agent which could function as a controller, as the ungrammaticality of (23) suggests.

(23)   a.   *the city's destruction to prove a point
          b.   *the rubble to prove a point

Here the claim is that a result, like an object such as *rubble* in (23b), cannot assume the role of Agent. If *destruction* were simply a result, then it would explain why it behaves equal to a word like *rubble*.

The view that the preposed object cases are results can be countered, however, by the fact that verbal adverbs can appear with preposed cases, as in (24), showing that they are event nominals, after all.

(24)   The city's destruction so quickly surprised us.

We can get a fairly sharp contrast if we construct a true contrast between action (the breaking of bones) and result (the broken bones) as in (25).

(25)   a.   the breaking of bones so quickly
          b.   *the broken bones so quickly

Only events, not results, allow adverbial modification. Therefore it cannot be a general result reading that is blocking control when the object is preposed, but, as argued originally by Roeper (1987), the fact that the object is occupying the subject position and therefore there is no room for a PRO Agent.

Therefore we conclude 1) that nominalizations continue to bear a relation to an underlying VP, 2) therefore they have an implicit Agent which, furthermore, is projected specifically into the empty possessor position, and 3) consequently can serve as a controller to a lower PRO. If the Possessor position is filled, then control is blocked. The effort to explain away the control relation by claiming that no VP and therefore no Agent is involved, fails, and the effort to explain the control cases as clausal control covers only a few examples. (Williams (1994) concedes that non-clausal agent control exists.)

If it is precisely the Possessor position which excludes Agents in deverbal *-ity* cases, like we claim, then closer positions - actual incorporation - should not show this restriction. This is exactly as predicted. The Agent (which is not limited to human agents, but the kind of Agent which can appear in a *by*-phrase) can incorporate in deverbal *-ity* nominals, (26).[3]

(26)   a.   Machine-decipherability of text has been questioned.
            b.   Computer-translatability of text has been questioned.
            c.   Human-computability of large numbers has been questioned.

Now let us compare Possessors to adjectives. It has been claimed that adjectives are free in how they modify a noun and likewise that Possessors can assume any relation (see Williams' (1981) R relation). We are not sure about how adjectives are associated with verbal arguments, but it is clear that Possessors disallow exactly the relation allowed by adjectives. While the Agent meaning can appear through an adjective, it still cannot appear in the Possessor position of *-ity*. Compare the examples in (27).

(27)   a.   human learnability of grammar
            b.   *the human's learnability of grammar

Why does the adjective allow the Agent readings? The answer is that it is a kind of modifier and not a kind of argument. The Possessor position, however, cannot receive the Agent argument of the verb with *-ity*, which is independent the simple Agent meaning of the adjective.

There is further evidence that adjectives are not arguments. Consider the examples in (28).

(28)   a.   Germany's invasion by France
            b.   the German invasion
            c.   *the German invasion by France

As an adjective in (28b), *German* is free and can mean either an invasion of Germany or by Germany, but in neither case is it an argument. As a Theme, the adjective can appear in the Possessor position, as in (29).

(29)   a.   France's German invasion was weaker than America's German invasion.
            b.   The Americans believed that the German invasion would require many troops and it did.

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[3] Note that compound incorporation shows other restrictions: the incorporated item must be head and cannot be a proper name (*John lover*), quantifier (*everybody-hater*) or phrase (*few that buyer*).

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When it is combined with an argument projection of the verb, then the Possessor is acceptable as a Theme as in (28a), but as an adjective it is excluded as an Agent in (28c) where the Agent meaning is possibly present, but not represented as an argument. We conclude that it really must be something about the Possessor position itself that blocks the Agent in the cases of *-able* plus *-ity* above.

Our proposal, once again, provides the answer: the Possessor position is the subject position and therefore can receive verbal arguments. Since *-able* operates as a passivizer, it entails the effects of Burzio's generalization, which is to literally dethematize the subject, which in turn means to disallow an Agent projection.

How do we implement dethematization? Consider again the two parts of Burzio's generalization in relation to the Possessor position. On the one hand, the subject/Possessor position is dethematized: it cannot host an Agent anymore (we will call this the [-Agent] feature). On the other hand, object case is absorbed and the object moves to subject/Possessor position (we will call this the [+Theme] feature). As for the first part of Burzio's generalization, in a passive, the subject position becomes [-Agent].
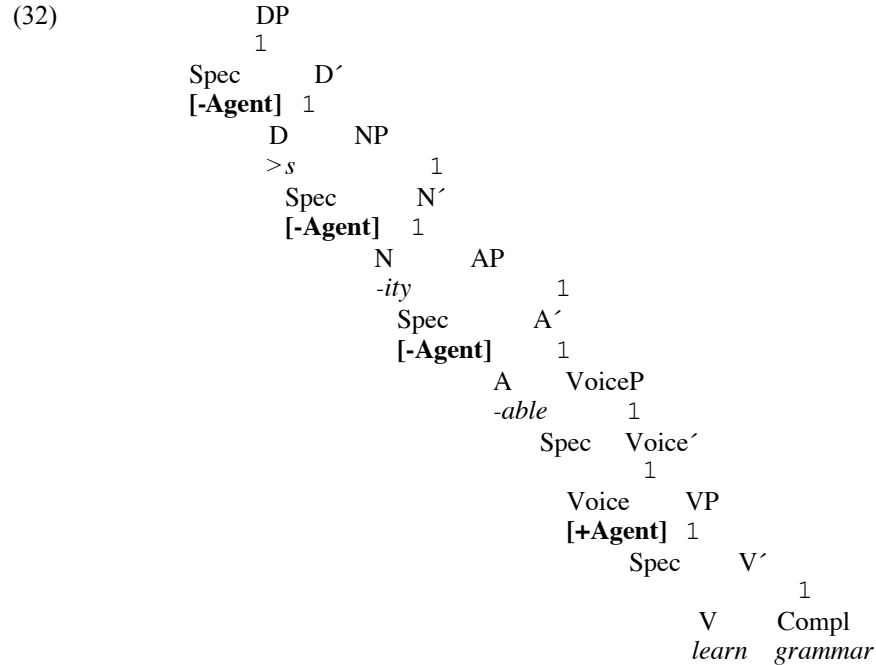
(30)   a.   John sings a song.
         b.   *John was sung.

In order to get this effect for Possessors and to state it in the same, configurational terms, we must add verbal structure to the nominalization. Minimally, the structure must contain VP, AP and NP as in (31).

(31)   [[[learn grammar]$_{VP}$ *-able*]$_{AP}$ *-ity*]$_{NP}$

We start with a VP [*learn grammar*] and then *learn* raises progressively through the tree. The AP projection carries the dethematization properties of *-able* and projects them onto the subject position of the DP. Notice that this is a new long-distance relation that needs to be expressed in structural ways. How do we allow the inheritance of subject properties? Let us say that the subject position is the Specifier of the head, and that argument projection properties are inherited to the top level. Therefore, the Specifier of DP is the subject position that is the result of systematic inheritance from the verb learn to *-able* to the NP *-ity* which then requires a further DP projection. The subject must project to the highest possible Specifier in the verbal/nominal projection line (which is like the verb which raises to the highest available verbal position in a functional projection line). This is illustrated in (32). (We assume a VoiceP projection on top of the VP for the introduction of the Agent argument, following Kratzer (1994), which is similar to Chomsky=s (1998) *v*P projection.)

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(32)

```
                    DP
                    1
          Spec        D´
          [-Agent]  1
                  D       NP
                  >s           1
                    Spec        N´
                    [-Agent]   1
                          N        AP
                          -ity           1
                             Spec        A´
                             [-Agent]      1
                                     A      VoiceP
                                    -able        1
                                         Spec   Voice´
                                                1
                                         Voice      VP
                                         [+Agent]  1
                                              Spec      V´
                                                          1
                                                   V      Compl
                                                  learn   grammar
```

Consider now the other part of Burzio=s generalization, the [+Theme] feature. Suppose one argued that *John* is the Theme of *home* in *the home of John*, parallel to *grammar* in *learn grammar*. Let us compare again deverbal and non-deverbal nominalizations, *learnability* and *homelessness*, (33).

(33)   a.   John=s homelessness
        b.   grammar=s learnability

Could one then argue that the verbal origin is unnecessary in generating *learnability* and put the structures for *homelessness* and *learnability* into the same format as in (34)?

(34)   a.   [[[the home of John] -less] -ness]
        b.   [[[learn grammar] -able] -ity]

Looking at the meanings carefully, however, reveals that if *John* is really the Theme of *home* in *John=s homelessness* we get the wrong reading. It would be >to be without John's home=. However, it means >John is homeless=. The structure is not (34a), but (35).

(35)   [[[John=s] homeless] -ness]

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Similarly, *John=s friendlessness* means that >John is without friends= and not >to be without friends of John= and *the dog=s houselessness* means that >the dog is houseless= and not >to be without the dog=s house=.

Where no verb is involved the Possessor must apply to the outer form (*homeless*) and not the inner noun (*home*), while for the deverbal nominal we must project from the inner verb (*learn*). The Theme of an underlying noun cannot move to the Possessor position. Instead the Possessor is generated in an external position and modifies the adjective (*homeless*). Our conclusion is that a Theme argument can move to Possessor position only if there is an underlying verb.

Taking our analysis a step further we propose that the passive operation of dethematization involves an invisible [+Theme] feature in the Specifier of DP such that it blocks an Agent. This leads to a prediction: the invisible Theme will block any other constituent. And indeed, all forms of adjunct Possessors are excluded just in the Specifier of DP for *-able* derivations, both temporal ones as in (36b) and locative ones as in (36c).

(36)   a.   the acceptability of nudity on East Coast beaches last year
        b.   *last year's acceptability of nudity
        c.   *East Coast beaches' acceptability of nudity

Where there is no (deverbal) derivational projection, we find that adjunct Possessors and, in fact, multiple Possessors are possible, (37).

(37)   a.   yesterday's teacher's strike
        b.   Pierre Cardin's men's clothing

We conclude that the implicit Theme blocks not only Agents, but inevitably any lexical form that cannot fulfill the role of Theme.[4]

In conclusion, we find reflections of both parts of Burzio's generalization in nominals, although there is non-parallelism with verbal passives with respect to case-assignment to which we turn next.

5.   Where to project the Agent? Burzio's generalization revisited

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[4] If our syntactic analysis of *-able* expressions is correct, then not only do we have a projection from a VP to the Specifier of DP, but we should expect VP modifiers to be acceptable for *-able*, just as they are for *-tion*. We find this to be the case. Consider (i).
(i)   The acceptability of drugs initially in Holland was later a matter of dispute. However the data is particularly subtle and often yields obscure results, such as in (ii).
(ii)   ??The learnability of grammar so quickly by children still mystifies us.

Why is the Agent blocked in the Possessor position of *-able* plus *-ity* and *-ed* plus *-ness* (as well as in passive sentences), while it is fine with *-tion* and *-ing* nominalizations? We propose that *-able* and *-ed* are passive in the [-Agent] sense of Burzio's generalization and that *-tion* and *-ing* nominalizations are not passive in this sense.

It is clear that *-tion* is not inherently passive because we can have the Agent in the subject position as in (38a). It becomes passive when the object moves to the subject position as in (38b). *-Able* on the other hand is inherently passive because it blocks the Agent in subject position, (38c)

(38)   a.   the enemy's destruction of the city
       b.   the city's destruction (by the enemy).
       c.   *the enemy's destroyability of the city

These facts point to a new perspective on Burzio=s generalization. In Burzio's account, object case-absorption triggers a movement to subject position. Here object case can be expressed through an *of*-phrase, but the passive effect occurs nonetheless. Therefore case-absorption cannot be the crucial feature of the generalization.

What then underlies the Burzio generalization effects? We have two further arguments that it is *not* object case absorption, as in his original proposal. First, if absorption of object case were the deep issue, then we should be able to resolve the lack of object case in passive clauses by inserting an expletive in subject position and *of* for the object case. But we cannot: (39), on the passive reading >John was pushed=, is ungrammatical.

(39)   *It/There was pushed of John.

Second, we find the same dethematization of the subject position in impersonal passives (passives of intransitives): the Agent can no longer appear in subject position, even though there is no issue of object case absorption here, because the verb never took an object argument in the first place. Consider the impersonal passive of Dutch *lachen* >laugh= in (40). The Agent cannot appear as subject any longer; it may only appear in a *by*-phrase. The only option for the subject position is to insert an expletive.

(40)   a.   Maria lacht
               Maria laughs
               `Maria is laughing.=

       b.   *Maria werd gelachen.
                Maria was   laughed

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      c.   Er   werd gelachen door Maria.
                 there was laughed by Maria
                 >Maria laughed.=

So it is not general properties of the grammar like Move-Alpha that allow or even force the object to move to subject position once object case is absorbed. Rather, we conclude that nominalizations give the deeper insight behind Burzio´s generalization. Case-absorption is not the essential property; dethematization of the subject position as [-Agent] and making it the position for the Theme as [+Theme] is. Before we propose our implementation of dethematization in section 8 below, we first turn to middles in nominalizations.

6.   Middles do not nominalize

Having seen the syntactic effects of passive show up in nominalizations, we now take it one step further and wonder if we can find effects of a middle in a nominal. In a middle clause the Theme appears in subject position, while the original Agent cannot be projected anymore. Compare the active clause (41a) versus the middle clauses (41b) and (41c).

(41)   a.   The earthquake destroyed the city easily.
         b.   Cities destroy easily.
         c.   *Cities destroy easily by earthquakes.

We cannot get a middle inside a nominal, though. Compare (42a) and (42b), aiming for the latter the middle reading >That cities destroy easily was often asserted=.

(42)   a.   ?This city's destruction so easily was reported yesterday.
         b.   *Cities' destruction easily was often asserted.

While it is marginally possible to nominalize (41a) as (42a), a middle reading as in (42b) is completely impossible. Why do middles not nominalize?

Before we attempt to answer this question consider some further properties of middles. Middles have two notable characteristics. One is morphological: there is no affix. The other is their semantics: they have a generic modality and a stative aspect. Moreover, there is an interesting syntactic distributional pattern of middle verb and adverb, pointed out by Fellbaum (1986). Compare the two different readings in (43).
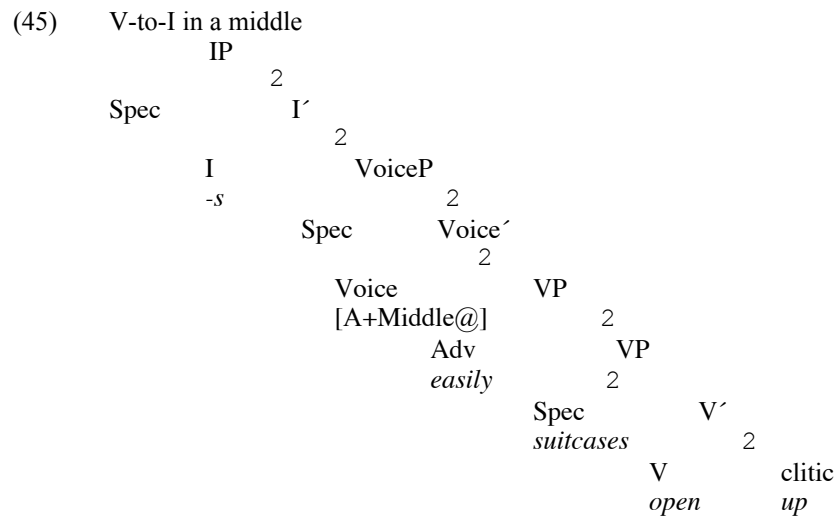
(43)   a.   Those boats sink easily.
         b.   Those boats easily sink.

(43a) with the order verb-adverb is the middle and means >It is easy for them to sink those boats=. (43b) on the other hand with the adverb-verb order is an unaccusative and means >Those boats are such that they sink easily=. Another clear pair with a particle verb is given in (44): (44a) has a middle reading and (44b) is an unaccusative.
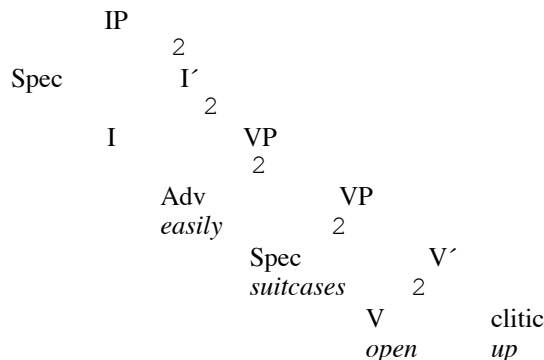
(44) a. The suitcases open up easily.
   b. The suitcases easily open up.

  From these examples we conclude as Fajita (1996) does that in a middle the verb moves around the adverb up to I; in an unaccusative there is no V-to-I raising. A middle derivation is given in (45); an unaccusative is given in (46). (We notate the middle effect on the Agent as a feature on the Voice head as a descriptive diacritic here.)

(45) V-to-I in a middle

```
                IP
              2
    Spec            I´
                  2
        I               VoiceP
       -s                 2
            Spec       Voice´
                        2
                Voice           VP
                [A+Middle@]         2
                        Adv           VP
                        easily         2
                                Spec        V´
                                suitcases       2
                                        V       clitic
                                        open    up
```

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(46)   No V-to-I in an unaccusative

```
                    IP
                    2
        Spec            I´
                        2
            I               VP
                            2
                Adv             VP
                easily          2
                    Spec            V´
                    suitcases       2
                                V       clitic
                                open    up
```

For a middle, IP is the relevant domain for the verb to overtly move to; I attracts the middle verb. Now let us ask again: why do middles not nominalize? We can answer this by assuming that 1) the middle modality is located in IP, and 2) nominalizations dominate VoiceP plus VP, but not an IP.[5]

While both passive and middle are operations that affect the argument projection properties of a verb (in fairly similar ways), nominals can only support passives, but not middles. Taking a syntactic approach to explain the passive effect in nominals as we do leads to a straightforward explanation to exclude middles from nominals by positing that, even though there is some VP structure in a nominal, there is not enough structure to support a middle. This follows naturally as a next step in our research program of looking how far syntax extends inside the deverbal lexicon.

7.   Further proofs of syntactic effects inside nominals

Our demonstration that syntactic constraints are relevant to derivational structures leads inevitably to a further expectation: are other syntactic constraints present in these derivations? We illustrate one here and refer to Van Hout and Roeper (1998a) for another illustration of the presence of event entailments in *-er* morphology.

There are very clear Principle B effects in morphology. Principle B causes disjoint reference effects in passives and also in nominalizations. Since *-tion* requires a transitive verb, when an NP alone appears in the Possessor, then

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[5] We may have to modify this claim and say that while *-tion* nominals do not involve IP, *-ing* nominalizations might involve IP. See van Hout and Roeper (1998b) for an argument that different nominalizing affixes link to every level of the tree. However the *-ing* nominal has a number of special restrictions which make intuitional judgements cloudy and therefore we will not explore them here.

passive must have applied and the Agent is implicit. Now, however, we find, just as with passives, that disjoint reference applies, (47).

(47)   a.   John was being destroyed.
       b.   John's destruction

Each implies that someone else did it. Disjoint reference is also present in both examples in (48). We find that Principle C rules out coreference in (48a). This applies directly to (48b) as well under the assumption that there is a PRO Agent in the subject position in (48b).

(48)   a.   He evaluated John.
       b.   the PRO evaluation of John

       Now, the disjoint reference effect also shows up with *-able*. Compare (49a) and (49b).

(49)   a.   They are a loving couple.
       b.   They are a lovable couple.

With the adjectival suffix *-ing* in (49a) there is no such effect; it means >they love each other=. But with *-able* there is: (49b) does not mean >they love each other=, but >somebody loves them=. A similar, telling example is the impossibility to derive *perjurable* from *perjure*, (50).

(50)   a.   John perjures himself.
       b.   *John is perjurable.

Since *perjure* requires co-reference, but *-able* requires disjoint reference, *perjurable* is impossible. (See Roeper (1993) and Kratzer (1994) for further examples of disjoint reference with participles.)

       Note in passing that the Baker, Johnson and Roberts (1989) argument that the passive morpheme *-ed* is a pronoun becomes impossible to account for these facts, unless we assume that *-tion* and *-able* are pronouns as well.

8.   Dethematization of the subject position in Minimalist terms

       We turn now to the technical question: how do we project information into the Specifier position of the DP from the inner verb *learn*? The problem is: how do we get the Burzio effects in nominalizations? We must project the Burzio effects from the subject position, Specifier of VoiceP, via Specifier of AP, to the Specifier of DP, much higher up. We argue that we can capture the effect only if we allow Feature-movement. We argue that argument projection

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involves thematic role features which participate in the Feature-checking system which, as we shall see, is unavoidable in capturing the facts.[6]

Suppose we represent the initial projection of an argument with the [+Agent] feature as an element in Specifier of Voice [+Agent] of a simple verb like *destroy*. The addition of *-tion* adds higher functional nodes, namely a DP. For *-tion* the projection of any feature into the highest Specifier is clearly not required because we can have either subject or object in that position, (51).

(51)   a.   the enemy's destruction of the city
          b.   the city's destruction by the enemy

(Alternatively one can argue that an invisible passive changes the [+Agent] projection to [+Theme] for (51b).)

For *-able* there is no choice: only an object can occupy the highest Specifier position. It is this strong restriction that we must accurately capture. How does the projection of an argument as object in the VP translate into a projection onto the Specifier of DP? We argue that the passive impact of *-able* is to project a [+Theme] feature onto its Specifier. Then the property of that Specifier automatically projects to the higher available Specifier, namely Specifier of DP. This automatic constraint, which says >Project argument Specifiers to the highest available Specifier=, may be an important constraint in itself but we will not explore it further here. In effect then, we avoid an actual operation of dethematization by saying that *-able* does not necessarily reverse the projections made upon an active base sentence, which would be based on the original model of how passive operates. We take this simplification an important virtue of an approach to passive that does not originate with actual declarative sentences.

How does Feature-checking then take place? We assume that either overt movement occurs, producing a form with the Theme in Specifier of DP like (52a), or covert movement occurs from the form in (52b) with the Theme in its original object position.

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[6] Hornstein (1999) has given an independent argument for treating thematic roles as Formal Features.
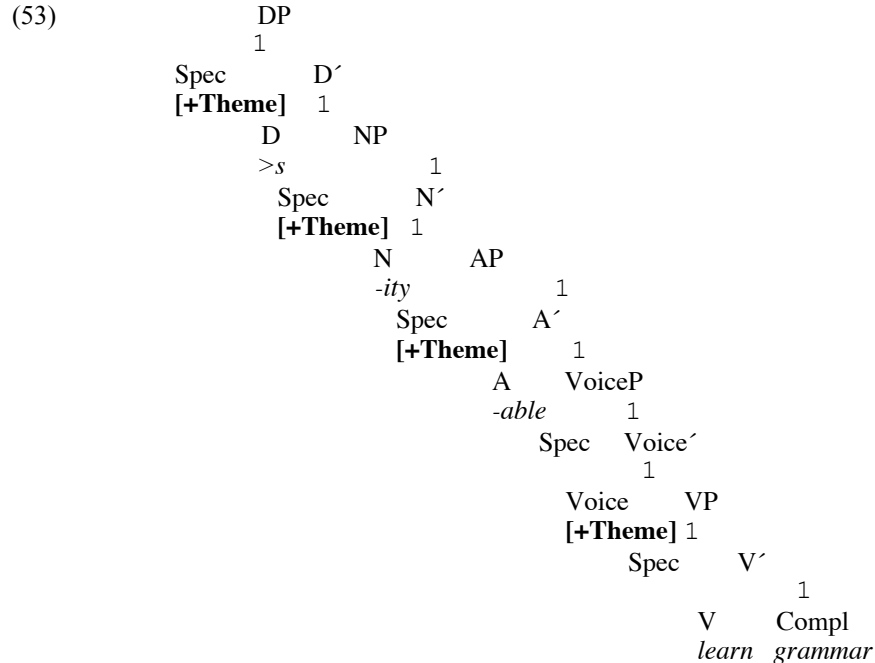
(52)   a.   grammar's learnability

           b.   the learnability of grammar

In the case of overt movement, the object moves from its initial projection as the Specifier above VP to the higher positions. For (52b), in order to block other occupants of Specifier of DP, we assume that covert movement occurs, moving the object with its [+Theme] feature through the Specifier positions all the way from the object position in VP (now linked to the *of*-PP). The presence of covert movement is then enough to 1) satisfy Feature-checking requirements, and 2) block the projection of any other element into the subject position.

Concluding now that [+Theme] is the passivizing feature, our analysis goes as follows: *-able* subcategorizes for a passive Voice phrase Ba VoiceP with [+Theme] in its Specifier. This passive feature moves up along the projection line passing through all of the intermediate Specifiers. Before turning to the predictions that follow from it, we illustrate our analysis in the tree in (53).[7]

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[7] We will not investigate the details of PP insertion for case reasons. One might take a case projection from the AGR node and simply spell out the [+case] Formal Feature as a preposition. A genuinely insightful explanation, not simply a technical representation, should be the ultimate goal. Since we have no specific proposals, we will not provide a structure here.

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(53)

```
                      DP
                      1
            Spec        D´
            [+Theme]    1
                  D       NP
                  >s            1
                    Spec        N´
                    [+Theme]  1
                          N        AP
                          -ity            1
                              Spec        A´
                              [+Theme]      1
                                    A      VoiceP
                                    -able       1
                                        Spec   Voice´
                                                1
                                        Voice     VP
                                        [+Theme] 1
                                              Spec     V´
                                                        1
                                                V      Compl
                                              learn   grammar
```

In order to guarantee the [+Theme] in the subject/Possessor position as a blocker and to capture the notion that it originates in the Specifier of VoiceP, we have to have a system of projecting the feature that will be checked off.

We now make an important prediction: if one of the Specifiers on the way is filled, the formal feature cannot move up. Consider now cases where there are two possessors, as discussed by Munn (1995). In ordinary noun phrases it is quite possible to fill them both, (54).

(54)   a.   yesterday's teachers' strike
        b.   Pierre Cardin's men's clothing

Now consider some deverbal nominals. A *-tion* nominal cannot take more than one Possessor phrase; this may be an Agent, a Theme and even a temporal adjunct, (55). An *-able* nominal, however, can only take a Theme as its subject, (56).

(55)   a.   the enemy=s destruction of the city
        b.   The city=s destruction by the enemy
        c.   Yesterday's destruction of the city was worse than today's.
        d.   *yesterday's city's destruction
        e.   *yesterday's enemy's destruction of the city

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(56)   a.   *our irresistability (of the boys)
         b.   the boy's irresistability
         c.   *yesterday's irresistability (of the boys)

The crucial contrast are between (55a) and (56a) and between (55c) and (56c). We find that only the *-able* nominal has a required projection into the subject position. This projection blocks not only Agent but any element which fails to satisfy the [+Theme] feature in that position. This is the most overt evidence in behalf of the notion of Feature-movement that we are aware of. In other words, while one can have two Possessor positions with non-deverbal nominals (e.g., *clothing* in (54)), you cannot with (passive) deverbal ones.

        The claim that intermediate positions cannot be occupied is illustrated by the following contrast, (57).

(57)   a.   yesterday's teachers' strike
         b.   *the teachers' yesterday's strike

Recall that we project a thematic feature onto the highest Specifier from a Numeration which includes both an element like *strike* plus a feature [+Agent], or in the case of *irresistability* an element like *-able* plus a [+Theme] feature. In the case of *strike,* the highest upper Specifier must be filled by an Agent, if it is filled at all, and no node in between can be occupied, hence the ungrammaticality of (57b). For *irresistability* in (56), the highest upper Specifier must be filled by the Theme. Those features must be checked off by overt movement of an argument or covert movement of a feature on an argument that remains low. Thus the [+Theme] feature moves from the object *grammar* to the Specifier of DP covertly, as illustrated in (58).

(58)   the [+Theme] learnability of grammar
                  <============= [+Theme]

The verb assigns [+Theme] to *grammar*, but *-able* projects a [+Theme] feature to its subject position. The verbally assigned theta-role then moves to check off the inflectionally projected theta-role from *-able* in derivational morphology, just as it does in tensed sentences.

        This follows precisely from the assumption that the argument or its feature moves through the Specifier positions and therefore no blocker can be present. Overtly the argument moves, but covertly only the feature must move in order to satisfy Checking. Once again, the presence of the attracting feature in the highest Specifier blocks insertion of any other adverbial element (like *yesterday*).

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We have not explored a translation of the Feature-movement system into the notion of Probe-Goal agreement proposed by Chomsky (1998) but we expect that it would not be a problem. One could envisage a method to argue that [+Theme] is projected only once in the Specifier of DP position, as required by *-able*, and it operates as a Probe which seeks a Goal to satisfy it, namely an NP in an argument position that can function as a Theme, and then establishes an Agreement relation from the Probe to the Goal.

Finally, the empirical generalization is that *-able* requires a transitive verb with an Agent and Theme. We capture that generalization in two ways. We guarantee an Agent by the verb=s subcategorization of a Voice phrase, and we guarantee a Theme by satisfying *-able*=s [+Theme] feature through Probe and Goal agreement. We can now successfully exclude *fallable* and *runnable* in (59).

(59)   a.   *John is fallable.
        b.   *John is runnable.

Fallable in (59a) is out because *fall* does not subcategorize for a Voice phrase and *runnable* in (59b) is out because, even though there is a Voice phrase, John cannot bear a [+Theme] interpretation (we never run on John). But we can include *runnable* in (60).

(60)   The road is runnable again (by the joggers).

Runnable in (60) is fine because *the road* satisfies [+Theme] and the Agent remains implicit unless it is copied onto a *by*-phrase (see Roeper (1985)).

9.   Is there a lexical alternative?

Our statement of the passive effect on the subject position inside nominalizations is a syntactic one, not a lexical one. We believe the effect needs to be referred to in syntactic terms, as it extends beyond the properties of lexical argument structure. Can one imagine a purely lexical alternative to our account? If one were to develop such a proposal, here is the range of facts which would have to be incorporated: 1) the variety of VP ellipsis and presence of adverbs; 2) the contrast between possessive and adjective readings prenominally; 3) the fashion in which an argument percolates up to the higher noun from affixes like *-able* and *-ed*; 4) the connection between subject position in nominals and subject in syntactic passives.

Such a theory of argument structure would, we imagine, be a notational variant of our suggestions. Note that if one includes concepts like Aargument demotion@ or Aargument suppression@ as an alternative to our approach to dethematization, one still introduces a new operation and one still has to refer to

how it projects onto syntactic structure. It is difficult to imagine such an alternative that does not entail syntactic structure.

Crucially, it is not sufficient to capture argument dethematization in terms of argument demotion and let the syntax be captured by case-sensitive movements because, as we have shown, case theory is not the only motivation. Precisely in nominalizations, the movement occurs but is not forced by case theory. Lexical operations do not suffice, because they can only refer to the argument taking properties of a predicate, with effects such as which arguments are suppressed, saturated or deleted. One cannot state the effect that a syntactic position, the subject, blocks certain kind of arguments and adjuncts in lexical terms.

10.   The larger range of derivational morphology

Where does *-able* fit into the range of derivational morphemes? There are morphemes which maintain thematic role information and those which do not. For instance, consider the contrast between *-ary* and *-tion* in (61).

(61)   a.   *imaginary of the town
         b.   imagination of the town

There are other cases which lie in between. For instance, we can ask: is there a connection between *-ible* and *-able*? Are they the same? In general, *-ible* does not allow the projection of the Agent, but does allow the projection of the Theme, (62).

(62)   a.   the meat is edible
         b.   *the meat is edible by John

Thus *edible* differs from *eatable* in that the latter still projects an Agent and allows, marginally, cases like (63a). In the case of *edible* a non-argument adjunct fulfills the same function, (63b).

(63)   a.   This is eatable by anyone.
         b.   This is still edible to the patient.

These facts are important in avoiding misleading cross-linguistic comparisons. For instance, Dutch *-baar* appears to be more like *-ible* in English, since it disallows Agents in a *by*-phrase, (64a), and allows a non-argument PP, (64b).

(64)   a.   *Dit is eetbaar door iedereen.
               this is eatable by   everybody

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b.   Dit is nog   steeds eetbaar voor de patiënt.
           this is still   still   eatable for   the patient
           >This is still edible to the patient.=

But *-able* allows a *by*-phrase and thus does not change the set of arguments of the verb; it only changes their projection possibilities. For *edible* the Theme argument remains and, under our analysis, projects to the subject position. Therefore it blocks anything else, (65).

(65)   a.   the meat's edibility
         b.   *John's edibility of the meat
         c.   *yesterday's edibility of the meat
         d.   the edibility of meat

The projection of Theme to subject position blocks anything else that could appear there, including datives or temporal modifiers. This representation, where the Agent no longer exists but the Theme is present and moves to subject position, provides further evidence that the two parts of Burzio's generalization are divisible.

Moreover it supports the views of Borer (1994) and Van Hout (1996) that there is a set of arguments lexically linked to a verb, but their projection is a function of higher nodes. Thus the representation of the arguments is not embedded in the verb=s lexical specification as earlier theories of subcategorization and argument structure imply.

11.   **Conclusions**

Let us review our arguments in some depth. We have made a strong case that *-able* is like passive *-ed* and that its passive feature B the Specifier is [+Theme]B percolates up to the subject position of higher nominalizations. In passive sentences, the object obligatorily raises to the subject position to satisfy [+Theme] and case requirements, (66a) versus (66b); for *-able* this movement is possible, but not obligatory, (66c) and (66d).

(66)   a.   The grammar was learned.
         b.   *There was learned the grammar.
         c.   the grammar's learnability
         d.   the learnability of grammar

We have been at some pains to prove that the subject position is occupied exactly as if movement has occurred. A natural way to capture such an >as if= relation is to claim that it has indeed occurred, covertly.

A theory of covert movement requires a representation in which a feature is projected at two positions: one syntactically and the other lexically. In verb-raising, the verb raises to check off a tense/agreement feature on an I-feature. Our system likewise has two bases for the projection of an object/Theme. First inside the VP, the V projects an object (*grammar*); then at a higher node *-able* projects information to the Specifier of IP that effectively requires a Theme to move into that IP, precisely as *-ed* does. If we go no further we have (67).

(67)   a.   The grammar is learned.
         b.   The grammar is learnable.

But when above *-able* there is *-ity*, it inherits the projection for IP and substitutes a DP, since there is no IP. So now we have effectively the same system for motivating movement within morphology as has been developed for syntax. One further step is necessary. In the syntax of passives, movement is obligatory, while in the morphology, because *of*-insertion can satisfy case-requirements, it is optional. Therefore under minimalism, we assume that nothing more than the crucial feature, which is [+Theme], undergoes movement to the Specifier of DP.

Let us now consider some modifications. Suppose we assume that a verb has a set of arguments, but they are not projected onto initial positions that serve as syntactic origins for movement. This could be done by stipulating that a morphological form directly projects a [+Theme] into the Specifier of DP or the highest functional category: IP for *-able* and DP for *-ability*. Now how do we guarantee that only transitive verbs can arise? We accomplish this by selecting a Voice phrase which guarantees an Agent and rules out *fallable* (see (59)).

How do we guarantee a link between the subject position and a possible Theme? Here we argue either that the verb *learn* assigns Theme inside the VP and that the [+Theme] feature in the Specifier of DP functions, in Chomsky's (1998) terms, as a Probe, which must be matched with a Goal, namely the Theme assigned by *learn*. This system in turn could be simplified, but with different grammatical assumptions. Suppose we represented the Probe/Goal relationship as involving a single projection of Theme to the Specifier of DP and then a link to a configurationally defined domain, namely, the Specifier of VP where objects reside. This alternative remains a possibility but we will not explore it further at this point because it does not have empirical consequences that differ from the movement account we have given.

In conclusion, we find there is a syntactic effect in morphology. We find that this morphological set of data shows us how Burzio's generalization should be explained. In particular, it should not be taken as object case-absorption. *-Able* has a passive effect B which is different from saying that it converts an Agent into an implicit argument. In our implementation we have

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shown that not only are syntactic structures present in morphological derivations, but syntactic constraints as well. This is another piece in the bigger program of looking how far syntax extends into derivational morphology. We have argued in favor of a syntactic approach to these passive effects and argued that a lexical approach that just manipulates argument structures is not sufficient. How does one represent the implicit nature of arguments with *-able*? In this approach, it follows automatically by reversing the assumptions: all arguments are implicit unless some morpheme or structural requirement forces them to be projected. Our approach takes a strong stand in favor of a certain kind of simplicity: we wish to have no modular distinction between the syntax and the morphology.

Appendix: **Evidence for a VP in nominalizations**

We include two further sets of data to show the effects of a VP inside nominals, both sets of tests are from Fu, Roeper and Borer (1998): 1) the *do so*-test works well with nominalizations and 2) VP adverbs are licensed in nominalizations, but not IP or CP adverbs.

Do so-**test**

Do so is a VP subsitute, (68a); it appears in nominalized forms, (69). *Do* is an IP substitute, (68b); it cannot appear in nominalized forms, (70).

(68)   a.   He said he would change his socks, but he $[did]_T$ not $[do\ so]_{VP}$.

        b.   He said he would change his socks, but he $[did]_T$ not $[e]_{VP}$.

(69)   a.   His destruction of the documents was preceded by Bill's doing so.

        b.   His removal of the garbage in the morning and Sam's doing so in the afternoon was surprising.

        c.   His resignation and then my doing so made the headlines.

(70)   a.   John's destruction of the city with bombs and Bill's doing so too made the headlines.

        b.   *John's destruction of the city with bombs and Bill's doing too made the headlines.

VP adverbs tests

Deverbal nominals can take VP adverbs, (71); non-deverbal ones cannot, (72).

(71)   a.   The city's resurrection so dramatically was a surprise.

        b.   Dole's elevation to majority leader so suddenly was a

surprise.

    c.   Ross Perot's resurrection so quickly caught us by surprise.

    d.   Clinton's rejection so decisively was a surprise.

(72)   a.   ?His explanation of the accident
             immediately did not help him.

    b.   *His version of the accident immediately did not help him.

    c.   His immediate version of the accident did not help him.

When modifiers appear prenominally they must be adjectives, but when they appear postnominally they are adverbs, (73).

(73)   a.   He immediately explained the accident to the tenants.

    b.   His explanation of the accident immediately to the tenants did
             not prevent a riot.

    c.   *his immediately explanation of the accident to the tenants

    d.   his immediate explanation of the accident

While VP adverbs are possible in nominals, speaker-oriented (sentential) adverbs are not, (74). These can only appear as adjectives, (75) and (76).

(74)   a.   *His removal of the evidence presumably promised a lengthy
             trial.

    b.   *His explanation of the problem fortunately to the tenants did
             not cause a riot.

(75)   a.   *The alteration of his diaries unfortunately doomed the
             senator.

    b.   The unfortunate alteration of his diaries doomed the senator.

(76)   a.   *His appointment probably to the supreme court alarmed the
             public.

    b.   His probable appointment to the supreme court alarmed the
             public.

Adverbs that carry object orientation are licensed postnominally, but not as prenominal adjectives, (77) and (78).

(77)   a.   his destruction of these documents individually

    b.   *his individual destruction of these documents
           (*on the relevant reading: destroy these documents one by one)

(78)   a.   his distribution of apples evenly

    b.   *his even distribution of apples

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Adjectives and adverbs may co-occur, (79) and (80).

(79)   a.   his careful destruction of the documents immediately
           b.   his immediate destruction of the documents carefully

(80)   a.   his nice presentation of the results slowly
           b.   his slow presentation of the results nicely

Finally, notice the meaning difference with different positions of an adverb, (81).

(81)   a.   Japan is slowly catching up with the US.   (it succeeds)
           b.   Japan is catching up with the US slowly.   (it fails so far)

Looking at the adverb in nominals like (82c), we find that its meaning is like that of (82a), but not like (82b). It suggests that the underlying verb in the nominal raises across a high-attached adverb in (82c), and therefore that there are various VP levels in the nominal.

(82)   a.   John is slowly accepting his illness.   (he accepts it)
           b.   John is accepting his illness slowly.   (not accepted yet)
           c.   John's acceptance slowly of his illness   (he accepts it)

References

Ackema, Peter and Maaike Schoorlemmer (1995). Middles and nonmovement. *Linguistic Inquiry*, 26, 173-197.

Baker, Mark, Kyle Johnson and Ian Roberts. 1989. Passive arguments raised. *Linguistic Inquiry* 20, 219-252.

Borer, Hagit (1994). The projection of arguments. In Elena Benedicto & Jeffrey Runner (eds.), *Functional Projections*, University of Massachusetts Occasional Papers 17, 19-47. Amherst: GSLA.

Burzio, Luigi (1986). *Italian syntax*. Dordrecht: D. Reidel Publishing Company.

Chomsky, Noam (1986). *Knowledge of language: Its nature, origin and use*. New York: Praeger.

___ (1995). *The minimalist program*. Cambridge: MIT Press.

___ (1998). Minimalist inquiries. *MIT Occasional Papers in Linguistics* 15. Cambridge: MIT.

Di Sciullo, Anna-Maria (1995). X= selection. In Johan Rooryck and L. Zaring (eds.) *Phrase structure and the lexicon*. Dordrecht: Kluwer.

Fajita, Koji (1996). Double objects, causatives, and derivational economy. *Linguistic Inquiry* 27, 146-174.

Fellbaum, Christine (1986). On the middle construction in English. Indiana University Linguistics Club.

Fu, Jingxi, Thomas Roeper and Hagit Borer (1998). The VP within nominalizations: Evidence from Adverbs and the VP anaphor *do so*. Ms., UMass.

Grimshaw, Jane (1990). *Argument structure*. MIT Press, Cambridge.

Hale, Kenneth and Samuel Jay Keyser (1993). On argument structure and the lexical expression of syntactic relations. In Kenneth Hale and Samuel Jay Keyser (eds.), 53-109.

Hale, Kenneth and Samuel Jay Keyser (eds.), *The view from Building 20: Essays in linguistics in honor of Sylvain Bromberger*. Cambridge: MIT Press.

Halle, Morris and Alec Marantz (1993). Distributed morphology and the pieces of inflection. In Kenneth Hale and Samuel Jay Keyser (eds.),111-176.

Hornstein, Norbert (1999). Movement and control. *Linguistic Inquiry* 30.

van Hout, Angeliek. 1996. *Event semantics of verb frame alternations: A case study of Dutch and its acquisition*. Ph.D. dissertation, Tilburg University. Published in 1998. New York: Garland.

van Hout, Angeliek and Thomas Roeper (1998a). Events and aspectual structure in derivational morphology. In Heidi Harley (ed.) *Papers from the UPenn/MIT Roundtable on Argument Structure and Aspect*, MITWPL32, 175-200. Cambridge: MIT.

van Hout, Angeliek and Thomas Roeper (1998b). Events and aspectual structure in derivational morphology. Talk at *International Morphology Meeting*, Budapest.

Kratzer, Angelika. 1994. The event argument and the semantics of voice. Ms. UMass. Forthcoming. Cambridge: MIT Press.

Lieber, Rochelle (1992). *Deconstructing morphology*. Chicago: University of Chicago Press.

Munn, Alan (1995).The Possessor who stayed close to home. In V. Samiian and Jeannette Schaeffer (eds.), *Proceedings of Eastern Conference on Linguistics (ESCOL 1994)*, 222-233.

Reinhart,Tanya (1996). Syntactic effects of lexical operations: Reflexives and unaccusatives. *UiL OTS Working Paper*. Utrecht University.

Roeper, Thomas (1985). Copying implicit arguments. *Proceedings of the West Coast Conference on Formal Linguistics*.

___ (1987). Implicit arguments and the head-complement relation. *Linguistic Inquiry* 18, 267-310.

___ (1993). Explicit syntax in the lexicon: The structure of nominalizations. In James Pustejovsky (ed.), *Semantics and the lexicon*. Dordrecht: Kluwer.

___ and Muffy Siegel (1978). A lexical transformation for verbal compounds. *Linguistic Inquiry* 9, 197-269.

Spencer, Andrew (1991). *Morphological theory*. Cambridge: Blackwell.

Vergnaud, Jean-Roger (1973). Formal properties of lexical derivations. *Quarterly Progress Report,* 108 MIT (Electronics Laboratory).

Williams, Edwin (1981). Argument structure and morphology. *The Linguistic Review* 1, 81-114.

___ (1994). *Thematic structure in syntax*. Cambridge: MIT Press.

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