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BA Thesis

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The current status of rightward verb movement

The question whether rightward verb movement exists in OV languages has been long debated. There is however still no consensus in the field on whether it exists or not. This thesis will outline and review arguments that have been presented in favour of and against rightward verb movement, consequently trying to establish whether rightward verb movement should be adopted or not. The different arguments concern Dutch verb clusters, clauses involving ellipsis in Japanese, the difference in parsibility between centre-embedded clauses between Japanese and Korean, (im)mobility of the V-*te* clause in Japanese and the difference in scopal relations between different speakers of Korean. After reviewing all the arguments, the following tentative conclusions can be made: Dutch and Korean do not possess rightward verb movement, whereas Japanese does possess rightward verb movement.

Keywords: rightward verb movement, Dutch, Japanese, Korean, verb clusters, ellipsis, parsing, mobility, scope

1. Introduction

The existence of leftward verb movement in the syntax of VO languages has long been shown to exist, and has been written extensively about (see a.o. Kayne 1991). However, there is still no consensus in the field on whether rightward verb movement, that is, verb movement in OV languages, exists. Although it has been researched extensively in past years in languages such as Dutch and German, no satisfactory answer can yet be given. What makes rightward verb

movement so difficult to establish is the fact that, if rightward verb (so head) movement were to take place in an OV language, it is string-vacuous. This means that if a constituent would move rightward, it would not, as opposed to most instances of leftward movement, affect the word order of the sentence (see (1)), which means that rightward movement cannot be established by looking at word order.

Recently arguments in favour of rightward movement have been put forth however from Asian OV languages such as Japanese and Korean (a.o. Hagstrom & Rhee 1997, Hayashi & Fujii 2015 and Sato & Hayashi 2018 for Japanese and Han, Lidz & Musolino 2007 for Korean) and arguments against such movement in Dutch (Barbiers, Benning & Drost-Hendriks 2018), Japanese (Kobayashi 2015) and Korean (Zeijlstra 2017).

(1)   a. S V O V̶

Icelandic:

Ég spurði [$_{CP}$ af hverju [$_{IPx}$ Helgi **hefði** [$_{VP}$ oft *t* lesið þessa bók]]]

I   asked   why   H.   had   often read this book

(Bobalijk & Thráinsson 1998, p. 48)

Here, the verb *hef*ði 'had' has moved out of the VP past the adverb *oft* 'often' to I (adverbs are seen as markers for verb movement, if the verb occurs after the adverb, the sentence becomes ungrammatical).

        b. S O V̶ V

Japanese:

Taro [Complement *te*-clause Ziro pizza *t*] [cook-*te*] +get-PAST

(Hayashi & Fujii 2015, p. 34)

Here, the verb 'cook' supposedly moves into a higher a clause, but as can be seen, the movement would be string-vacuous, that is, the word order of the sentence is not affected by the movement. So, whereas leftward verb movement has generally been accepted to exist, rightward movement is still under discussion. If rightward movement would not exist, this might be explained by the processability of rightward movement. In a sentence containing leftward verb movement, the filler (in this instance the moved verb) precedes the gap (the position the verb moved from), whereas in a sentence containing rightward verb movement, the gap would precede the filler. This fact could make the processing of rightward movement too difficult: the parser encounters the gap first and the filler after, which means that it has to retrieve the gap quite late in the sentence, which could prove to be too much strain on short-term memory. Abels and Neeleman (2007) among others provide a theoretical argument against rightward movement in light of this. They argue that because of a contradiction in the labelling of a certain node in sentences supposedly containing rightward movement, rightward movement is too difficult to process (see chapter on parsing).

This thesis will provide a concise overview of the arguments that have recently been proposed in favour of and against rightward verb movement, and will subsequently review these arguments and put them against each other, hereby providing some clarity on the many different arguments and counterarguments that have been proposed for rightward verb movement.

The structure of this thesis is as follows: In the second chapter I will review arguments that have been presented in favour of and against rightward movement concerning verbal clusters in Dutch. The third chapter reviews arguments that have been put forth to account for rightward movement in Japanese concerning ellipsis. The fourth chapter will review arguments in favour and against rightward verb movement concerning parsing. The fifth chapter concerns arguments in favour of rightward verb movement regarding the (im)mobility of the V-*te* clause in Japanese in adjunct and complement clauses. The sixth chapter will review arguments that have been put forth to account for rightward movement in Korean concerning scope. The last chapter is a conclusion.

2. The status on rightward verb movement in Dutch (and German): verb clusters

The status on how verbal clusters in Dutch are derived has been much debated. However, it is still unclear whether these verb clusters are derived through rightward movement or through some different operation. Three different analyses can be distinguished: rightward movement of the verb (Evers 1975), leftward movement of VP (Barbiers 1995) and base-generation of the verbs in the cluster (Barbiers, Bennis & Dros-Hendriks 2018). Below all three analyses are presented and reviewed.

Evers (1975) argues in favour of rightward verb movement in Dutch and German, such as in (2).

(2)   a. Omdat Jan [de berg te beklimmen] probeert

Because John the mountain to climb tries

'Because John tries to climb the mountain'

b. Omdat Jan de berg [probeert te beklimmen]

Because John the mountain tries to climb

'Because John tries to climb the mountain'

(Evers 1975, p. 1)

Here, the VP *te beklimmen* 'to climb' moves past the verb *probeert* 'tries' to form (2b). Verbal clusters as in (2) appear in both Dutch and German. In German however, the verb cluster is the mirror image of the verb cluster in Dutch. Evers' (1975) analysis of verbal

clusters in Dutch and German is based on the fact that in Dutch the word order of the cluster changes. You expect the order V2-V1, but you get the order V1-V2. According to Evers, the word order V1-V2 is derived by verb movement to the right, as in (3).

(3)

$$
\begin{array}{c}
VP_1 \\
\diagup \quad \diagdown \\
VP_2 \qquad V_1 \\
| \\
V_2
\end{array}
$$
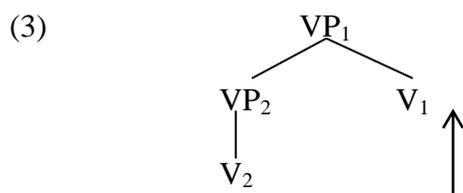
He assumes that this also happens in German, even though German does have the V2-V1 order. This means that this movement would be string-vacuous.

(4)   a. omdat Jan Cecilia een lied schijnt te willen leren zingen

        b. weil Johann Cecilia ein Lied singen lehren zu wollen scheint
         'because John seems to want to teach Cecilia to sing a song'

        (Evers 1975, p. 53)

(4) shows that German is the mirror image of Dutch. The fact that in both Dutch and German verb clusters seem to form a syntactic unit (e.g. in neither language an object can occur between the verb in the cluster) leads Evers to argue that rightward verb movement also exists in German. This movement then would be string-vacuous.

Whereas Evers (1975) argues for verb movement to the right to form verb clusters in Dutch and German, Barbiers proposes an analysis that follows Kayne (1994). Kayne argues that all languages have an underlying VO order, and that rightward movement does not exist, but that OV languages are derived through leftward movement of XPs. Thus, according to Barbiers (1995), these verb clusters are derived through leftward VP movement, as in (5).

(5)   a. Jan   heeft [PP in die stad] [VP gewerkt]

            John has   in that city   worked

      b. Jan   heeft [VP gewerkt] [PP in die stad]

            John has   worked   in that city

c.
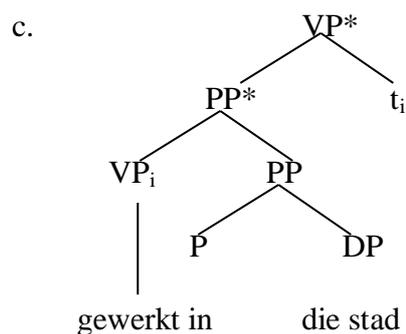
(Barbiers 1995, p. 94)

In (5), (5b) is derived from (5a) through leftward VP movement, as can be seen in (5c). Barbiers argues for this analysis by looking at 'PP Extraposition' in Dutch, where the PP can appear before and after the VP, as in (6).

(6)　　a. Jan heeft [PP in de tuin] [VP gewerkt]

John has　　in the garden   worked

'John has worked in the garden'

b. Jan   heeft [VP gewerkt] [PP in de tuin]

John has　　worked　　in the garden

(Barbiers 1995, p. 89)

Because Barbiers follows Kayne (1994), so that rightward movement and right-adjunction are impossible, (6b) cannot be derived by rightward PP-movement from (6a), or from rightward VP movement from (6b). In addition, this means that the PP cannot be base-generated in a right-adjoined position. Instead he argues that in (6b), the VP moves to the left of PP. The problem with rightward movement is that there seems to be no trigger for it, which goes against Chomsky (1993), who argues that movement is always triggered by the need for feature-checking and always has to be obligatory. According to Barbiers there is an interpretive trigger for this leftward VP movement, as a "qualificational relation" between PP and VP has to be established. Barbiers argues for this in light of the Principle of Semantic Interpretation.

(7) **Principle of Semantic Interpretation**

I. A node Z establishes a **S(emantic)-Relation** between a node X and a node Y iff X immediately c-commands Z and Z immediately c-commands Y

II. Z is a **QUALIFIER** of X iff Z establishes a S(emantic)-relation between X and Y, and X and Y are coindexed

(Barbiers 1995, p. 95)

Barbiers argues that the trigger for this leftward VP movement is interpretive because, according to this principle, if the VP would not move to the specifier position of the PP, the PP would not be interpretable as a qualifier of the VP. However, there seems to be a problem with this analysis: the sentences in (6) are completely identical in meaning, only the word order has changed. Why would the VP move then for interpretive reasons in (6b), but remain in situ in (6a)? Barbiers solves this by arguing that in (6a), the VP moves in covert syntax, whereas in (6b), the VP moves in overt syntax. Support for this is provided by the similarity of PP-X constructions and focus constructions, for which evidence for movement in covert and overt syntax is provided by the fact that both forms are sensitive to negative islands. The contrast between the focus constructions in (8) and (9) shows this.

(8)   a. Jan   kan WERKen!

         John can WORK

         'John can work very hard'

    b. WERKen   dat   Jan   kan!

      WORK   that   John can

      'John can work very hard'

(9)   a. *Jan   kan niet WERKen!

      John can   not WORK

    b. *WERKen dat   Jan   niet kan!

      WORK   that John not can

    (Barbiers 1995, pp. 95-96)

(9b) is ungrammatical because the focused VP *werken* 'work' has moved overtly across

negation. (9a) then is ungrammatical because the focused VP has moved across negation

covertly.

    The third analysis by Barbiers, Bennis and Dros-Hendriks (2018) involves no movement

whatsoever. Instead it argues for the direct of merger of the verbs in the verb clusters.

According to Barbiers et al, not much word order variation occurs in Dutch dialects. There is

however one domain in which this does occur, namely in verb clusters at the end of sentences

in Dutch. (10) shows that there are four possible word orders across Dutch dialects.

(10)   a. Ik vind dat iedereen *moet kunnen zwemmen*.   V1-V2-V3

      I   find that everyone must can   swim

    'I think that everybody should be able to swim.'

    b. Ik vind dat iedereen *moet zwemmen kunnen*.   V1-V3-V2

    c. Ik vind dat iedereen *zwemmen kunnen moet*.   V3-V2-V1

    d. Ik vind dat iedereen *zwemmen moet kunnen*.   V3-V1-V2

(Barbiers et al 2018, p. 146)

There seem to be no differences in meaning between the four word orders at all. At first

glance it seems that the selection of one of these word orders is arbitrary, but Barbiers et al

argue that there is a clear syntactic system behind the variation. They do this by assuming that

verbal clusters are built through Merge and not, as argued in previous literature, through

rightward verb movement (OV analysis) or leftward VP movement (VO analysis). This would

be preferable to an analysis involving movement, because there seem to be no triggers at all

for such movement, which goes against the minimalist approach. Barbiers et al furthermore

show, by looking at restrictions on linearization, that only the 1-2-3 and 3-2-1 orders consist

of all verbs, and that orders such as 1-3-2 and 3-1-2 involve a reanalysis of a verb as nominal

or adjectival.

If verb clusters are derived through Merge, four possible orders are available, namely:
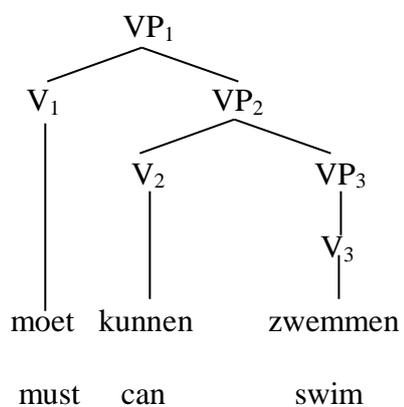
(11)   a.   [VP1 V1 [VP2 V2 VP3]] (16e)
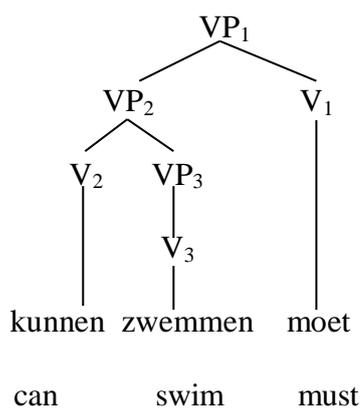
b.   [VP1 [VP2 V2 VP3] V1] (16f)

c.   [VP1 V1 [VP2 VP3 V2]] (16g)

d.   [VP1 [VP2 VP3 V2] V1] (16h)

e.

```
                    VP₁                    = 1-2-3
             ╱        ╲
           V₁          VP₂
                     ╱     ╲
                   V₂        VP₃
                              │
                              V₃
                   │     │    │
                 moet  kunnen zwemmen

                 must   can   swim
```

f.

```
                    VP₁                    = 2-3-1
             ╱        ╲
           VP₂          V₁
         ╱    ╲
       V₂      VP₃
                │
                V₃
         │      │       │
       kunnen zwemmen  moet

        can    swim    must
```

g.   VP₁   = 1-3-2

```
                    VP₁                        = 1-3-2
              V₁          VP₂
                      VP₃      V₂
                       V₃
          moet   zwemmen    kunnen

           must     swim       can
```

h.   VP₁   = 3-2-1

```
                    VP₁                        = 3-2-1
              VP₂          V₁
          VP₃      V₂
           V₃
        zwemmen   kunnen   moet

          swim      can     must
```
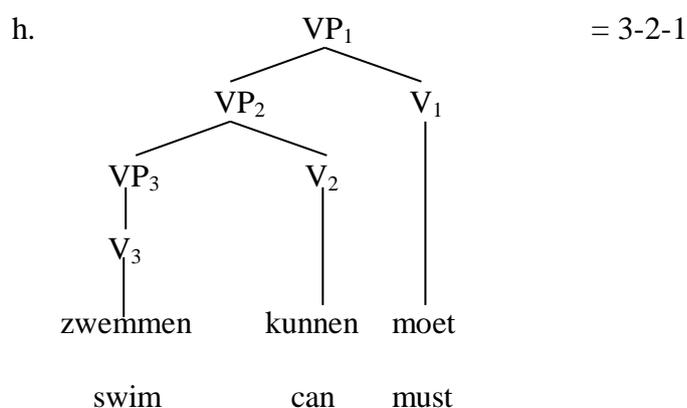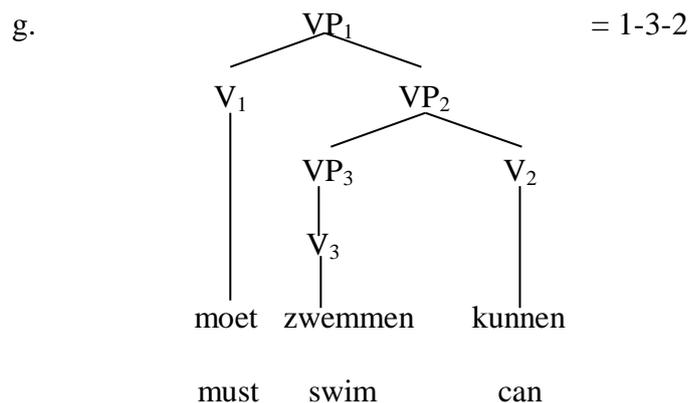
(Barbiers et al 2018, pp. 153-154)

Furthermore, the orders [VP2 V2 V1 V3] and [VP2 V3 V1 V2] should be impossible when verb clusters are generated through Merge. After analysing the occurrence of different word orders of different verb clusters (clusters with two modal auxiliaries, clusters with a modal auxiliary and a perfect auxiliary, and clusters with a perfect auxiliary and an aspectual auxiliary), Barbiers et al draw the following conclusions:

(12)   i. V2-V1-V3 does not occur;

ii. V1-V2-V3 occurs frequently in all three constructions, especially in the

Netherlands area;

iii. V3-V2-V1 is basically confined to the northern part of the language area. In
that area it occurs in all three constructions;

iv. V2-V3-V1 only appears in ASP$_2$ – V$_3$ – PERF$_1$. It is excluded in the other two;

v. V1-V3-V2 is frequent in MOD$_1$ – V$_3$ – PERF$_2$, infrequent in MOD$_1$ – V$_3$ – MOD$_2$, and
absent in PERF$_1$ – V$_3$ – ASP$_2$

vi. V3-V1-V2 is frequent in V$_3$ – MOD$_1$ – PERF$_2$, occurs regularly in V$_3$ – MOD$_1$ –
MOD$_2$, and sporadically in V$_3$ – PERF$_1$ – ASP$_2$

(Barbiers et al 2018, p. 158)

Strikingly, the order V3-V1-V2 occurs quite frequently in Dutch, even though this order
should be impossible if verb clusters are derived through Merge. The order V2-V1-V3 does
not occur as expected however, and all the other possible orders do indeed occur.

To account for the V3-V1-V2 order, Barbiers et al argue that reanalysis of V3 has taken
place, resulting in the order *participle* (with adjectival status)-V1-V2. Participles are
ambiguous in their categorial status; they occur in both "verbal or adjectival contexts", as can
be seen in (13).

(13)   a. Hij zag dat de   deur *geopend* $_2$ *is* $_1$.

He saw that the door opened   is

'He saw that the door has been opened / is open.'

b. Hij zag dat de deur *is* ₁ *geopend* ₂.

'He saw that the door has been opened / *is open.'

(Barbiers et al 2018, p. 160)

In (13a), the participle can have both a verbal and adjectival interpretation, whereas in (13b), the participle can only have the verbal interpretation. Since participles can have an adjectival status, the order V3-V1-V2 can be accounted for. Because in Dutch non-verbal elements are mostly situated left of the verb (see (14), where the non-verbal element *on* 'un' cannot appear after the verb *is* 'is'), Barbiers et al. argue that the V3 in this word order should be reanalysed as being an adjectival participle, which would make the V3-V1-V2 order (so *participle_A*-V1-V2) compatible with the theory of Merge. Consequently, orders such as this containing two modal auxiliaries are reanalysed as *nominalisation*-V1-V2, since infinitival main verbs can appear in a nominalised form in these clusters.

(14)   het artikel mag worden geretourneerd mits de verpakking <(on)geopend> is

    the article may be   returned   if   the package   <unopened>   is

    <(*on)geopend>.

    <(*un)opened>

(Barbiers et al 2018, p. 161)

As already shown, participles can be either adjectival or verbal, and since adjectival participles occur to the left of the perfective auxiliary, the cluster V2-V3-V1 can be

reanalysed as [[V2-V3]$_{ADJ}$ V1]. So, as with the order V3-V1-V2, the order V2-V3-V1 does not consist of three verbs, but of a participle cluster and a verb.

The last order to be accounted for then is the order V1-V3-V2, which can be reanalysed as V1-*participle*-V2. Barbiers et al argue that this is possible since other non-verbal elements, such as particles, occur in between verbs as well.

(15)   Ik vind dat Jan Marie *moet $_1$ OP bellen $_2$*.

I   find that Jan Marie must   up call

'I think that Jan should call Marie.'

(Barbiers et al 2018, p. 172)

Here, the particle *op* should be analysed as being a separate element from the verb, indicating that non-verbal elements can occur between verbs. In the analysis of Barbiers et al then, the participle just gets merged into the structure, without any movement involved. Furthermore, this order also occurs with nominalized infinitives as V3, which will then be reanalysed as V1-*nominal infinitive*-V2.

Hence, Barbiers et al argue for an analysis of Dutch verbal clusters being derived through Merge. They argue that the only possible verb orders are either the ascending V1-V2-V3 order or the descending V3-V2-V1. This means that these orders could indeed be derived through Merge, since these orders are linearized, which is a prerequisite of Merge. Verb orders that differ from these two linear orders should be reanalysed as having either adjectival

or nominal participles, which means that the verb orders remain linear.

Three different analyses to account for verbal clusters in Dutch and German have been presented. Evers (1975) argues for rightward verb movement due to the discrepancy in the word order of verbal clusters in Dutch. Barbiers (1995) follows Kayne's (1994) antisymmetry approach and argues that verb clusters in Dutch are derived through leftward movement of the VP. A whole new argument for the formation of verb clusters in Dutch is provided by Barbiers, Benning and Drost-Hendriks (2018), who argue for an analysis in which no movement whatsoever takes place. Instead they argue that verbs get merged directly into the structure.

The main objection that can be, and has been, raised against Evers' analysis of Dutch verb clusters being derived through rightward verb movement is the fact that there seems to be no trigger for said movement, which goes against Chomsky (1993): there is no need for feature-checking, so there seems to be no need for the verb to move to the right at all. Barbiers' justifies his analysis by arguing that there seems to be a trigger for leftward VP-movement in Dutch, namely an interpretive one. However, this movement seems to go against Chomsky (1993) as well: there is still no need for feature checking in Dutch verb clusters. Furthermore, the assumption that the VP moves covertly across for interpretative reasons seems unconvincing. There seems to be nothing that indicates that it is the movement of the VP over negation that makes a sentence such as (9b) ungrammatical: maybe it is just the focus in combination with negation that makes sentences such as these ungrammatical. In this respect then, the analysis by Barbiers, Benning and Drost-Hendriks seems to fit in best with common theory of movement: as there are no features to check in Dutch verb clusters, and therefore no

movement is required, it seems plausible that the verbs are merged directly into the structure.

A problem that arises in this analysis however is the question how theta-roles are distributed in a derivation where verb clusters are merged directly into the structure. In common theta-theory, lexical verbs in the cluster assign theta-roles to arguments inside their projection. In an order such as V1-V2-V3 then (e.g. Ik vind dat iedereen moet kunnen zwemmen 'I think that everybody should be able to swim'), the lexical verb cannot assign its theta-roles to arguments in its projection, as there are no arguments in its projection to assign theta-roles to. Barbiers et al provide a solution for this themselves. They follow Neeleman and Weerman (1993), who argue in for example a '2.PCP-1' verb cluster, both the lexical verb (V1) and the participle (PCP) can assign theta-roles (see (16))

(16) $VP_1 [\Theta_1, \Theta_2]$

PCP $[\Theta_2]$ $V_1 [\Theta_1]$
| |
gemaakt   heeft

made   has
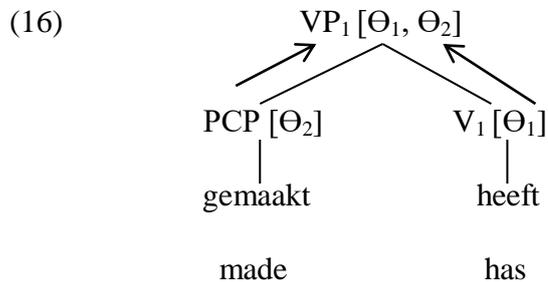
(Barbiers et al 2018, p. 165, from Neeleman & Weerman 1993, p. 451)

The fact that the participles can assign theta-roles as well means that Barbiers et al's analysis can hold. Both an analysis which involves some kind of movement (Evers 1975 and Barbiers 1995) and an analysis which involves no movement at all (Barbiers et al 2018) go against conventional theories of linguistics, namely the fact that things move for feature checking in the movement analyses and the fact that common theta-theory is not compatible with the

Merge analysis. Seeing as the three empirical arguments that have been proposed to account for verb clusters in Dutch seem insufficient in itself to argue for either movement (leftward or rightward) or no movement at all, it seems reasonable to approach these analyses from a theoretical perspective: the Minimalist approach in this instance. An important question to ask then is which one of these theories seems to be the most severe to violate in light of Minimalist theory. I would say that the former seems to be a greater violation (in fact, it would go against Minimalist theory), namely the fact that movement always needs a trigger. Furthermore, the analysis that participles can assign theta-roles as well has been empirically supported by Neeleman and Weerman (1993), whereas movement without trigger remains controversial till this day. The most plausible conclusion then, in the light of current Minimalist theory, seems to be to adopt the analysis of Barbiers, Benning and Drost-Hendriks (2018), which argues that Dutch verbal clusters are derived by directly merging the verbs in the structure.

3. Ellipsis in *te*-clauses and verb-echo answers

In this chapter arguments by Hayashi and Fujii (2015) and Sato and Hayashi (2018) will be reviewed. Firstly, the argument by Hayashi and Fujii (2015) involving V-*te* movement and the argument by Sato and Hayashi (2018) involving verb-echo answers will be summarised, after which their arguments will be reviewed against common ellipsis theory.

Hayashi and Fujii (2015) provide an argument in favour of rightward movement in Japanese involving the non-ellipsis of the V-*te*. In a sentence involving ellipsis (for example an answer to a question), a part of the sentence is not pronounced, whereas it is syntactically present. This could tell us something about whether the verb has moved: if a verb is pronounced in a sentence involving ellipsis, it is possible it has moved out of the clause targeted by ellipsis to a position higher in the structure. Hayashi's and Fujii's argument that accounts for V-*te* movement in Japanese is based on ellipsis and the fact that the V-*te* component gets pronounced after ellipsis. Hayashi and Fujii claim that dependants, such as arguments, of V-*te* can only be ellided when V-*te* is pronounced. They use the following two sentence pairs to account for this fact:

(17)   a. Taro-wa [Ziro-ni   mayoneezu-de   susi-o   tabe-te] morat-ta kedo,

            Taro-TOP Ziro-DAT mayonnaise-with sushi-ACC eat-TE   get-PAST but

            'Taro had Ziro eat sushi with mayonnaise, but

b. *boku-wa *e* morawa-nakat-ta.

   I-TOP   get-NEG- PAST

‘I didn’t have ~~Ziro eat sushi with mayonnaise~~.’ (intended reading)

(18)   a. Taro-wa [Ziro-ni   mayoneezu-de   susi-o   tabe-te] morat-ta   kedo,

   Taro-TOP Ziro-DAT mayonnaise-with sushi-ACC eat-TE   get-PAST but

‘Taro had Ziro eat sushi with mayonnaise, but’

b. boku-wa e tabe-te   morawa-nakat-ta.

   I-TOP   eat-TE   get-NEG- PAST

‘I didn’t have ~~Ziro~~ eat ~~sushi with mayonnaise~~.’

(Hayashi & Fujii 2015, p. 41)

In (17b), the lexical verb in the embedded clause gets elided, which results in ungrammaticality. In (18b) however, the verb from the elided clause is pronounced, which results in the sentence being grammatical. The fact that the V-*te* cannot, as shown by (17b), be elided, shows, according to Hayashi and Fujii, that V-*te* has moved into the higher clause, which means that it is no longer in the clause targeted by the ellipsis. So when the V-*te* from the elided clause is pronounced, as in (18b), the sentence is grammatical. This leads Hayashi and Fujii to adopt the following analysis of sentences involving ellipsis:

(19) I [~~TP Ziro with mayonnaise sushi *t*~~] [T eat-*te*]ᵢ+get-PAST

(Hayashi & Fujii 2015, p. 42)

In (19), the V-*te* moves out of the TP to the higher clause, after which it is no longer a part of the elided clause, and thus gets pronounced in a sentence involving ellipsis.

Furthermore, this argument is confirmed by elliptical sentences in which no head movement takes place, like in (20), in which ellipsis of the entire clause does not cause any ungrammaticality.

(20) a. Taroᵢ-wa   Sony-ni [CP zibunᵢ-no   musume-o   yatou yooni] tanon-da.

    Taro-TOP   Sony-DAT self-NO   daughter-ACC hire   C   ask-PAST

    'Taroᵢ asked Sony to hire hisᵢ daughter.'

    b. Ziroⱼ-wa   Toyota-ni e   tanon-da.

    Ziro-TOP Toyota-DAT aske-PAST

    'Ziroⱼ asked Toyota ~~to hire hisⱼ daughter~~.'

    (Hayashi & Fujii 2015, p. 41

In (20), the lexical verb in the embedded clause gets, in contrast to the lexical verb in (18b), elided, and the sentence remains grammatical. The contrast between (18b) and (20) then is head movement: in (17b) the V-*te* moves into a higher clause after which it escapes ellipsis,

whereas in (20) the lexical verb does not move, which means that it remains in the clause targeted by ellipsis. Evidence for the fact that the verb does not move in a *yooni*-clause such as (20) comes from the fact that *yooni*-clauses can be moved freely, whereas *te*-complements cannot be (see chapter 5 on mobility for the entire argument of the (im)mobility of the V-*te*).

(21)   [$_{CP}$ pizza-o   tukuru yooni]$_i$ Taro-ga   Ziro-ni t_i tanon-da.

          pizza-ACC cook   C   Taro-NOM Ziro-DAT ask-PAST

          'Taro asked Ziro to cook pizza.'

          (Hayashi & Fujii 2015, p. 42)

(21) shows that the *yooni*-clause can be fronted without causing ungrammaticality, which subsequently shows that the verb has not moved to higher clause, for fronting would have resulted in ungrammaticality if it would have moved.

Sato and Hayashi (2018) build on Hayashi's and Fujii's (2015) analysis on verb movement and ellipsis. They provide an argument in support of string-vacuous rightward movement in Japanese by looking at so-called 'verb-echo answers'. In verb-echo answers, a yes/no-question is answered by repeating the verb of the question. As seen in (22), yes/no-questions can be answered both with a verb-echo answer (22a), as well as with a simple yes or no (22b).

(22)　　Q: Moo　　hirugohan-o tabe-mashi-ta-ka?

　　　　　　already lunch-ACC　eat-POL-PST-Q

　　　　　'Did you already eat lunch?'

　　　　A: a. Tabe-mashi-ta-yo.

　　　　　　　eat-POL-PST-PARTICLE

　　　　　　Lit. 'Ate.'

　　　　　b. Hai.

　　　　　　yes

　　　　　'Yes.'

　　　　(Sato & Hayashi 2018, p. 73)

It has been argued in previous literature that verb-echo answers can be accounted for through 'clausal ellipsis'. This mean that in verb-echo answers, the verb raises from V to T, and subsequently from T all the way up to C, after which TP ellipsis takes place. Because the verb raised to C however, it is still pronounced, because the CP lies outside of the TP.

In contrast to the clausal ellipsis analysis, others have argued for analysing verb-echo answers through *pro*-drop. Sato and Hayashi first show that verb-echo answers cannot be explained by *pro*-drop, but must be explained by clausal ellipsis. They do this by adopting Holmberg's diagnostic statement in (23).

(23)   The indefinite-*pro*-drop restriction

An existential indefinite singular subject pronoun cannot be *pro*-dropped.

(Sato & Hayashi 2018, p. 74, from Holmberg 2016, p. 80)

This restriction has been attested in multiple languages such as Italian and Brazilian Portuguese (see Holmberg 2016 and Sato & Hayashi 2018 for evidence). (24) shows that Japanese has this *pro*-drop restriction, as the null subject in (24) cannot be interpreted as indefinite.

(24)   Yoichiro-ga   kono kikai-wa   *e*   katate-de   soosadekiru-to   itteiru.
Yoichiro-NOM this   machine-TOP one hand-with can.control-COMP say
'Yoichiro says that he/one can control this machine with one hand.'
*'Yoichiro says that someone can control this machine with one hand.'

(Sato & Hayashi 2018, p. 75)

This means that, if there are verb-echo answers in which the preceding question contains an indefinite subject in Japanese, they cannot be derived by *pro*-drop because of this restriction, so they have to be explained in some other way. As (24) shows, Japanese does indeed have this *pro*-drop restriction. Despite this, verb-echo answers for these questions do in fact exist, as can be seen in (25). And whereas these verb-echo answers cannot be explained by *pro*-drop, they can be explained by Sato's and Hayashi's movement plus ellipsis analysis, as the

verb moves to the C position after which TP ellipsis takes place.

(25)　Q: Dareka-ga　　　kinoo　　kokode tabako-o　　　sui-mashi-ta-ka?

　　　　　someone-NOM yesterday here　　cigarette-ACC smoke-POL-PST-Q

　　　　　'Did anyone smoke a cigarette here yesterday?'

　　　A: Sui-mashi-ta-yo.　　　　　　Tabun　　Fujita-san-desu-ne.

　　　　　smoke-POL-PST-PARTICLE probably Fujita-TITLE-COP.POL-

　　　　　PARTICLE

　　　　　'Yes. Someone smoked a cigarette yesterday. Probably it was Fujita.'

　　　(Sato & Hayashi 2018, p. 76)

Their second argument against a *pro*-drop analysis is based on the fact that in verb-

echo answers in general, voice mismatches are impossible. Merchant (2001) shows that this is

the case for instances of sluicing in English, as in (26), which also involve TP ellipsis.

(26)　　*Someone shot Ben, but I don't know by who(m)$_i$ [$_{TP}$ ~~Ben was shot t_i~~].

　　　(Sato & Hayashi 2018, p. 81, from Merchant 2001, p. 35)

Merchant argues that the sentence in (26) is ungrammatical because the voice features of the

first TP do not match with the voice features of the second, elided TP. This means that in a

sentence which involves ellipsis, the voice features of the antecedent TP and the elliptical TP

have to be the same. So if the elliptical TP is passive, the antecedent TP has to be passive as well, and cannot be, for example, active. If verb-echo answers in Japanese involve verb movement and TP ellipsis then, it can be predicted that these instances of sluicing in Japanese also do not allow voice mismatches. According to Sato and Hayashi, (27) shows that this prediction is indeed borne out.

(27) Q: Anata-no gakka-wa   kotoshi John-o   yatoi-mashi-ta-ka?

       you-GEN department-TOP this year John-ACC hire-POL-PST-Q

       'Did your department hire John this year?'

    A1: Yatoi-mashi-ta-yo.

       hire-POL-PST-PARTICLE

       Intended: 'Yes. My department hired John this year.'

    A2: *Yatow-are-mashi-ta-yo.

        hire-PASS-POL-PST-PARTICLE

        Intended: 'Yes. John was hired by my department this year.'

    (Sato & Hayashi 2018, p. 81)

The question in (27) is an active sentence, which means that it should have an active sentence as an answer. As can be seen, the response in (27A1) is grammatical, as it is an active sentence, but the response in (27A2) is ungrammatical, as it is a passive sentence, showing that voice mismatches are impossible in verb-echo answers in Japanese. This is important as

pro-drop does permit voice mismatches. Thus Sato and Hayashi have provided another argument to reject the *pro*-drop analysis of verb-echo answers, and that instead their movement plus ellipsis analysis has to be adopted.

Sato's and Hayashi's third argument in favour of their analysis of verb-echo answers involves the interpretation of adjuncts in verb-echo answers in Japanese. According to Sato and Hayashi it has long been assumed that adjuncts in Japanese are not able to undergo ellipsis. They argue that because of this, an adverb-inclusive interpretation should be possible if verb-echo answers involve head movement and TP ellipsis, whereas if verb-echo answers would be derived through *pro*-drop, adverb-inclusive interpretations would be impossible. In (28) it is shown that verb-echo answers with adverb-inclusive interpretations indeed exist:

(28)   Q: Moo   kuruma-o teineini   migai-ta-no?

         already car-ACC   carefully polish-PST-Q

         'Did you already polish your car carefully?'

      A: Migai-ta-yo.

         polish-PST-PARTICLE

         'Yes. I already polished my car carefully.'

      (Sato & Hayashi 2018, p. 83)

The interpretation of the ellipsis in the answer of (28) contains the adverb *teineini* 'carefully', showing that adverb-inclusive verb-echo answers are possible in Japanese. However, there are

also still verb-echo answers which do not allow an adverb-inclusive interpretations, such as (29).

(29)   Q: Sono shatsu kawaii-desu-ne.   Hawaii-de kat-ta-no-desu-ka?

that   shirt   cute-COP.POL-PARTICLE Hawaii-in buy-PST-COP-POL-Q

'That shirt is cute. Did you buy it in Hawaii?'

A1: *Kai-mashi-ta-yo.

buy-POL-PST-PARTICLE

'Yes, I bought it in Hawaii.

A2: Hai.

yes

'Yes, I bought it in Hawaii.'

(Sato & Hayashi 2018, p. 84)

The ungrammaticality of the verb-echo answer in (29), so A1, shows that an adverb-inclusive interpretation is not possible in this instance. Sato and Hayashi account for this difference in adverb-inclusive and adverb-exclusive interpretations by arguing that the size of the constituent in focus matters: VP-focus accounts for the adverb-inclusive interpretation and adjunct-focus accounts for the adverb-exclusive interpretation. So, in (28), the entire VP is part of the focus, whereas in (29), only the adverb part is in focus. To account for this difference in verb-echo answers, Sato and Hayashi adopt the following general constraint on

ellipsis proposed by Kuno (1995)

(30)   Pecking-Order-of-Deletion Principle

Delete less important information first, and more important information last.

(Sato & Hayashi 2018, p. 85, from Kuno 1995, p. 209)

According to Sato and Hayashi, this principle correctly rules out a sentence such as (29), because the information *Hawaii-de* 'in Hawaii' is more important than *kai-mashi-ta-yo* 'bought', so 'in Hawaii' cannot be deleted before 'bought'. Since this analysis does not involve syntax but semantics, the adjunct-inclusive interpretations are consistent with their theory of verb movement and ellipsis, but it does not provide an argument in favour of it either. To account for the adjunct-inclusive interpretations that fits their theory of verb movement and subsequent ellipsis, Sato and Hayashi expand on a theory by Simpson (2015) known as 'focus intervention' (see (31)).

(31)   Focus intervention

γ intervenes between a and β if β asymmetrically c-commands both γ and a, whereas γ asymmetrically c-commands a.

(Sato and Hayashi 2018, p. 86)

Sato and Hayashi propose the following schematic derivation (32) for (29), which has the adjunct-exclusive interpretation, and (33) for (28), which has the adjunct-inclusive

interpretation.

(32)   [$_{CP}$ [$_{TP}$ Subj [$_{VP}$ Obj **Adverb**$_{[+FOC]}$t$_V$] t$_T$] C+T+V]]] (intervention effect)

(33)   [$_{CP}$ [$_{TP}$ Subj [$_{VP[+FOC]}$ Obj Adverb t$_V$] t$_T$] C+T+V]]] (intervention effect

(Sato & Hayashi 2018, p. 86)

In (32), the adverb bears focus and c-commands the base position of the verb, which means that the focus-driven movement of the verb to T is blocked due to focus intervention, so the adjunct-inclusive interpretation is not possible in this instance. On the other hand, in (33) it is the entire VP that bears focus, and this VP does not c-command the base position of the focused verb. This means that verb movement to T is not blocked by focus intervention, so the verb can move all the way up to C, which means that an adjunct-inclusive interpretation is possible. If verb-echo answers were to be analysed as involving *pro*-drop, adjunct-inclusive answers would never be possible, because no movement takes place whatsoever. Thus, Sato and Hayashi have provided a third argument against the *pro*-drop analysis and in favour of the movement plus ellipsis analysis.

Hayashi and Fujii (2015) and Sato and Hayashi (2018) have both argued for rightward verb movement in Japanese by looking at ellipsis. Hayashi and Fujii have shown that the V-*te* constituent does not get elided in sentences in which ellipsis of TP takes place. This leads them to argue that the V-*te* constituent raises to a position outside the elided TP, thus getting pronounced in sentences involving ellipsis. Sato and Hayashi provide additional evidence for this analysis by looking at verb-echo answers. Whereas Hayashi's and Fujii's analysis only

focuses on one particular constituent in Japanese, Sato and Hayashi provide an argument for this analysis by showing that verb-echo answers cannot be analysed through *pro*-drop, but that instead they need to be analysed by verb movement and subsequent ellipsis. By analysing the indefinite-*pro*-drop restriction, voice mismatches and the fact that adjuncts-inclusive answers can occur in verb-echo answers in Japanese, they provide three counterarguments for the other analysis that involves *pro*-drop.

Hayashi's and Fujii's argument seems to be rather circular at first glance: they argue that in a sentence such as (20), ellipsis of the entire clause is grammatical because the verb does not move, and we know it does not move because the entire clause can be elided. However, there seems to be some concrete evidence for the fact that the verb does not move in sentences such as (20) based on mobility (see chapter 5 for review). This makes their argument more convincing. Furthermore, Sato's and Hayashi's analysis seems to further strengthen Hayashi's and Fujii's analysis (see below).

As to Sato's and Hayashi's argument for analysing verb-echo answers through some different operation than *pro*-drop based on Holmberg's (2016) indefinite-pro-drop restriction, the fact that this restriction has been shown to exist in many languages, and the fact that this restriction exists for verb-echo answers in Japanese as well (see (24)), seems like a solid argument at least against the idea that verb-echo answers in Japanese are derived through *pro*-drop. Thus their argument that verb-echo answers need to be analysed in some other way (for example verb movement to the right) seems justified. The argument that Sato and Hayashi make concerning voice mismatches is that in verb-echo answers, voice mismatches cannot occur, which could indicate that they are derived through ellipsis preceded by verb movement. The notion that voice mismatches cannot occur in sentences involving ellipsis has indeed been argued for in the literature. However, Merchant (2016) distinguishes between two forms of

ellipsis: high ellipses, such as sluicing, does indeed not allow voice mismatches (see (34)),

whereas low ellipsis, such as VP-ellipsis in English, does allow voice mismatches (see (35)).

(34)   Sluicing

    a.   *Passive antecedent, active ellipsis:*

      *Joe was murdered, but we don't know who \<murdered Joe\>.

    b.   *Active antecedent, passive ellipsis:*

      *Someone murdered Joe, but we don't know who by \<Joe was murdered\>.

(35)   VP-ellipsis

    a.   *passive antecedent, active ellipsis:*

      This problem was to have been looked into, but obviously nobody did

      \<look into this problem\>.

   b.   *Active antecedent, passive ellipsis:*

      The janitor should remove the trash whenever it is apparent that it needs to

      be \<removed\>.

    (Merchant 2016, p. 22)

Both (34a) and (34b) are ungrammatical because the antecedent and the ellipsis do not match

in voice, showing that in instances of high ellipsis, voice mismatches are not allowed. On the

other hand, both (35a) and (35b) are grammatical, despite having a voice mismatch between

the antecedent and the ellipsis. The question then is, are the Japanese verb-echo answers used

by Sato and Hayashi examples of high ellipsis or of low ellipsis? According to Merchant (2016), TP-ellipsis is an instance of high ellipsis, so no voice mismatches whatsoever can take place. He argues for this by saying that in a structure that involves TP-deletion, the Voice head is included in the ellipsis, and therefore the voice of the antecedent and the ellipsis must be identical (see (36)), whereas in VP-ellipsis, the Voice head is not part of the ellipsis, and therefore the antecedent and the ellipsis do not need to be identical in voice.

(36)   a. *Joe was murdered (by someone), but we don't know who.

b.
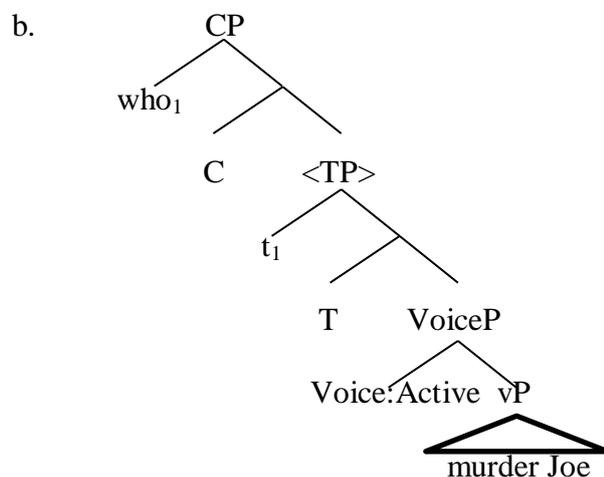
(Merchant 2016, p. 23)

So, the fact that verb-echo answers do not allow voice-mismatches and should therefore be analysed as involving verb movement and subsequent TP-ellipsis is nicely accounted for within common ellipsis theory. Thus, the argument that Sato and Hayashi provide in favour of rightward verb movement in Japanese based on the impossibility of voice mismatches in verb-echo answers seems to be a plausible one. Furthermore, the fact that the ellipsis concerned is

part of high ellipsis means that the verb indeed has to move out of the TP in order to be

pronounced in verb-echo answers.

Section 4: Parsing of centre-embedded clauses in Korean and Japanese

This section will review an argument in favour of rightward verb movement in Japanese and against such movement in Korean based on parsing by Hagstrom and Rhee (1997). As seen in the introduction, parsing consideration provide a possible argument against rightward movement. Hagstrom and Rhee adopt these processing difficulties to a somewhat lesser degree: rightward movement does lead to processing problems, but only if the processing load gets too much. Firstly, the argument is briefly set out. Secondly, the argument will be reviewed.

Hagstrom and Rhee provide an argument in favour of rightward verb movement in Japanese by looking at the contrast in the way speakers parse centre-embedded clauses. Centre-embedded clauses are clauses that are embedded in the middle of another clause, as in (37)

(37)   a. The patient was discharged yesterday. →

b. The patient [the nurse likes] was discharged yesterday.

Here, the clause [the nurse likes] is centre-embedded into the sentence (37a). According to the literature, structures that are centre-embedded are harder to parse than right- or left-branching structures. There are however differences in the amount of centre-embedded structures that can be processed cross-linguistically. SOV languages like Japanese and Korean can have more centre-embedded structures in a sentence than for example English, as can be seen in (38).

(38) a. #The patient [the nurse [the surgeon trusted] liked] was discharged

yesterday.

b. Japanese

Haha-ga   [titi-ga   [hukigana akatyan-ga naita to]   itta to]

Mother-NOM [father-NOM [fussy   baby-NOM cried that] said that]

omotteiru

thinks

"My mother thinks that my father said that the fussy baby cried."

c. Korean

Sunhi-nun [Chelswu-ka [Yenghi-ka uless-tako] malhayss-tako] mitnunta

S-Top   [C-NOM   [Y-NOM   cried-that] said-that]   believes

"Sunhi believes that Chelswu said that Yenghi cried."

(Hagstrom & Rhee 1997, pp. 190-191)

The English sentence (38a) is syntactically okay, but it is still judged as unacceptable by speakers because it has two centre-embedded structures, namely [the nurse liked] and [the surgeon trusted], which causes a processing overload. In Japanese and Korean however, two centre-embedded structures do not cause an overload in processing. However, there also seems to be a difference between Japanese and Korean regarding the processing of centre-embedded sentences. According to Babyonyshev and Gibson (1995) a doubly centre-embedded sentence becomes unprocessable when it contains an object. This does not happen

in Korean however; an object in a doubly centre-embedded sentence does not affect the processability (compare (38b) with (39a) and (38c) with (39b).

(39)   a. Japanese

#Obasan-ga [syoojikina bebiisitaa-ga   [ani-ga

aunt-NOM [honest   babysitter-NOM [older brother-NOM

imooto-o   ijimeta to]   itta to]   omotteiru

younger sister-ACC teased that] said that] thinks

"My aunt thinks that the honest babysitter said that my older brother teased

my younger sister."

b. Korean

Sunhi-nun [Chelswu-ka [Yenghi-ka koyengi-lul cohahan-tako]

S-TOP   [C-NOM   [Y-NOM   cat-ACC   likes-that]

malhayss-tako] mitnunta

said-that]   believes

"Sunhi believes that Chelswu said that Yenghi likes cats."

(Hagstrom & Rhee 1997, p. 192)

According to Babyonyshev's and Gibson's (1995) proposed theory of "certain degrees of cost or processing load" (1997, p. 192), there are three constraints a sentence needs to satisfy, and if there are more than four violations, the sentence becomes difficult to parse and will be

rejected. According to this theory then, both the Japanese sentence and the Korean sentence in (39) have the same processing load, and should therefore both be difficult to parse. As can be seen however, the Korean sentence does not get rejected by speakers, whereas the Japanese sentence does get rejected. To try to confirm this difference, Hagstrom and Rhee devised a study to establish whether doubly centre-embedded intransitives and transitives are similar in Korean (See Hagstrom & Rhee 1997 for the complete experiment). The study confirmed that intransitives and transitives indeed are similar to each other in Korean, as opposed to what happens in Japanese. To account for this difference in processing load in Japanese and Korean, Hagstrom and Rhee provide a possible explanation involving verb-raising in Japanese and the lack of said verb-raising in Korean. What is important here is that the contrast they found between Korean and Japanese can possibly be explained by the differences in the syntax of the two languages, which gives another possible argument in favour of verb movement in Japanese, and a possible argument against verb movement in Korean. Hagstrom and Rhee base their argument on the fact that one of the constraints proposed by Babyonyshev and Gibson involves the assignment of theta roles. In Korean, when the parser receives the object marked with the accusative case, the parser can predict and confirm the functional head $v°$, even though it has not been reached yet in the input. Because the verb has not moved in Korean, the parser can thus confirm the existence of $v°$, after which the parser is able to assign the theta role to the external argument. This means that the parsing constraint concerning the assignment of theta roles does not get violated, which relieves the processing load and thus makes the sentence available for parsing. In Japanese on the other hand, the verb has moved rightwards to some position like I, which means that only a trace of $v°$ remains in its original position. Hagstrom and Rhee assume that the confirmation of a trace alone is not enough to assign theta-roles, which means that the parser is unable to assign the theta-role to the external argument. Therefore, in Japanese, the parsing constraint

concerning the assignment of theta roles gets violated at least one time more than in Korean, thus accounting for the difference in processability of Japanese and Korean sentences.

Hagstrom and Rhee have argued for an analysis in which rightward verb raising occurs in Japanese and does not occur in Korean based on the parsing of centre-embedded sentences. The question to ask here however is whether this verb raising would really cause so much more difficulty for the parser: the movement is string-vacuous, so the distance remains the same. If we are to believe Abels and Neeleman, rightward movement indeed causes a big strain on the parser, so much even that they argue that rightward movement is not possible at all. According to Abels and Neeleman, because the parser needs to recover hierarchical structures incrementally, an inherent asymmetry in the parsing process exists. It has been argued in the literature that the parser wants to achieve an interpretation of the input as soon as possible and that the parser does not have a look-ahead capacity. Therefore the parser has to analyse the input it has received while it is still gathering input. Furthermore, the parser needs to preserve previously gained information for the duration of the parse. Abels and Neeleman use parse trees to explain their argument.

(40)

```
                >
               / \
             >     
            / \
           A   <
              / \
             B   C
```
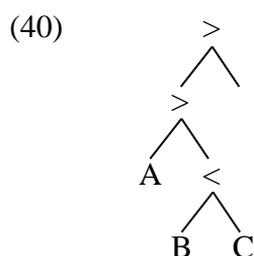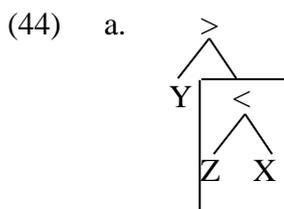
(Abels & Neeleman 2007, p. 42)

The > and < in the tree express dominance: the extended projections of B and C are immediately dominated by a node belonging to the extended projection of A. Furthermore, the empty branch indicates that the parse is still incomplete and that there is more input on the way, and trees without any empty branches indicate completed parses. Since there have to be restrictions on the occurrence of empty branches (there is only so much information someone can parse), Abels and Neeleman propose that empty branches can only occur at the right edge of the parse tree. They furthermore argue that the parser is not able to parse a string created by rightward movement. They do this by adopting the following parse tree (41) for sentences supposedly containing rightward movement:
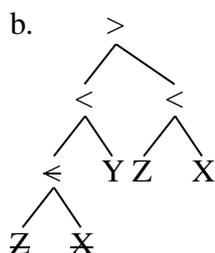
(41)
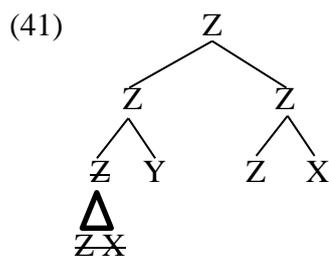
(Abels & Neeleman 2007, p. 44)

The tree in (41) is derived by the following parsing steps:

(42)

(43)

(44)   a.

```
        >
       / \
      Y   <
         / \
        Z   X
```
(Z and X boxed as moved constituent)
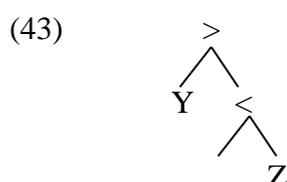
In this step, the parser recognises that the subtree is a moved constituent (the box indicates that it is a moved constituent), and therefore a copy of this subtree needs to be inserted.

b.

```
            >
           / \
          <   <
         / \ / \
        < Y Z  X
       / \
      Z   X
```

(Abels & Neeleman 2007, p. 47)

According to Abels and Neeleman, this last step shows that rightward movement is not available for the parser. Because throughout the parsing process the labelling of the root node expresses that the extended projection of Y is an immediate part of the category to its right and the labelling of the node inserted between Y and the root contradicts this (the arrow has to be switched), rightward movement is hard to process. Maybe we should adopt Abels' and Neeleman's analysis to a somewhat lesser degree: the rightward movement Japanese would have in the analysis of Hagstrom and Rhee could just be enough strain on the parser to tip the scales towards unparsibility. If we were to adopt Abels' and Neeleman's analysis to a lesser degree then, the argument by Hagstrom and Rhee seems plausible. Their argument furthermore gets supported by Hayashi and Fujii (2015) and Sato and Hayashi (2018), who

argue convincingly for rightward verb movement in Japanese (see section 3) and Zeijlstra

(2017), who argues convincingly against rightward movement in Korean (see section 6).

5. (Im)mobility of V-*te* in adjunct and complement clauses

In this section an argument in favour of rightward verb movement in Japanese by Hayashi and

Fujii (2015) based on the (im)mobility of the V-*te* will be presented and reviewed. The

different places in which the verb can occur in a sentence could say something about whether

the verb has to move or not: if it has to stay inside a particular constituent, it might be the case

that it has to move to this constituent, whereas if it can be moved around freely, it can be the

case the verb has not moved and thus does not have to remain in one particular constituent.

Hayashi and Fujii argue that adjunct *te*-clauses can be moved around freely, whereas

complement *te*-clauses can never be moved around. This contrast becomes apparent by

looking at the following sentences (45) and (46):

(45)   [piza-o   tukut-te]$_i$ Taro-ga   okane-o t_i morat-ta.

         pizza-ACC cook-TE Taro-NOM money-ACC   get-PAST

        'By cooking pizza, Taro got money.'

(46)   *[Ziro-ni   piza-o   tukut-te]$_i$ Taro-ga t_i morat-ta.

         Ziro-DAT pizza-ACC cook-TE Taro-NOM   get-PAST

         'Taro had Ziro cook pizza.' (intended reading)

        (Hayashi & Fujii 2015, p. 36)

In the adjunct clause (45), fronting of the TP affect the V-*te*, because it does not have to

move to the matrix verb, which means it stays inside the TP that undergoes fronting (see 47).

In the complement clause (46) however, the V-*te* does not stay inside the TP because it has to move to the matrix verb, which means that fronting of the TP results in ungrammaticality in complement *te*-clauses (see 48).

(47) Taro [$_{TP}$ PRO [$_{vP}$[$_{VP}$ pizza t_V] t_v] [$_T$ [cook-*v*]-*te*]] money got

(48) Taro [$_{TP}$ Ziro [$_{vP}$[$_{VP}$ pizza $_{tV}$] $_{tv}$] $_{tT}$] [[$_T$ [cook-*v*]-*te*]+get]-PAST

(Hayashi & Fujii 2015, p. 36)

In the adjunct phrase (47), the V-*te* moves with the TP to the front of the sentence, indicating that it has not moved to the matrix verb but remained inside the fronted TP. In the complement phrase (48), the V-*te* cannot get fronted along with the TP, but instead remains in the same place in the word order. This could indicate that the *te*-clause has moved string-vacuously (so no change in the word-order) to the matrix verb 'get', and so is no longer part of the TP.

Hayashi and Fujii furthermore provide the argument for the complement/adjunct asymmetry by looking at the behaviour of *te*-clauses in 'fragment answer formations'. In these, *te*-adjuncts can be fragments whereas *te*-complements can never be (see (49) and (50)).

(49)   Adjunct phrase:

    a. Taro-wa [piza-o   tukut-te] okane-o   morat-ta no?

       Taro-TOP pizza-ACC cook-TE money-ACC get-past   Q

       'Did Taro get money by cooking pizza?'

    b. iya, [suupu-o   tukut-te] da.

       no   soup-ACC cook-TE COP

       'No, by cooking soup.'

(50)   Complement phrase:

    a. Taro-wa [Ziro-ni   piza-o   tukut-te] morat-ta   no?

       Taro-TOP Ziro-DAT pizza-ACC cook-TE get-PAST Q

       'Did Taro have Ziro cook pizza?'

    b. *iya, [(Ziro-ni)   suupu-o   tukut-te] da.

        no   Ziro-DAT soup-ACC cook-TE COP

       'No, (Taro had Ziro) cook soup.' (intended reading)

       (Hayashi & Fujii 2015, p. 36)

Hayashi and Fujii follow Nishigauchi's (2006) analysis of fragment answers, in which these

answers are derived from focus movement to the specifier of FocP followed by deletion of

FinP (see (51)).

(51)   [_FocP Fragment_i ~~[_FinP [_TP …t_i …V T]   NO]~~ DA]

(Hayashi & Fujii 2015, p. 37)

In the adjunct phrase (49), the fragment answer containing the V-*te* is grammatical, whereas the fragment answer in the complement phrase (50) is ungrammatical when it contains the V-*te*. Hayashi and Fujii explain this by arguing that the *te*-adjunct is allowed to move as a whole, as established above, which means that it can move to a position where it can survive deletion, thereby remaining as a fragment. In complement *te*-clauses on the other hand, the V-*te* moves to the elided FinP, which means that it is never pronounced in fragment answer formation (see (52)).

(52)   [_FocP [_TP Ziro soup *t*_T]_i ~~[_FinP [_TP Taro *t*_i [_T [cook-*v*]-*te*]+get PAST] NO]~~ DA]

(Hayashi & Fujii 2015, p. 37)

Hayashi and Fujii have thus provided an argument in favour of rightward verb movement based on the (im)mobility of V-*te*. In adjunct phrases, the V-*te* is fronted alongside the TP, showing that it has not moved into a higher clause. In complement clauses on the other hand, the TP cannot be fronted, which Hayashi and Fujii explain by arguing that the V-*te* does move in complement clauses, which results in the TP not being allowed to be fronted. This could subsequently explain the fact that the V-*te* occurs in adjunct fragment answer formations and does not occur in complement fragment answer formations. A verb movement analysis seems to capture the facts nicely, and the fact that Hayashi and Fujii have also argued

convincingly for movement of V-*te* in sentences containing ellipsis, which is also supported by Sato and Hayashi (2018) (see chapter on ellipsis), this argument seems to provide further support for an analysis in which the V-*te* moves rightward.

6. Arguments based on scope

This chapter will review an argument put forth in favour of rightward verb movement in Korean by Han, Lidz and Musolino (2007) based on scope relations, and the argument that counters their theory put forth by Zeijlstra (2017). In addition, another argument against rightward verb movement in Japanese regarding scope put forth by Kobayashi (2015) will be reviewed.

Han et al argue in favour of rightward verb movement in Korean by looking at the acquisition of grammar by speakers of Korean. They say that speakers of Korean have different grammars concerning verb movement: some speakers acquire verb raising and some do not. Han et al argue for this by looking at negation in Korean. In Korean, negation behaves like a clitic that is associated with the verb in syntax, which means that negation and the verb behave like a syntactic unit. Thus, if the verb moves in Korean, negation would move with it. Because of this, the way in which negation takes scope over for example a quantified object NP could provide evidence for verb raising: negation forms a unit with the verb, which means that the scope relations between negation and the quantified object can say something about the height of the verb.

It is generally assumed that when the finite verb in a language precedes negation, for example in French, this language possesses V-to-I movement. On the other hand, languages which require *do*-support with negation, for example English, do not possess V-to-I movement, because the lexical verb obligatorily follows the negation.

(53)　　a. French:

Jean (ne) mange pas de pommes.

Jean not eats   not of apples

'Jean doesn't eat apples.'

(Koeneman & Zeijlstra 2014, p. 19)

b. English:

John does not eat apples

Korean has two different types of negation, namely a long form and a short form. With long form negation, negation appears after the verb and requires *do*-support ('*ha*' in Korean), which means that in long form negation, the verb does not move. Short negation however appears in front of the verb and does not require *do*-support.

(54)　　Korean long negation

Toli-ka　　ttena-ci ani　ha-yess-ta.

Toli-NOM leave-CI NEG do-PST-DECL

'Toli didn't leave.'

(Han et al 2007, p. 13)

(55) Korean short negation

    Toli-ka an ttena-ss-ta.

    Toli-NOM NEG leave-PST-DECL

    'Toli didn't leave.'

    (Han et al 2007, p. 14)

It is however still unclear whether verb raising occurs in short negation, for Han et al propose the following structure for short form negation in Korean, in which Neg is seen as a specifier or an adjunct instead of a head ((56)), opposed to Neg in long form negation ((57)).

(56)

```
                IP
              /    \
        NP_subj     I'
                   /  \
                 VP     I
                /  \
             Neg    VP
                     |
                     V
```

    (Han et al 2007, p. 14)

(57)
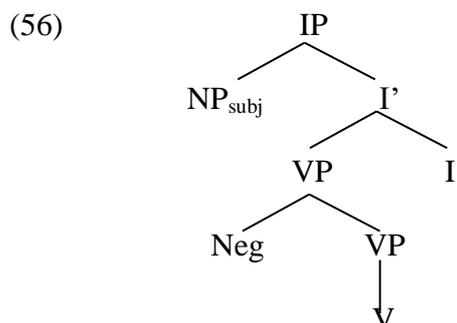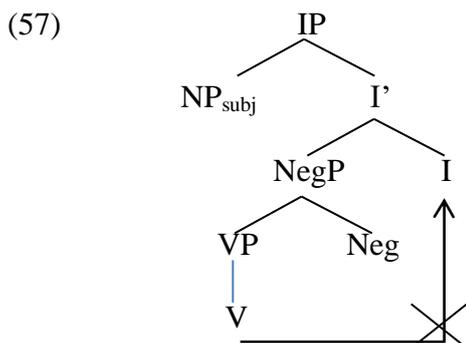
(Han et al 2007, p. 14, blocking of movement own addition)

As can be seen in (56), movement of the verb in short form negation is still difficult to establish, because the movement would be string-vacuous, unlike in an analysis where Neg would be a head as in (57), in which case the verb would move past Neg to I. In long form negation however, verb movement is blocked because the Neg head has been filled by '*ha*'. If short form negation would have the same structure as long form negation, the Neg head would be empty and there would nothing that would stop the verb from moving from V to I. There is however some evidence for the fact that structure (56) has to be adopted for short form negation, so the verb movement would be string-vacuous in Korean.

To show that scope interactions of negation and object QPs can be a diagnostic for verb movement, Han et al use three facts about Korean. The first fact is that Korean has 'frozen scope', a phenomenon in which the only reading of a sentence with subject and object QPs can be one in which the subject takes scope over the object, and the inverse scope would only be possible if the object scrambles over the subject in overt syntax. This means that the scope of an argument QP will be determined by its surface position, which subsequently means that it is the position of negation that determines the relative scope of negation and an argument QP. The second fact is that in transitive sentences in Korean, certain adverbs must

follow the object NP. This would mean that objects raise from a VP-internal position to a functional projection higher in the clause structure. The third fact is that short negation in Korean can be seen as clitic, which means that short negation must appear immediately in front of the verb. Short negation must however be seen as an independent lexical item, because children sometimes do not put the negation before the verb, showing that short negation cannot be seen as a prefix. What is important however is that, because negation is a unit with the verb, the scope relation between negation and the QP object can tell us something about whether the verb has raised or not. If negation takes scope over the object QP, it means that the verb, plus negation, has moved to a position higher than this QP. If the object QP takes scope over negation however, it means that the verb has remained in situ and that the QP is in a higher position than the verb plus negation.

To test the different scope relations, Han et al devised two different truth-value judgement tasks, with which they wanted to establish what the scope judgements of Korean speakers are on sentences containing negation and quantified argument NPs and to determine whether the verb moves in Korean. What is important for this paper is that they found that about half of their participants accepted the Neg>∀ interpretation, where short form negation takes scope over the object QP. What this means according to Han et al is that there is a split in the grammar of the Korean population: only half of the population has acquired a grammar in which the verb raises to I. This means that their grammar would look something like (58), whereas the other half of the population has a grammar in which the negation plus verb remain in situ, which means that negation does not take scope over the object QP. Therefore, these speakers do not accept the Neg>∀ interpretation.

(58)

IP
NP_{subj} I'
FP I
NP_{obj} F' *sh.neg*+V+F+I
VP F
t VP
NP V
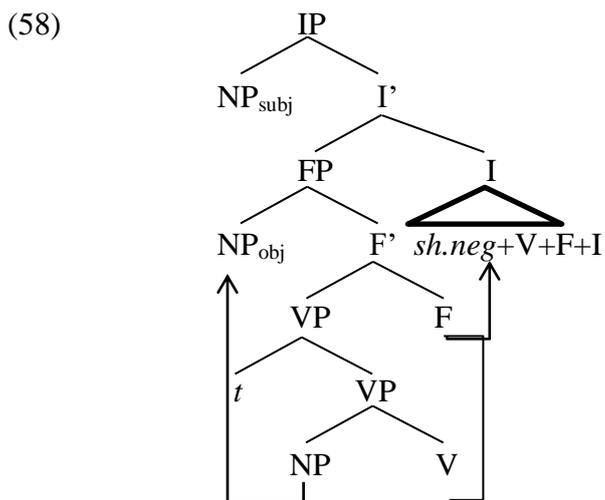
(Han et al 2007, p. 34)

In (58), the verb plus short form negation raises to F and further to I, after which it takes scope over the object QP, for I c-commands the object. Han et al have hereby presented an argument in favour of rightward verb movement in Korean.

An argument against this analysis is given by Zeijlstra (2017), who argues that there are problems with the syntactic approach to account for the variation in Korean. So according to Han et al, there are two varieties of Korean. In Korean A, the verb and negation move to a position higher than the object to take scope over this object (which always moves), whereas in Korean B, the verb remains in situ and the object takes scope over negation. One of the claims that Han et al use to argue for their analysis is that Korean is scope-rigid. According to Zeijlstra however, scope-rigidity does not say anything about the scopal relation between quantifiers and other scope-taking elements such as negation. In (59a), the universal quantifier *motun* 'every' takes scope over the negation, whereas in (59b), the negation takes scope over the existential quantifier *amwukesto* 'anything', showing that both interpretations are possible.

(59)   a. John-i   motun chayk-ul   an   ilk-ess   ta.

          John-NOM every   book-ACC NEG read-PST –DECL

        'John read no book' (∀ > ¬)

       b. John-un   amwukesto an   mek-ess -ta.

          John-TOP anything   NEG eat-PST –DECL

          'John didn't eat anything' (¬ > ∃)

       (Zeijlstra 2017, p. 19)

Because of the facts in (59), Zeijlstra argues that it should be possible that the raised object

quantifier reconstructs below negation, which means that it should be able to allow both

'scopal construals'. However, it does not allow this.

   The problem with the variation in which the verb does supposedly move (Korean A), is

the fact that sentences like (60) can be ambiguous.

(60)   John-i   motun chayk-ul   an   ilk-ess ta.

        John-NOM every book-ACC NEG read-PST-DECL
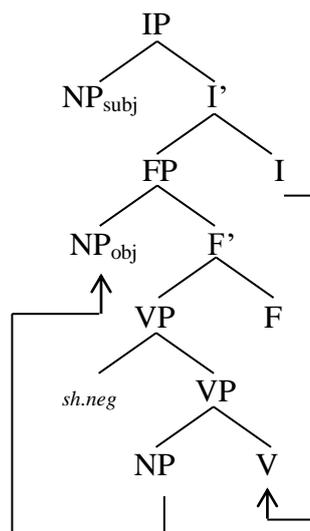
        'John didn't read every book'

       (Zeijlstra 2017, p. 21)

(60) can be interpreted as 'John read some, but not all books' and as 'John read no book' (Zeijlstra 2017, p. 21). Because negated universals often have an existential inference such as "John didn't read every book, but he did read some book", the interpretation where John reads no book should be judged false in this variety, but it is judged true.

Thus, the problem for Korean B is that sentences such as (59) are predicted to be ambiguous due to object reconstruction, but they are not. The problem for Korean A is that, even though Han et al's theory predicts that sentences in this variety should be unambiguous, some sentences are still judged as ambiguous.

Therefore Zeijlstra proposes not a syntactic, but a semantic analysis of the difference in scope relations in Korean. This means that in the variety where sentences such as (59) are not ambiguous (so Korean B), the universal quantifier is a Positive Polarity Item (PPI). This would mean that the quantifier cannot be reconstructed below the negation. In the variety where the verb did raise in Han et al (so Korean A) the quantifier is polarity-insensitive, which means that it can be reconstructed below negation. This gives rise to the following structure of Korean, where the verb and negation remain in situ, the object raises to spec-FP and tense morphology lowers down from I onto the verb:

(61)

```
                    IP
              /          \
          NP_subj         I'
                       /      \
                     FP        I
                   /    \       |
               NP_obj    F'     |
                 ↑     /    \    |
                 |   VP      F   |
                 |  /  \         |
              sh.neg    VP       |
                      /    \      |
                    NP      V     |
                    |       ↑_____|
                    |_____|
```

(Zeijlstra 2017, p. 50)

So according to Zeijlstra, in both Korean A and B the object moves to the specifier of FP. In variety A, in which sentences can be ambiguous, the object is polarity-insensitive and can therefore reconstruct below negation, which means that it can have both interpretations. In Korean B, the object moves to the specifier of FP, but because it is a PPI, it cannot reconstruct below negation. If this analysis is correct, the problems stated above are solved: Korean A is expected to be ambiguous, which it is, and Korean B is expected not to be ambiguous, which it is not.

Another argument against rightward verb movement involving scope, this time for Japanese, has been presented by Kobayashi (2015). Kobayashi (2015) poses an argument against V-to-T-to-C movement in Japanese by looking at 'Non-Constituent Coordination' (NCC), hereby arguing against Koizumi's (2000) and Funakoshi's (2014) analyses that do involve verb movement in NCCs. His argument is based on the fact that in Japanese, the 'Affirmative Polarity Item' (API) always takes scope over Neg, which shows that Neg cannot

have moved to a higher position in the clause, because if it would, it would take scope over the API instead of the other way around.

Kobayashi's first argument involves the scope of Neg over an API inside NCC structures. If the verb moves all the way to the C position, NEG should have scope over the API, since Neg moves along with the verb to the C position, as in (62).

(62)　　[CP [TP **API** [NegP [VP IO DO tV] tNEG] tT] & [TP SU [NegP [VP IO DO tV] tNEG] tT] [V-NEG-T]-C]

|___|___|_____|___|___|_____↑

(Kobayashi 2015, p. 4)

According to Kobayashi however, the scope relations are always the other way around: API always takes scope over Neg, whereas Neg never takes scope over API in NCC constructions. In addition, Kobayashi argues that the API also cannot move to take scope over Neg, as this would violate the 'Coordinate Structure Constraint'. This means that, if Kobayashi is right, no rightward movement takes place in NCC structures in Japanese. A different analysis however, put forth by Fukui & Sakai (2003), does account for the fact that API has to take scope over Neg, and does not involve any verbal or other movement whatsoever. This analysis uses gapping to account for the NCC constructions in Japanese. They argue that these constructions are "derived through gapping in the first conjunct, which is followed by PF-reanalysis" (Kobayashi 2015, p. 5), as in (63).

(63)   a. Narrow Syntax:

[Taro [$_{VP}$ [Hanako ringo 3-tu   age] &   [Kumiko banana 2-hon age]-ta]

T.   H.   apple 3-CL give Conj K.   banana 2-CL give-PAST

b. PF-component (Gapping + insertion of case particles):

[Taro-ga [[Hanako-ni ringo-o   3-tu ~~age~~] & [Kumiko-ni banana-o

T.-NOM H.-DAT   apple-ACC 3-CL give Conj K.-DAT   banana-ACC

2-hon age]-ta]

2-CL   give-PAST

c. PF-component (PF-reanalysis: Adjacent elements are reanalysed as
nominal:

Taro-ga [$_{nominal}$ [Hanako-ni ringo-o   3-tu] to [Kumiko-ni

T.-NOM   H.-DAT   apple-ACC 3-CL Conj K.-DAT

banana-o   2-hon]] age-ta

banana-ACC 2-CL   give-PAST

'Taro gave three apples to Hanako and two bananas to Kumiko'

(Kobayashi 2015, p. 5, from Fukui & Sakai 2003, pp. 348-350)

In (63b), gapping of *age* 'give' occurs in the first conjunct, after which the [IO DO CL]

become phonologically adjacent to each other. Subsequently these elements become

'nominal' through reanalysation. The gapping analysis by Fukui and Sakai would capture the

fact that the API always takes scope over negation, as shown in (64).

(64)   [$_{CP}$ [$_{TP}$ [$_{TP}$ **API** [$_{NegP}$ [$_{vP}$ IO DO CL ~~V] NEG] T~~] & [$_{TP}$ SU [$_{NegP}$ [$_{vP}$ IO DO CL

V] NEG] T]] C]

(Kobayashi 2015, p. 6)

Two different arguments then have been presented to account for the differences in grammar of Korean speakers. Han et al (2007) argue that this due to a difference in grammar acquisition between speakers: about half of the population, who have the interpretation Neg > Obj, has acquired a grammar which possesses rightward verb movement where the negation moves with the verb to take scope over the object, whereas in the grammar of the other half the verb does not move and the object takes scope over negation, which leads to a reading Obj > Neg. Zeijlstra (2017) argues that problems concerning ambiguity arise when adopting this analysis, and therefore argues that the locus of variation lies in a grammar which involves PPIs and a grammar that does not involve PPIs. PPIs cannot reconstruct below negation, which results in unambiguity, whereas non-PPIs can reconstruct below negation, which results in ambiguity. The main assumption Han et al's analysis is built on is the fact that the object always has to move to a higher position in Korean, which means that the verb plus negation also has to move to a higher position in order to c-command, and thus take scope over, the object. The question then should be, is there evidence for the fact that objects always raise in Korean? Han et al provide this evidence themselves, by looking at the position of adverbs and object NPs. In Korean, some adverbs follow the object, which shows that the object raises from a VP-internal position to some point higher in the clause.

(65)   a. Toli-ka   maykcwu-lul cal   masi-n-ta.   (S O Adv V)

       Toli-NOM beer-ACC   well drink-PRES-DECL

       'Toli drinks beer well.'

       b. *Toli-ka   cal   maykcwu-lul masi-n-ta.   (*S Adv O V)

        Toli-NOM well beer-ACC   drink-PRES-DECL

       'Toli drinks beer well.'

       (Han et al 2007, p. 16, see also Hagstrom 2000, 2002)

In (65a), the adverb *cal* 'well' follows the object *maykcwu-lul* 'beer', whereas (65b) shows that if the adverb precedes the object the sentence becomes ungrammatical. This shows that the object moves out of the VP to a position higher in the clause. Thus the analysis of Han et al, that the verb plus negation has to move to a higher position in the clause in order to take scope over the object, is a plausible one.

Zeijlstra (2017) does however show some convincing data of examples that the analysis of Han et al cannot account for. However, he also argues that optionality in so-called 'hard' syntactic operations such as rightward movement does not occur in languages. There seem to be languages though where verb movement is an optionality, such as Dutch:

(66)   a. dat ik Jan heb gezien

        that I Jan have seen

        'that I have seen Jan.'

        b. dat ik Jan   gezien heb

        that I   Jan   seen   have

        'that I have seen Jan.'

Both (66a) and (66b) are acceptable sentences in Dutch, and the different places the verbs appear in seem to indicate movement of some kind (either leftwards or rightwards, see section 1 for discussion), and are therefore indicative of a 'hard' syntactic operation. However, there is another way in which Dutch sentences can be analysed without any movement at all, as proposed by Barbiers, Benning and Drost-Hendriks (2018) (see section 1). If we assume this last analysis, Dutch does not show variation in 'hard' syntactic operations either, and the argument proposed by Zeijlstra becomes a bit stronger. The second analysis seems favourable here. Despite the fact that there are some good arguments in favour of rightward verb movement in Japanese, some of the same arguments at the same time argue against this movement in Korean (see section parsing). Furthermore, the second analysis does not involve a grammar which possesses optional 'hard' syntactic operations, which has not been attested for in any other language (if we adopt an analysis in which verb movement does not occur in Dutch). Instead it argues for a semantic difference in the grammar of Korean speakers, a phenomenon that has been encountered before in many other languages (e.g. Dutch has been shown to possess this difference between PPIs and polarity-insensitive verbs in Northern and Southern dialects, see (Hoeksema 1999, Latridou & Zeijlstra 2013 and Zeijlstra 2017)).

In addition, Kobayashi (2015) argues against rightward verb movement in Japanese because of the fact that in NCC constructions, the API always takes scope over negation, even though this should be the other way around if the verb, and the negation attached to the verb, would have moved to a higher position in the clause. The evidence for this analysis seems rather convincing: it seems rather difficult to explain away the fact that the API always takes scope over negation, and the fact that there is an empirical argument in favour of another analysis strengthens this.

7. Conclusion

To summarise then, multiple arguments have been presented in favour and against rightward verb movement in OV languages. For Dutch verb clusters, three different analysis have been presented, namely rightward verb movement (Evers 1975), leftward VP movement (Barbiers 1995) and direct merger of the verbs in the cluster (Barbiers, Bennis & Drost-Hendriks 2018). As both the analysis of Evers (1975) and the analysis of Barbiers (1995) violate common Minimalist theory because there seems to be no trigger for movement in Dutch verb clusters, the analysis of Barbiers, Benning and Drost-Hendriks (2018) seems to be the most plausible analysis to adopt here. In this analysis, no movement is involved whatsoever, which means that it fits in with current Minimalist theory. Implications this analysis faces regarding the distribution of theta-roles can be solved by adopting the analysis by Neeleman and Weerman (1993), who argue that participles can assign theta-roles alongside the lexical verb. This would mean that composite theta roles have to be allowed, but since this has been empirically supported by Neeleman and Weerman, this seems to be less of an implication than violating Minimalist theory.

For Japanese, arguments in favour of rightward verb movement have been presented from three different angles, namely ellipsis, parsing and mobility. Arguments concerning ellipsis come from V-*te* movement (Hayashi & Fujii 2015) and verb-echo answers (Sato & Hayashi 2018). Hagstrom and Rhee (1997) have argued for rightward verb movement in Japanese and against such movement in Korean by looking at the parsing of centre embedded sentences in both languages. By looking at the mobility of V-*te* clauses in Japanese, Hayashi and Fujii (2015) provide another argument in favour of rightward verb movement. The arguments provided in favour of rightward verb movement in Japanese concerning ellipsis seem to fit in nicely with common ellipsis theory. Therefore, it seems justified to adopt the

analyses provided by Hayashi and Fujii (2015) and Sato and Hayashi (2018) and accept the fact that rightward verb movement exists in certain V-*te* clauses and in verb-echo answers in Japanese. As to the argument by Hagstrom and Rhee (1997) in favour of rightward verb movement in Japanese, their analysis does seem to capture the differences in parsibility between Korean and Japanese nicely. However, the fact that this verb movement in Japanese would be string-vacuous adds a bit of doubt whether this movement would really cause that much more processing difficulties. However, according to Abels and Neeleman (2007), rightward movement causes so much processing difficulties that they argue for a complete ban on rightward movement. Maybe then this analysis should be adopted to a somewhat lesser extent: rightward movement is possible, but it causes considerable processing difficulties, enough to make doubly centre-embedded sentences unprocessable in Japanese, but not so much difficulty that it renders for example single centre-embedded sentences unprocessable in Japanese. Hayashi and Fujii (2015) provide another argument for rightward movement of the V-*te* by looking at the (im)mobility of V-*te*. As their argument concerning ellipsis, which was further strengthened by Sato's and Hayashi's (2018) analysis, seems plausible, their argument concerning mobility seems to further strengthen the idea that V-*te* moves to the right in Japanese. Lastly, Kobayashi (2015 provides a convincing argument against rightward verb movement in NCC constructions in Japanese based on the scopal relations between the API and negation. This argument seems to really implicate a verb raising analysis in Japanese, for it seems difficult to explain this fact away.

Han, Lidz and Musolino (2007) provide an argument for rightward verb movement in Korean based on scopal relations between negation and the object. This argument is countered by Zeijlstra (2017), who argues instead that the difference in Korean scope relations has to be analysed through the ability of the object to reconstruct below negation. In the discussion

between Han et al (2007) and Zeijlstra (2017), the analysis of Zeijlstra seems favourable. Despite the fact that Han et al provide some solid arguments in favour of rightward verb movement, their analysis still encounters problems, as pointed out by Zeijlstra (2017). Zeijlstra's analysis on the other hand accounts nicely for all these problems, and if we in addition adopt the analysis by Barbiers et al (2018) that verbs in verb clusters in Dutch are directly merged into the structure, there is no need for optionality in 'hard' syntactic operations such as rightward verb movement in one particular grammar.

The current situation on rightward verb movement now then seems to be that there definitely is a possibility that this verb movement does exist in Japanese (at least in V-*te* clauses and clauses involving ellipsis, and depending on what we make of parsing difficulties possibly in more instances), and that it does not exist in Korean and Dutch. Recent arguments in favour of rightward verb movement in Japanese all seem plausible, and they all fit well in current theories on ellipsis, parsing and mobility. One argument against verb raising however, namely that of Kobayashi (2015), seems to seriously implicate a verb-raising analysis in Japanese. For a verb-raising analysis in Japanese to hold then some theory should be brought forth that can convincingly counter Kobayashi (2015). As multiple plausible theories have been put forth in favour of verb-raising, I myself am inclined to believe that Japanese indeed possesses rightward verb movement, but further research should be done before conclusive answers can be given. For Dutch and Korean however, arguments in favour of rightward verb movement have been countered by plausible counterarguments, and I think it seems reasonable to assume that Dutch and Korean do not possess rightward verb movement.

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