

Towards a Minimal Argument Structure^{*}

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Abstract

In this paper I give a short presentation of a syntactic approach to argument structure, taking a particular implementation of the minimalist framework (Chomsky (1995, 2001 and later)) as my point of departure. The proposed account allows for only 16 different argument structures, thereby reducing the syntactic variation at this level of syntax considerably. The theory also offers an explanation why no verb can have more than three DP arguments. Since the theory has its base in narrow syntax and not in the single verb and its argument structure variation, it may furthermore help us to understand which properties must be found in a particular root for it to be associated with this or that argument structure.

1. Introduction

1.1. Thesis

The goal of this paper is to outline a minimalistic approach to argument structure, trying to determine the role played by syntax for the argument structure of verbs. This approach is based on Chomsky's (1995 and later) assumption that (narrow) syntax is a feature-driven computational system unique to mankind (Hauser, Chomsky & Fitch 2002). Narrow syntax has the purpose of linking domain specific cognitive systems in ways not available to other living creatures, and hence is central to our thinking (Spelke 2003). Among the cognitive systems is a sensory-motor system that, when linked to other cognitive systems, enables us to communicate our thoughts and experiences. As a consequence, narrow syntax can be seen as bridging the gap between conceptual-intensional cognitive systems (the CI interface or roughly *semantics*) and sensory motor systems (the SM interface, roughly *phonology*).

One important property of our ability to think is that we can distinguish an action from the entities (living creatures, things etc.) involved in that action: in this way we are able to generalize over actions as well as over entities. The simple way to represent this property of our thinking is to use the predicate logical expression in (1b) to formulate the thought expressed in the sentence in (1a):

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- (1) a. John threw the ball.
 b. THROW (JOHN, BALL)¹

In (1b), THROW is called the **Predicate** and JOHN and BALL the **Arguments**; the representation is to be read as follows: the predicate THROW holds between *John* and *the ball*, or *John* and *the ball* are involved in the action referred to as *throw*. Generalizing over both the predicate (P) and the arguments (x,y) , we can use the expression in (2):

- (2) P(x,y)

From a semantic point of view, both (1a) and a sentence like (3) are represented as (1b):

- (3) The ball was thrown by John.

From a (narrow) syntactic point of view, however, (1b) is not equal to (3), although both sentences roughly mean the same. Our syntax must enable us to explain why sentences with the syntactic structure outlined in (4a) usually can be alternatively expressed as (4b), where *-ed* is a way to indicate past participle, irrespectively of the actual realization:

- (4) a. x P y
 b. y is P-ed by x

Classical generative grammar (Chomsky 1965) postulated a type of rules, called “transformations”, that were supposed to relate structures like (4a,b) to each other. In this particular case, the rule was called the Passive transformation.

One way to express the similarities of (4a) and (4b) is to highlight the fact that the arguments have the same roles to play in relation to the predicate in both cases: x is causing the action, playing the role of Agent, whereas y is performed upon, playing the role of Patient or Theme. Below, *theta-roles* like Agent, Patient and Theme will be discussed in more detail, and I will claim that there is an infinite number of semantic theta-roles,² corresponding to only three theta-roles in narrow syntax, here called theta-role families. The term “Argument Structure” as it is used here, refers to the syntactic relations between these theta-role families and various types of predicates (verbs).

¹ Note that the logical formula does not represent tense.

² See also Noreen (1906)

1.2. Argument Structure of Verbs – an overview

1.2.1. A limit on the number of DP arguments

Although the range of variation in argument structure is huge,³ the number of arguments that may accompany a particular verb is quite restricted. Jackendoff (2002:135) notices that “[t]he largest number of semantic arguments seems to be four, exhibited by verbs describing transactions [(5a)] and wagers [(5b)].”

- (5) a. Pat sold/rented a lawnmower to Chris for \$20.

Chris paid Pat \$20 for the lawnmower.

- b. Fran bet Phil a cigar that Mark wouldn't come

Observe that although four semantic arguments seem to be present in the sentences in (5), no more than three of them (5b) are expressed by DPs. In particular, it should be noticed that the last argument in (5b) is expressed by an embedded clause. This clause cannot be replaced by *it* (i.e. a DP kind of thing), as shown in (6a). Compare (6b,c) where it is shown that an object *that*-clause in other contexts may be replaced by *it*:

- (6) a. *Fran bet Phil a cigar it.

- b. John knows that Mark wouldn't come.

- c. John knows it.

Both the semantic and the syntactic restrictions of the number of arguments possible in a single sentence call for explanation by a theory of argument structure.

1.2.2. Alternations

The sentences (1a) and (3), illustrating what we may call the **Passive alternation**, have shown that the same action may be syntactically expressed in more than one way. Levin (1993) presents and discusses several other alternations, of which a few will be illustrated here.

The Passive alternation is an example of a larger family of alternations where the object of a transitive verb shows up as the subject of the intransitive version of the same verb. Some examples are given in (7a-c).

- (7) a. The butcher cuts the meat. The meat cuts easily. (Middle Alternation)
b. The visitor rang the bell. The bell rang. (Causative Alternation)
c. The sun radiates heat. Heat radiates from the sun. (Substance Alternation)

The verb has different forms in the transitive and the intransitive uses in case of Passive, whereas in the examples in (7a-c), the verb has the same form in both cases. However, this

³ See Levin (1993) who devotes a whole book to a comprehensive enumeration of the possibilities.

might be a coincidence of the English verb system. In many languages, there is a productive grammatical rule for the formation of causatives; consider the Turkish examples in (8):

- (8) a. Bill öl- dü.
 Bill die PAST
 b. John Bill-i öl-dür dü.
 John Bill.GOAL die.CAUSE PAST
 John killed Bill.

In Swedish, a language closer related to English than Turkish, causatives are often derived from intransitives with the help of stem alternations (/a/ > /ä/, /o/ > /ö/, /i/ > /ä/), even if this could not be said to be a productive rule. See the following examples: *falla* – *fälla* ‘fall – fell’, *sova* – *söva* ‘sleep – put to sleep’, *brinna* – *bränna* ‘burn_{itr} – burn_{tr}’, *sitta* – *sätta* ‘sit – put (in a sitting position)’ etc. Note that stem alternations are sometimes used in English as well, as illustrated by the *fall–fell* alternation.

Another well known alternation is the **Dative alternation**, illustrated in (9):

- (9) a. John gave Mary a book.
 b. John gave a book to Mary

Characteristic for this alternation is that the DP functioning as indirect object with a Goal/Beneficiary thematic role in (9a) is expressed as the complement of a preposition in (9b).

In the **Locative alternation**, there is a shift between DP₁ P+DP₂, and DP₂ P+DP₁:

- (10) a. John loaded the wagon with hay.
 b. John loaded hay on the wagon.

There are a lot of other alternations mentioned and exemplified in Levin (1993), but for an illustration this should be enough. Any theory of argument structure should be able to account for such alternations, and also for cross-linguistic variations with respect to alternations. Just to take one example: the Dative alternation is not found in the Romance languages with a DP indirect object (11b), only with a dative clitic, as shown in the Spanish example (11c).

- (11) a. Juan dió un libro a María.
 Juan gave a book to Mary
 b. *Juan dió María un libro.
 Juan gave Mary a book
 c. Juan le dió un libro a María.
 Juan cl.DAT.3.SG gave a book to Mary

If we do not want to say that Spanish reflects a way its speakers look at the world which is different from how a speaker of a Germanic language looks at the world, we have to try to see if we can explain the difference in terms of a syntactic difference.

1.2.4. The same verb with different argument structures

In addition to alternations of the type exemplified in the last section, many verbs can occur with different argument structures, see Swedish *rulla* ‘roll’ in (12).

- (12) a. Nu rullar *det*.
 now rolls *it*_{expletive}
 Now it is rolling.
- b. Bollen rullade längs väggen.
 ball.DEF rolled along wall.DEF
- c. Han rullade in i rummet.
 he rolled in to room.DEF
- d. Bollen rullade fem meter.
 ball.DEF rolled five meters
- e. Han rullade bollen till bordet.
 he rolled ball.DEF to table.DEF
- f. Han rullade (henne) en cigaret.
 he rolled her a cigarette

Example (12a) illustrates the case where *rulla* is not combined with any DP argument at all; *det* ‘it’ is an expletive without semantic meaning. Intransitive uses of *rulla* are illustrated in (12b,d), a transitive use in (12d) and a ditransitive use in (12f). Note that (12c) is ambiguous: it either means that the subject *han* ‘he’ unintentionally rolls into the room, perhaps as an effect of being pushed, or it means that the subject intentionally rolls into the room.

The theory of argument structure that will be outlined below puts an upper limit on the number of possible argument structures for a single verb, irrespectively of the semantics of the verb. A theoretically interesting question in connection with this is the division of labor between semantics and syntax when trying to answer the question why not every verb occurs with every possible argument structure. As was illustrated with *rulla* above this verb takes zero, one, two or three DP-arguments. When compared with a verb like *springa* ‘run’ we find that this verb has fewer options.

- (13) a. *Nu springer *det*.
 now runs *it*_{expletive}
- b. Råttan sprang längs väggen.

- rat.DEF ran along wall.DEF
- c. Han sprang in i rummet.
he ran in to room.DEF
- d. Råttan sprang fem meter.
rat.DEF ran five meters
- e. *Han sprang hunden till parken.
he ran dog.DEF to park.DEF
- f. *Han sprang henne ett lopp.
he ran her a run

Example (13a) shows that there is no impersonal use of *springa* ‘run’. With some other motion verbs there is such a use, as in *Nu gick det* ‘now went it’ (I managed), *Det gungade kraftigt* ‘it swung strongly’ (There was a good deal of tossing). Whereas *det* with *rulla* in (12a) can be read as an expletive, this reading is not available with *springa*.⁴ It is also impossible to separate the Agent from the Moving entity, as shown in (13e); note that such examples are well-formed in English, see *John ran the dog to the park*. Finally, Swedish does not allow a high applicative with *springa*, as would have been the interpretation of (13f), had it been well-formed. This construction is possible in the Bantu language Chaga, as shown in (14), taken from Pylkkänen (2002:17)⁵:

- (14) N- ä- i- zric-í- à mbùyà
FOC- 1SG-PRES-run-APPL -FV 9-friend
‘He is running for a friend’

1.2.5. Cross-linguistic variation

Even between closely related languages that in many respects have overlapping “lexicons”, i.e. many lexical correspondences, argument structure differences may exist between verbs that seemingly have the same meaning in the two languages. Just to take one example: English *kick* can be used both with animate and inanimate objects, whereas the corresponding Swedish *sparka* can take an animate object but not an inanimate one:

- (15) a. Pat kicked Bill.
b. Pat kicked the wall.
- (16) a. Pat sparkade Bill.

⁴ If *det* ‘it’ is a personal pronoun, the sentence *Nu springer det* (= *lejonet*) is well-formed.

⁵ Pylkkänen refers to Bresnan & Moshi (1993: 49-50). I have changed Pylkkänen’s glossing of *zric* from ‘eat’ to ‘run’, otherwise it would obviously not correspond to the translation ‘running’.

- Pat kicked Bill
- b. *Pat sparkade väggen.
Pat kicked wall.DEF
- c. Pat sparkade på väggen.
Pat kicked at wall.DEF

Adding a resultative predicate, (16b) with an inanimate object becomes well-formed:

- (17) John sparkade sönder dörren.
John kicked to-pieces door.DEF

1.3. Conclusion

In this introduction I have pointed at four areas about which any theory of argument structure must have a story. Firstly, any theory should be able to answer the question why the number of DP arguments is restricted to maximally three. Secondly, we expect a theory of argument structure to account for the fact that there are classes of alternations, i.e. cases where the same verb systematically is used with two or more different argument structures. Thirdly, such a theory should also be able to handle the fact that many verbs can be used with several different argument structures, and it should also preferably be able to explain why certain verbs can be used with a higher number of argument structures than other verbs. Finally, any theory of argument structure should be able to describe the vast cross-linguistic variation that we find within this area.

The presentation in this subsection only scratches the surface of what can be found under the rubric argument structure, which is one of the most central topics in any grammatical theory. Usually, this field of research is approached from the point of view of the verb/predicate, surveying the various argument structures connected to the verb. In this paper I will take the opposite stance, investigating which argument structures that are allowed by a particular implementation of the minimalist program, and speculating how the verb must be formed to go together with this or that argument structure. First, however, I will in section 2 present the theoretical framework within which the proposed syntactic account of argument structure is developed. In section 3 the various argument structures that are possible in the framework are presented, and it is illustrated how some central argument structure questions can be answered. Section 4 is the conclusion .

2. Theoretical Framework

In this work I will assume the feature-driven implementation of the Minimalist program, launched in recent works by Chomsky (2001, 2007, 2008) and Pesetsky & Torrego (2001,

2004). In line with Chomsky's intentions, I will try to keep the machinery to a minimum and thereby hopefully getting an understanding of how the labor is divided between syntax and semantics with respect to argument structure.

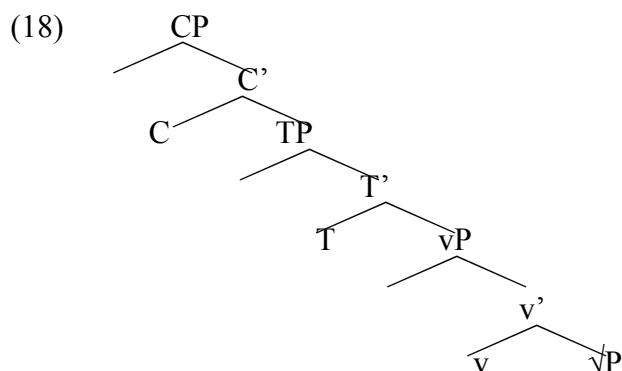
2.1. *Narrow syntax – a computational system that links form and meaning*

2.1.1. Merge and the lexicon

Syntax is a computational system, driven by the operation **Merge**, which works on grammatical features. Merge adds a syntactic object to the edge of another syntactic object, leaving the two objects unchanged. Having formed the syntactic object *the bed* we may merge the syntactic object *in* to the edge of *the bed*, yielding the PP *in the bed*. This type of merge is called external merge. There is also internal merge, corresponding to move in older versions of the theory. In this case, we take e.g. *John* in the syntactic object *has John bought a car* and merge it to this object, yielding *John has ~~John~~ bought a car*, where the stricken through of the second instance of *John* indicates that this is a copy and hence not pronounced.

As Chomsky (2007:6) notices, "[i]n addition to Merge, UG must at least provide atomic elements, lexical items LI, each a structured array of properties (*features*) to which Merge and other operations apply to form expressions. [---] A particular language is identified at least by valuation of parameters and selection from the store of features made available by UG, and a listing of combinations of these features in LIs (the lexicon)". In addition to LI, the lexicon that feeds the computation, there are two other lexicons, *the Vocabulary*, which contains rules that add phonological form to abstract morphemes, and *the Encyclopedia*, that contains semantic information associated with roots and idioms that is of no relevance for syntax.

In line with Chomsky (2001), I will assume that the computation of a sentence results in the following schematic structure:



The lowest parts, vP and \sqrt{P} , determine the event; this is the part of the tree where argument structure is represented. The middle part, TP, determines among other things the tense and mood of the sentence. The upper part, CP, anchors the sentence in the speaker's view, and the speaker's here and now, mediating information between the sentence and its context.

According to Chomsky (2001:11f), the derivation proceeds by **Phase**, motivated as a reduction of the computational burden. Chomsky (2008) claims there are two phases, CP and vP in a structure like (18), where information is sent to the semantic and the phonological interfaces. Deriving the structure from bottom up, the vP phase is first computed. T is then merged to vP. Since T is not a phase by itself, everything within vP is still available for the computation. As soon as C is merged, however, the complement of v, i.e. \sqrt{P} , is no longer accessible.⁶

The categorial head v is merged to a root phrase \sqrt{P} which lacks categorial features; when merged to a root, v makes a verb out of the root. Similarly, when merged to a root, the categorial heads n, a and p make nouns, adjectives and prepositions, respectively, out of the root.

Although the root $\sqrt{}$ is not determined for syntactic category it comes with information about ontological category (Josefsson 1998:37). Roots are divided according to ontological categories in at least four groups, where verbs associate with the ontological category *Aktivitet*,⁷ nouns with the ontological category *Thing*, adjectives with the ontological category *Property*, and prepositions with the ontological category *Relation*. The ontological categories are represented as features, see below.

2.1.2. Features

A syntactic structure is the result of merging syntactic objects (lexical items), where the lexical items consist of features with semantic values. These features come in two guises, *interpretable* and *valued* or *uninterpretable* and *unvalued*. Only interpretable and valued features are allowed at the interfaces to semantics and phonology, hence the syntactic computation must assign a value to the uninterpretable and unvalued features for the derivation to converge. This follows from syntax being a system zipping together form and meaning at the sentential level—if an uninterpretable/unvalued feature is present when the sentence is computed for form and meaning, these two aspects will not combine into an indivisible whole.

⁶ It must be stressed with Chomsky (2007:6) that the “generative system involves no temporal dimension. In this respect, generation of expressions is similar to other recursive processes such as construction of formal proofs. Intuitively, the proof ‘begins’ with axioms and each line is added to earlier lines by rules of inference or additional axioms. but this implies no temporal ordering. It is simply a description of the structural properties of the geometrical object ‘proof’. The actual construction of a proof may well begin with its last line, involve independently generated lemmas, etc. The choice of axioms might come last. The same is true of generation vs. production of an expression, a familiar competence-performance distinction.”

⁷ I.e., an action, an event, a process, a state, a relation or whatever situation a verb may refer to.

In my implementation of the minimalist program, I will work with only two features in addition to the ontological ones: a τ -feature (tense), interpretable in T and v, and ϕ -features (person, gender and number), interpretable in DP. See section 2.3. below.

2.1.3. The operation Agree

Uninterpretable features are valued with the help of the operation **Agree**, see Chomsky 2001: 3)

Step 1: Select a **probe** i.e. a head with at least one uninterpretable feature $\neg x$.

Step 2: Search the c-command domain of the probe for the closest **goal** with the same feature but with reversed value for interpretability, x.

Step 3: Value the uninterpretable feature of the probe in accordance with the value of the goal.

2.2. Thematic Roles

Following Baker (1988: 46, 1997, 104-105), I will assume that there is a universal link between grammatical structure and the thematic role expressed by a DP. I will distinguish three families of thematic roles, related to syntactic structure in the following way, when expressed as externally merged DP-arguments of the verb:

(19) **The A-family.** This class includes thematic roles like Agent, Cause, Instrument and Holder of the state.⁸ A DP expressing a role of the A-family is always externally merged in Spec-vP.

The B-family. This class includes thematic roles like Experiencer, Goal, Beneficiary, Location⁹ and Materiality.¹⁰ A DP expressing a role of the B-family is always externally merged in Spec-√P.

The C-family. This class includes thematic roles like Path and Theme. A DP expressing a role of the C-family is always externally merged in the complement of √.

The linking described in (19) obviously captures the main cases, e.g. the fact that if there is a DP with a role from the A-family, this DP will be the subject, since it is the DP closest to the subject position Spec-TP. It also accounts for the fact that there are at most three DP-

⁸ For the role Holder of the state, see Ramchand (2008:55),

⁹ The underlined DP in examples like *The dress fitted her badly*; *The room sleeps five persons*.

¹⁰ The term Materiality is taken from Christensen (2008). The Materiality-role is carried by a DP that refers to an entity (animate or inanimate) carrying out the specific action, motion or posture referred to by the verb. The subject of ordinary motion verbs typically has the role Materiality, like *John* in *John is running down the street*.

expressed arguments in a clause (additional DP arguments must be non-structurally case-marked or embedded within PPs).

The linking scheme makes the strong prediction that no sentence contains two DP arguments of the same role family. Hence, we cannot express both the Agent and the Instrument as DP arguments in a single clause.

- (20) a. *John broke the window the hammer.
 b. John broke the window with the hammer.
 c. The hammer broke the window.

The restriction that an argument belonging to a particular thematic role family must be externally merged in the relevant position may be up to discussion. Ramchand (2008) assumes that the subject DP *Mary* in the sentence *Mary ran to the station* is both Undergoer and Initiator in her terms, corresponding to Family A (Agent) and Family B (Materiality) in (19).

I will not follow Ramchand here, however. In the system I am proposing, the discussed example is analyzed as in (21); the subject of *run* is seen as having the Materiality role:

- (21) [_{VP} V [_{VP} Mary ran to the station]]

To start running presupposes an initiator/agent. It is less clear that we conceptualize such a role when we see or think about someone running, jogging etc. We interpret the subject of a verb like *run* as performing the movement, more or less intentionally. An alternative to an analysis like Ramchand's could be to assume that the Agent role in cases like this is not syntactically present, but an effect of our knowledge of the world: a living creature may always initiate an action. When the moving entity is not animate, such an inference is not drawn.

- (22) a. The log rolled into the river.
 b. The man rolled into the river.

In both cases, the rolling may be caused by gravity, the wind, a human agent, etc, but only in the second case is it possible that the subject both causes the rolling and is the thing that rolls. I see no reason from a syntactic point of view to believe that (22a,b) should have different structures, but will argue that in both cases we have the structure outlined in (21).

2.3. The distribution of features within *vP*

As mentioned, I assume DP to host the interpretable ontological feature Thing (Th). In addition, DP hosts an interpretable feature ϕ , (person, number, gender). A DP may optionally host an uninterpretable tense feature $\neg\tau$. Thus, there are two kinds of DP:

- (23) a. DP with feature bundle [Th, ϕ , $\neg\tau$]
 b. DP with the feature bundle [Th, ϕ].

When used as an argument, a DP with an uninterpretable τ -feature has an influence on the situational aspect/aktionsart of the event, see the examples in (24). The option to use the durational adverbial *in five minutes* in (24a) but not in (24b) is a consequence of the event being bounded in the a-case where the object refers to a thing with distinct limits (the event ends when the apple is consumed), whereas the use of the durational adverbial *for half an hour* in the b-case where the object refers to an unlimited thing shows that the event is unbounded.

- (24) a. John ate an apple in two minutes. (*for two minutes)
 b. John ate apples for half an hour. (in half an hour)

A DP argument with $\neg\tau$ corresponds to what Ramchand (2008: 25) calls Path, i.e. the object of a class of verbs “where the verbal change is directly mapped on to the material extent of the object”. Examples of DPs expressing different types of Paths are given in (25), where the relevant DP is underlined:

- (25) a. John run 5 miles / the New York Marathon
 b. John pushed the cart 500 meters.
 c. Mary ate the apple.
 d. Eve sang a song.

According to the linking rules in (19) above, the Path role is linked to the complement of the root phrase. I will assume that the use of $\neg\tau$ in DPs is restricted to DPs expressing a Path, hence only thematic roles of the C-family will be used to express whether or not an activity is bounded or unbounded.

The feature $\neg\tau$ may also be found in roots that underlie verbs with an inherently bounded reading, in which case the root itself determines the aktionsart.

- (26) He entered the room.

Hence the distinction $\tau/\neg\tau$ is a matter only for roots and for arguments of the role family C.

The impact of v on the root phrase involves at least the following three properties:

- (27) a. Little v encodes for *Aktivität*.
 b. Little v provides the concept referred to by the root with a temporal contour.
 c. Little v restricts the possible number of arguments within the root phrase.

The properties mentioned in (27) are expressed as three features attached to v , [$\neg Ak$, τ , $\neg\phi$]. Since both the Ak -feature and the ϕ -feature are uninterpretable in v ,¹¹ v is a probe, which searches for its goal within the root phrase. The interpretable version of Ak is found in the

¹¹ Uninterpretable ϕ -features are found in T and in P in addition to little v .

root, and interpretable ϕ -features are found in DPs. Thus, as soon as we have little v in a structure, it must c-command a root phrase with Ak in its head and at least one DP.

3. Theoretically possible argument structures

3.1. The available structures

The theoretical framework outlined in section 2 only allows for a restricted number of possible argument structures. We have already seen that the number of DP arguments that are possible in a sentence seems to be restricted to three, corresponding to the three theta role families presented in (19). Structurally, these DPs appear in the three places in the sentential tree where DPs may be first merged: Spec-vP, Spec-√P and the complement of the root. In addition, the feature set up of little v , i.e. $[-Ak, \tau, \neg\phi]$, restricts the possibilities even further: there must be at least one DP argument within the root phrase for little v to get rid of $[-\phi]$. On the other hand, the number of different argument structures is augmented by the assumption that a DP in the complement of the root may come either with or without $[-\tau]$. Since $[-\tau]$ may also appear in the root, and given the plausible assumption that only one instance of $[-\tau]$ is allowed per sentence, the number of possible argument structures is 16. These are presented and exemplified in (28)-(30), ordered with respect to the number of DP arguments.

(28) Argument Structures I: 3 DP arguments

- | | |
|--|--|
| a. $[_{vP} DP \ v \ [_{\sqrt{P}} DP \ [_{\sqrt{Ak}}, \neg\tau] \ DP]]]$ | <i>John gave Mary a book.</i> |
| b. $[_{vP} DP \ v \ [_{\sqrt{P}} DP \ [_{\sqrt{Ak}}] \ [_{DP} \neg\tau]]]$ | <i>John rolled his bike to the station..</i> |
| c. $[_{vP} DP \ v \ [_{\sqrt{P}} DP \ [_{\sqrt{Ak}}] \ DP]]]$ | <i>John owes her a lot of money.</i> |

(29) Argument Structures II: 2 DP arguments

- | | |
|---|-----------------------------------|
| a. $[_{vP} DP \ v \ [_{\sqrt{P}} [_{\sqrt{Ak}}, \neg\tau] \ DP]]]$ | <i>John broke the glass.</i> |
| b. $[_{vP} DP \ v \ [_{\sqrt{P}} [_{\sqrt{Ak}}] \ [_{DP} \neg\tau]]]$ | <i>Martha wrote a book</i> |
| c. $[_{vP} DP \ v \ [_{\sqrt{P}} [_{\sqrt{Ak}}] \ DP]]]$ | <i>She held the rail</i> |
| d. $[_{vP} DP \ v \ [_{\sqrt{P}} DP \ [_{\sqrt{Ak}}, \neg\tau]]]$ | <i>Mary washed John</i> |
| e. $[_{vP} DP \ v \ [_{\sqrt{P}} DP \ [_{\sqrt{Ak}}]]]$ | <i>The goast scared her</i> |
| f. $[_{vP} v \ [_{\sqrt{P}} DP \ [_{\sqrt{Ak}}, \neg\tau] \ DP]]]$ | <i>John got the money.</i> |
| g. $[_{vP} v \ [_{\sqrt{P}} DP \ [_{\sqrt{Ak}}] \ [_{DP} \neg\tau]]]$ | <i>John walked to the store..</i> |
| h. $[_{vP} v \ [_{\sqrt{P}} DP \ [_{\sqrt{Ak}}] \ DP]]]$ | <i>John has the money.</i> |

(30) Argument Structures III: 1 DP argument

- | | |
|--|--|
| a. $[_{vP} v \ [_{\sqrt{P}} [_{\sqrt{Ak}}, \neg\tau] \ DP]]]$ | <i>The train arrived at 3 o'clock.</i> |
| b. $[_{vP} v \ [_{\sqrt{P}} [_{\sqrt{Ak}}] \ [_{DP} \neg\tau]]]$ | <i>The ice melted.</i> |
| c. $[_{vP} v \ [_{\sqrt{P}} [_{\sqrt{Ak}}] \ DP]]]$ | <i>She lived in Konstanz for many years.</i> |

d. $[_{VP} V [_{VP} DP [_{\sqrt{}} [Ak, \neg\tau]]]]$

John died yesterday.

e. $[_{VP} V [_{VP} DP [_{\sqrt{}} [Ak]]]]$

John was sitting on the table.

3.2. Comments

In this section we will briefly discuss some consequences of the proposal in (28)-(30). Firstly, we will consider the two options for a DP in the complement of the root, mentioned in (19): this DP is a Path when hosting the feature $[\neg\tau]$, otherwise it is a Theme. Finally, I will show how the proposed framework handles cases where the same root appears with various argument structures.

3.2.1. The Path argument

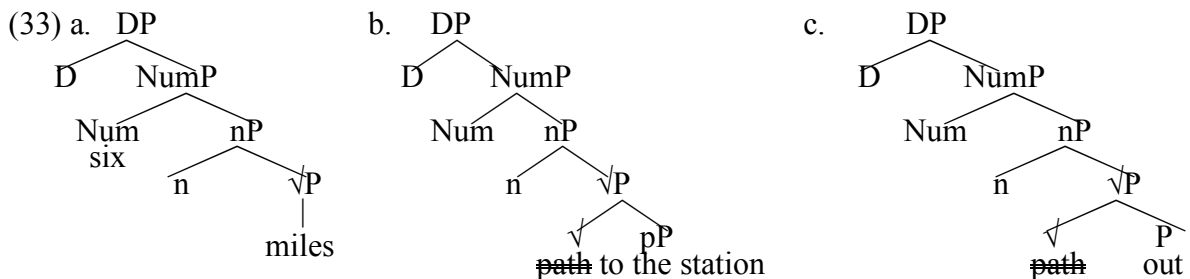
The Path argument is represented as $[_{DP} \neg\tau]$ in (28b), (29b,g) and (30b) above. This argument has to be modeled in a particular way to get the proposed system of argument structures off the ground. Sometimes, the Path DP is wholly (31a) or partially (31b,c) visible, sometimes it is invisible (31d):

- (31) a. He ran 6 miles.
 b. He ran to the store.
 c. He ran out.
 d. He ran fast.

I will claim that *run* in all four cases has the structure in (29g), here specified as (32):

(32) $[_{VP} V [_{VP} he [_{\sqrt{}} [run Ak] [_{DP} \neg\tau]]]]$

In this structure, the DP in Spec- \sqrt{P} has the Materiality role, and the DP in the complement of the root, the Path role, here referred to as DP_{path} . This role is visible as *miles* in (31a), but only indirectly visible in (31b,c); nevertheless, I will assume DP_{path} in all these cases as well, but with an unpronounced head; in the trees in (33a-c), this is rendered as *path*.¹² In (31b/33b), the visible part is a PP, in (31c/33c) it is a particle, represented as a P without complement.¹³



¹² The head of DP_{path} may be realized as *path*, *way*, *route*, *distance*, *stretch* etc. (cf. *the way to the station*, *the way out*, *he was running his way* etc.).

¹³ With Toivonen (2003) I analyze verb particles as non-projecting P's.

3.2.2. The Theme argument

Like the Path argument, the Theme argument may lack phonetic form; this is especially the case when the Theme corresponds to a cognate object. Consider the examples in (34):

- (34) a. Eve broke the glass.
b. Paula kicked him.

I suggest different argument structures in these two cases. In (34a), the object *the glass* is a Theme argument, being merged in the complement of the root, whereas in (34b), the object *him* is a Patient, merged in the specifier of the root. The subjects are Agents in both cases. Notice that (34b) but not (34a) may be paraphrased with a cognate object: *Paula gave him a kick* but not **Eve gave the glass a break*. Thus, according to this analysis, (34a) has the argument structure (29a), whereas (34b) has the argument structure (28a); although similar on the surface, (34a,b) thus differ considerably with respect to argument structure.

3.2.3. Argument structure alternations

In this section I will look at argument structure alternations from the point of view of the narrow syntactic system used as the basis for this study. Taking the verb *break* as an illustration, I will show how the variation associated with a single root can be at least partly predicted by the system proposed. As seen in (35), *break* can be used to illustrate the Causative/Inchoative alternation (Levin 1993):

- (35) a. Martha broke the glass. (c.f. (29a), [_{VP} DP v [_{√P} [_√ [Ak, ¬τ] DP]]])
b. The glass broke. (c.f. (31a), [_{VP} v [_{√P} [_√ [Ak, ¬τ] DP]]])

Considering first the inchoative version (35b), we have a structure with no DP in Spec-√P, ¬τ in the root, and a Theme DP in the complement of the root. Grammar predicts that there is no alternation where this DP is left out, since that would give us the impossible structure without any DP in the root phrase. This is confirmed by the absence of an impersonal passive in a language like Swedish that allows such passives: **Det krossades igår* ‘there was-broken yesterday’. With a Theme DP, as in *Det krossades glas igår* ‘there was-broken glass yesterday’, the passive is well formed..

A way to change (35b) that does not violate narrow syntax is to add a DP in Spec-√P (role family B), giving us (36), an instance of structure (29f).

- (36) My great grandmother broke her hip after falling off a horse.

In (36), the subject obviously refers to a thematic role of the B-family. Note that this DP is closer to T than the path DP, and it is therefore promoted to subject.

Another possible way to change (35b) is to remove $\neg\tau$ from the root. This will give us an instance of argument structure (30c). To exemplify this structure, we need to find *break* referring to a State, not a (momentary) change. The Middle use of *break* is a candidate at hand.

(37) Crystal breaks at the slightest touch.

Klingvall (2007:109), building on ideas from Lekakou (2005), analyzes middles as disposition ascriptions, i.e. “generalizations that hold by virtue of some property of the entity that appears as the grammatical subject”. This characterization fits well for (37).

Returning to the causative version in (35a), a theoretical option would be to insert a DP in Spec- \sqrt{P} , giving us argument structure (28a). This is illustrated in (38):

(38) He broke himself a switch from the hedge and gave the cow a touch on her side.

Finally, we may notice that (35a) has a verbal passive alternation:

(39) The glass was broken (by Mary).

The passive version in (39) has, like (36), the structure (29f). The main difference between (36) and (39) is a semantic one: a causer is understood in (39), but not in (36).

4. Summary and conclusion

In this paper I have given a short presentation of a minimalistic approach to argument structure, taking a particular implementation of the minimalist framework as my point of departure. As we have seen, narrow syntax, as it is defined by this framework, will allow only a restricted number of possible argument structures, presented and illustrated in section 3 above. The present proposal attempts to explore what a syntactically founded argument structure might look like. The argument structure theory argued for here does not have its base in the single verb and its argument structure variation. Instead, the theory may help us to understand which properties must be found in a particular root for it to be associated with this or that argument structure. As the title of my contribution reveals, I cannot say I have reached far in this direction, but I have at least tried to look at relevant data from a new perspective. Most questions are still unanswered, and there has been no space for any real argumentation, but it is my hope that the present proposal will inspire other scholars to look at the field of argument structure from a syntactic point of view.

References

- Baker, Mark (1988), *Incorporation. A Theory of Grammatical Function changing*. Chicago, IL: University of Chicago Press.
- Baker, Mark (1997), Thematic roles and syntactic structure. In *Elements of Grammar. Handbook in Generative Syntax*, ed. by Liliane Haegeman, 73-137. Dordrecht: Kluwer.

- Bresnan, Joan & Sam A. Mchombo (1993), Object Asymmetries in Comparative Bantu Syntax. In *Theoretical Aspects of Bantu Grammar I*, ed. by Sam A. Mchombo, 50-93. Stanford, CA: CSLI Publications.
- Chomsky, Noam (1965), *Aspects of the Theory of Syntax*. Cambridge, MA: The MIT Press.
- Chomsky, Noam (1995), *The Minimalist Program*. Cambridge, MA, The MIT Press.
- Chomsky, Noam (2001), Derivation by phase. In *Ken Hale. A Life in Language*, ed by Michail Kenstowicz, 1-52. Cambridge, MA and London, Engl.: The MIT Press.
- Chomsky, Noam (2007), Approaching UG from Below. In *Interfaces + Recursion = Language? Chomsky's Minimalism and the View from Syntax–Semantics*, ed. by Uli Sauerland and Hans-Martin Gärtner, 1-29. Berlin, New York: Mouton de Gruyter.
- Chomsky, Noam (2008), On Phases. In *Foundational Issues in Linguistic Theory*, ed. by Robert Freidin, Carlos Otero, and Maria-Luisa Zubizarreta, 133-166. Cambridge, MA: The MIT Press.
- Christensen, Lisa (2008), Vendler Revisited: From a Swedish Point of Departure. Unpublished ms., Lund University.
- Hauser, Marc D., Noam Chomsky & W. Tecumseh Fitch (2002), The faculty of language: What it is, who has it, and how did it evolve? *Science* 298:1569-79.
- Jackendoff, Ray (2002), *Foundation of Language. Brain, Meaning, Grammar, Evolution*. Oxford, New York: Oxford University Press..
- Josefsson, Gunlög (1998), *Minimal Words in a Minimal Syntax. Word Formation in Swedish*. Amsterdam, Philadelphia: John Benjamins.
- Klingvall, Eva (2007), *(De)composing the middle. A minimalist approach to middles in English and Swedish*. PhD thesis, Lund: Lund University.
- Lekakou, Marika (2005), *In the middle, somewhat elevated. The semantics of middles and its crosslinguistic realization*. PhD thesis, London: University College.
- Levin, Beth (1993), *English Verb Classes and Alternations. A Preliminary Investigation*. Chicago and London: Chicago University Press.
- Noreen, Adolf (1906), *Vårt språk V*. Lund: Gleerups.
- Pesetsky, David & Esther Torrego (2001), Tense-to-C Movement. Causes and Consequences. In *Ken Hale. A Life in Linguistics*, ed. by Michael Kenstowicz, 355-426. Cambridge, The MIT Press.
- Pesetsky, David & Esther Torrego (2004), Tense, Case, and the Nature of Syntactic Categories. In *The Syntax of Time*, ed. by Jacqueline Guéron and Jacqueline Lecarme, 495-537. Cambridge, MA: The MIT Press.

- Pylkkänen, Liina (2002), *Introducing Arguments*. PhD diss., MIT.
- Ramchand, Gillian C. (2008), *Verb Meaning and the Lexicon: A First Phase Syntax*. Cambridge: Cambridge University Press.
- Spelke, Elizabeth, What Makes Us Smart? Core Knowledge and Natural Language. In *Advances in the Study of Language and Thought*, ed. by Dedre Gentner and Susan Goldin-Meadow, p. 277-311. Cambridge, MA, The MIT Press).
- Toivonen, Ida (2002), *Non-Projecting Words. A Case Study of Swedish Particles*. Dordrecht, Boston, London: Kluwer.

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