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# On temporal relations inside DPs and their restriction

Paul Meisenbichler

This paper is an investigation into the temporal relations we find inside simple DPs. Specifically, I explore the relationship between two DP-internal times: the *evaluation time* (ET) of the noun and the *resource time* (RT), which is the time that contributes to the implicit domain restriction. At the center of the investigation is the observation that ET and RT can be temporally disjoint. It is further argued that the temporal relation between ET and RT is subject to restrictions that reveal how ET and RT depend on each other. Finally, I compare different ways of analyzing DP-internal temporality.

## 1. Introduction

This paper is about the temporal information that is relevant to the meaning of simple DPs of the form *determiner + noun*, e.g. *the president, a student, every fugitive, most doctors*. Past research on the temporal semantics of DPs has focused on the *evaluation time* (ET) of nominal predicates (for an overview, see Tonhauser 2020).<sup>1</sup> Nouns describe properties that are true of different individuals at different (evaluation) times. Because of this, (1) expresses different thoughts depending on the ET of the noun *prisoner*.

(1) In 2010, *a prisoner* won the Nobel Prize.

a. Context for the ET=utterance time/UT reading

(= A prisoner at the utterance time (UT=2023) won the Nobel Prize (in 2010).)

In 2010, Marcus was an esteemed scientist who won the Nobel Prize in Physics for groundbreaking work in particle physics. A few years later, he went crazy and killed his lab assistants. In 2023, while Marcus is in prison for murder, the warden at his prison brags about all the famous people he meets at work: ‘Besides some Oscar winners and former senators, there are also some accomplished scientists in our prison. To give just one example: *In 2010, a prisoner won the Nobel Prize.*’

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<sup>1</sup> Specifically, the focus has been on the question of whether the nominal ET is dependent on the main clause tense. The literature is roughly divided into two camps:

- a. *No*, the nominal ET is independent of tense (e.g. Enç 1981, 1986; Tonhauser 2020)
- b. *Yes*, the nominal ET is dependent on tense, but only the ET of a subclass of DPs, defined by their pragmatic status and/or determiner type and/or syntactic position (e.g. Musan 1995; O’Leary 2022).

b. Context for the ET=tense time/TT reading

(= A prisoner at the tense time (TT=2010) won the Nobel Prize (in 2010).)

As the result of his vocal protest against a corrupt, tyrannical regime, Julien became a political prisoner in 2009. While being in prison, Julien received the Nobel Peace Prize in honor of his unwavering devotion to the spread of democracy. A year later, Julien struck a deal with the authoritarian government that saw him freed from prison in exchange of becoming a public advocate for fascism. In 2023, Tom, after having listened to a critical podcast on the Nobel Prize and totally missing the point, excitedly turns to a friend and tells him: ‘Did you know: *In 2010, a prisoner won the Nobel Prize*. How cool is that?’

Illustration of a.

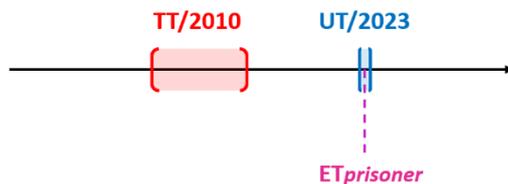
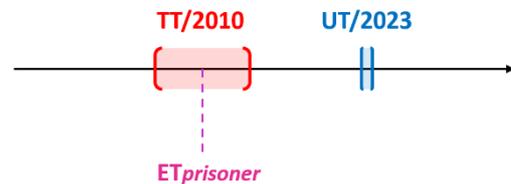


Illustration of b.



The modest aim of this section is to point out that there is more to the temporality of DPs than the nominal ET. Specifically, the temporal dimension of a simple DP involves (at least) a second time that can be temporally disjoint from ET. I will call this additional time, which is the time that contributes to a DP’s implicit domain restriction, the *resource time* (RT). Consider the example in (2).<sup>2</sup>

- (2) (At the class reunion in 2010) *The students* were (all) drunk.

Context

In 2010, former members of the graduation class of 1990 come together for a reunion. Not all former class members make it to the reunion, but everyone who shows up drinks at least two bottles of wine each.

In the given context, the content of (2) can be roughly paraphrased as in (3).

- (3) The individuals that were students [<sub>1</sub> *in/before 1990*] and [<sub>2</sub> that were present at the reunion *in 2010*] were drunk (at the reunion in 2010).



As indicated by the square brackets in (3), the content of (2) contains information that is not expressed by overt constituents. Specifically, the context supplies implicit content that narrows down potential referents for the subject DP *the students* to (pluralities of) individuals that are i)

<sup>2</sup> An example along these lines was first pointed out to me by Daniel Büring (p.c.).

students *in/before 1990* and ii) attending the reunion *in 2010*. Crucially, as part of this implicit content, the meaning of *the students* relies on two distinct (i.e. temporally disjoint) times: (2) is neither about individuals that were students in 2010 (the reunion time), nor about students at the utterance time. Instead, (2) is about individuals that were students in (and before) the year 1990. Since this first piece of temporal information fixes the set picked out by the noun *students*, it must be the nominal evaluation time (ET). Importantly, the ET is not the only temporal information that is relevant to the interpretation of *the students*: (2) does not assert that all former students from the graduation class were drunk in 2010, since not all students from before 1990 attended the reunion. Rather, (2) is a claim specifically about former students that were present *at the reunion in 2010*. This second piece of temporal information — the resource time (RT) — is part of the implicit domain restriction that typically appears with the interpretation of quantifiers/determiners.<sup>3</sup> In research on the temporality of DPs (e.g. Enç 1981, 1986; Musan 1995, 1997; Kusumoto 2005; Tonhauser 2020), the observation that the domain restriction of a DP can make reference to a time that is temporally disjoint from the nominal ET is rarely discussed (or even mentioned).<sup>4</sup> Importantly, the fact that ET and RT can be disjoint generalizes beyond plural definites to other types of determiners and quantifiers. Examples (4)–(7) illustrate this for universal quantifiers, singular definites, DPs headed by *most*, and indefinites.

- (4) *Every student* was drunk.  
= Every individual that was a student [<sub>1</sub> *in/before 1990*] and [<sub>2</sub> that was present at the reunion *in 2010*] was drunk (at the reunion in 2010).

Context

Same context as in (2).

- (5) *The class president* was drunk.  
= The (unique) individual that was a class president [<sub>1</sub> *in/before 1990*] and [<sub>2</sub> that was present at the reunion *in 2010*] was drunk (at the reunion in 2010).

Context

Same context as in (2), with the following addition: Brad is one of the former class presidents of the graduation class of 1990 (the class had the rule back then to always have two co-presidents at the same time — one male, one female). Brad is attending the reunion. There, he drinks three shots of tequila, two shots of vodka, three cans of beer and two bottles of wine (i.e. Brad is drunk). No other former class president attends.

- (6) *Most English teachers* were sober.  
= Most individuals that were English teachers [<sub>1</sub> *in/before 1990*] and [<sub>2</sub> that were present at the reunion *in 2010*] were sober (at the reunion in 2010).

Context

Same context as in (5), but in addition to the former students, several former teachers attend the reunion. Among them are six former English teachers (all of them are retired by the time of the reunion in 2010). Of the six former teachers, five do not drink a single drop of alcohol. One of them, however, is convinced by Brad to drink three shots of tequila, two shots of vodka, three cans of beer and two bottles of wine (i.e. he is drunk).

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<sup>3</sup> For a discussion of implicit domain restrictions, see Elbourne (2020).

<sup>4</sup> The only mention of this that I am aware of appears in Musan (1995). However, Musan does not investigate the resource time in detail and mostly focuses on the interpretation of the evaluation time.

- (7) *An English teacher was drunk.*  
 = There was an individual that was an English teacher [<sub>1</sub> *in/before 1990*] and [<sub>2</sub> that was present at the reunion *in 2010*] and he was drunk (at the reunion in 2010).

Context

Same context as in (6).

It appears that ET and RT can be disjoint regardless of the DP-type in question. Let us call this property of DPs *ET-RT disjointness*.

- (8) *ET-RT disjointness*  
 The evaluation time (ET) of a DP's main noun does not have to overlap with the resource time (RT) that is introduced as part of the DP's implicit domain restriction.

The following sections explore the consequences of ET-RT disjointness. Section 2 makes a first attempt at deriving ET-RT disjointness by exploring a system with two DP-internal time pronouns. In Sections 3 and 4, the predictions of this system are tested. It is argued that the relation between ET and RT is restricted in ways that are not predicted by the two variable system. Section 5 explores the consequences of ET-RT disjointness for various conclusions drawn in the literature. Section 6 sketches out alternative ways to account for DP-internal temporality. Most importantly, it is shown that we need only one time pronoun to account for the relevant data. Section 7 discusses open questions and offers ideas for future research.

## 2. Two time variables?

It seems that the contribution of ET and RT is similar across various DP-types (i.e. the bracketed content remains constant across (2)–(7)). Specifically, ET and RT contribute to the determiner's restrictor argument, which is the argument that determines the set of individuals in the determiner's domain. Let us call the restrictor argument of a determiner  $NP_{rest}$ . For the subject DPs in (2)–(7), the denotation of  $NP_{rest}$  picks out the following set.

- (9) *Denotation of  $NP_{rest}$  in examples (2)–(7)*  
 $\llbracket NP_{rest} \rrbracket^{g,c} = \{ x \mid x \text{ is a } nom \text{ in/before 1990 \& } x \text{ is present at the reunion in 2010} \}$   
 (where *nom*=student(s) in (2) and (4), *nom*=class president in (5), *nom*=English teacher in (6)–(7)).

Essentially, the denotation of  $NP_{rest}$  is a conjunction of two predicates, both of which are related to a distinct time: the nominal predicate (*Nom*), which is related to ET, and the implicit domain restriction predicate (*Dom*), which is related to RT. We can take a predicate to denote a function of the (intensional) type  $\langle i, \langle e, t \rangle \rangle$ , i.e. a function that takes a time argument of type *i* and returns a set of individuals (or more precisely: the characteristic function of that set). Importantly, while *Nom* activates a property described in the lexical entry of a particular noun, the domain predicate *Dom* denotes a salient property assigned by the context. *Dom* is thus a silent pronominal expression that denotes a function variable of type  $\langle i, \langle e, t \rangle \rangle$ . *Dom* gets its value from the assignment function *g*.<sup>5</sup>

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<sup>5</sup> Alternatively, one could imagine that *Dom* is not a covert domain pronoun, but an elided constituent that has the content of a noun (or relative clause) at LF. See Collins (2018) for arguments that at least some cases of domain

$$(10) \quad \llbracket \text{Nom} \rrbracket^{g,c} = \lambda t_i. \lambda x_e. x \text{ is a } \textit{nom} \text{ at } t \text{ }^6$$

$$(11) \quad \llbracket \text{Dom}_h \rrbracket^{g,c} = g(h) = \lambda t_i. \lambda x_e. x \text{ is a } \textit{dom} \text{ at } t$$

To derive ET-RT disjointness, the temporal arguments of Nom and Dom must be saturated *before* we combine their meanings compositionally to construct  $\llbracket \text{NP}_{rest} \rrbracket^{g,c}$ . This can be achieved by adopting a system in which each predicate locally combines with a time pronoun (i.e. a silent variable of type *i*). A DP must then contain at least two time pronouns: A *proET*, whose value determines the evaluation time of Nom, and *proRT*, which fixes the RT of Dom.

(12) *Adding temporal pronouns*

$$a. \quad \llbracket \text{proET}_i \rrbracket^{g,c} = g(i) = \mathbf{ET}^*$$

$$b. \quad \llbracket \text{proRT}_k \rrbracket^{g,c} = g(k) = \mathbf{RT}^*$$

$$c. \quad \llbracket \text{NomP} \rrbracket^{g,c} = \llbracket [\text{Nom proET}_i] \rrbracket^{g,c} = \llbracket \text{Nom} \rrbracket^{g,c}(\llbracket \text{proET}_i \rrbracket^{g,c}) \\ = \lambda x_e. x \text{ is a } \textit{nom} \text{ at } \mathbf{ET}^*$$

$$d. \quad \llbracket \text{DomP} \rrbracket^{g,c} = \llbracket [\text{Dom}_h \text{proRT}_k] \rrbracket^{g,c} = \llbracket \text{Dom}_h \rrbracket^{g,c}(\llbracket \text{proRT}_k \rrbracket^{g,c}) \\ = \lambda x_e. x \text{ is a } \textit{dom} \text{ at } \mathbf{RT}^*$$

After combining Nom and Dom with time pronouns, we arrive at two constituents (labeled NomP and DomP, respectively) that each denote functions of type  $\langle e, t \rangle$ . By applying the composition rule of *Predicate Modification* (familiar from Heim & Kratzer 1998 and similar works) to the node dominating NomP and DomP (i.e.  $\text{NP}_{rest}$ ), we get the desired end result.

(13) *LF for the restrictor argument of determiners (NP<sub>rest</sub>)*

$$[\text{NP}_{rest} [\text{NomP Nom proET}_i] [\text{DomP Dom}_h \text{proRT}_k]]$$

$$(14) \quad \llbracket \text{NP}_{rest} \rrbracket^{g,c} = \llbracket [\text{Nom proET}_i] [\text{Dom}_h \text{proRT}_k] \rrbracket^{g,c} \\ = \lambda x_e. x \text{ is a } \textit{nom} \text{ at } \mathbf{ET}^* \ \& \ x \text{ is a } \textit{dom} \text{ at } \mathbf{RT}^*$$

Example (15) illustrates how this system derives  $\llbracket \text{NP}_{rest} \rrbracket^{g,c}$  for the example (4).

(15) *Compositional semantics for (4)*

$$a. \quad \llbracket \text{student} \rrbracket^{g,c} = \lambda t_i. \lambda x_e. x \text{ is a student at } t$$

$$b. \quad \llbracket \text{Dom}_8 \rrbracket^{g,c} = g(8) = \lambda t_i. \lambda x_e. x \text{ is present at the reunion at } t$$

$$c. \quad \llbracket \text{proET}_2 \rrbracket^{g,c} = g(2) = \mathbf{ET}^* = \text{in/before 1990}$$

$$d. \quad \llbracket \text{proRT}_4 \rrbracket^{g,c} = g(4) = \mathbf{RT}^* = 2010$$

$$e. \quad \llbracket [\text{student proET}_2] \rrbracket^{g,c} = \llbracket \text{student} \rrbracket^{g,c}(\llbracket \text{proET}_2 \rrbracket^{g,c}) \\ = \lambda x_e. x \text{ is a student in/before 1990}$$

$$f. \quad \llbracket \text{Dom}_8 \rrbracket^{g,c}(\llbracket \text{proRT}_4 \rrbracket^{g,c}) \\ = \lambda x_e. x \text{ is present at the reunion in 2010}$$

---

restriction should be analyzed as syntactic ellipsis. For approaches that employ covert domain variables, see e.g. Stanley & Szabó (2000) and Stanley (2002), among others.

<sup>6</sup> The term *nom* stands for a property described by a particular noun. The term *dom* stands for a contextually salient property.

- g.  $\llbracket \text{NP}_{\text{rest}} \rrbracket^{\text{g,c}} = \llbracket [\text{student proET}_2] [\text{Dom}_8 \text{proRT}_4] \rrbracket^{\text{g,c}}$   
 $= \lambda x_e. x \text{ is a student in/before 1990 \& } x \text{ is present at the reunion in 2010}$

The system above derives ET-RT disjointness by introducing two independent DP-internal time pronouns: *proET* and *proRT*. I will henceforth call this approach the *two variable solution*. Introducing two time variables into the object language seems like a costly way of dealing with ET-RT disjointness. In order to make up for its conceptual baggage, the two variable solution must prove its empirical usefulness. There are two predictions that directly follow from a system with independent ET- and RT-pronouns: i) since pronouns can have bound variable readings, we expect to find DP-readings where ET and RT are selectively bound/free; ii) since ET and RT are determined by the value of independently indexed pronouns, the value of ET should not depend on the value of RT, and vice versa. The next two sections explore these predictions.

### 3. The (partial) independence of ET and RT: bound and free readings

A distinctive property of variables is that they have free (i.e. referential or discourse anaphoric) and bound uses. It has been argued in the past that the ET of a nominal predicate displays all readings that are characteristic of a variable (see Tonhauser 2020). Examples (2)–(7) already demonstrated ET’s ability to be free/unbound, since they make use of a contextually established past time that is not referenced by any expression in the sentences. ET can also receive a bound variable reading, e.g. (16), which can be paraphrased as in (17).

- (16) Whenever the crew served rotten salmon (on a flight), *a passenger* issued a complaint to the airline a few days later.
- (17) *Relevant reading (informal description)*  
 $\forall t. \text{ where } t \text{ is a time the crew served rotten salmon on a flight: } \exists x. \text{ where } x \text{ is a } \underline{\text{passenger at } t} \text{ \& } x \text{ issued a complaint to the airline at a time } t' \text{ a few days after } t$

Given the existence of free and bound ET-readings, it makes sense to assume that at least one DP-internal time pronoun is involved in the interpretation of ET. Since the two-variable solution relies on a second time pronoun for RT, it makes the prediction that RT should likewise allow free and bound variable uses. More specifically, the two variable approach predicts that we should observe the following four combinations of ET- and RT-readings.

- (18) *ET+RT-readings predicted by the two-variable solution*
- a. Bound RT + Free ET
  - b. Bound RT + Bound ET
  - c. Free RT + Free ET
  - d. Free RT + Bound ET

Let us first look for evidence that RT can receive a bound variable reading. Consider (19).<sup>7</sup>

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<sup>7</sup> The examples have been tested for German. For English, the judgments have not yet been systematically elicited. However, first trials indicate that the English counterparts behave similarly to German. If this is the case for all examples remains to be seen and any empirical claim made here should (for now) be viewed as a claim about German. Still, the reader can consider the English translation in parallel to the German examples.

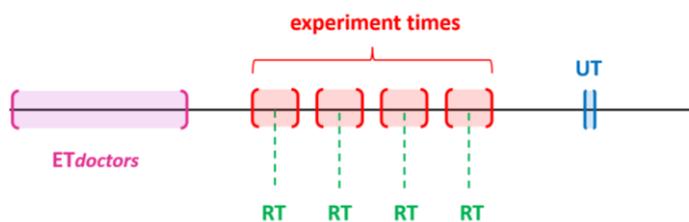
- (19) Immer wenn Prof. K ein Experiment durchgeführt hat, ist *jeder Arzt*  
 always when Prof. K an experiment conducted has is *every doctor*  
 bewusstlos geworden.  
 unconscious became  
 ‘Whenever Prof. K conducted an experiment, *every doctor* fainted.’

Bound RT+Free ET-reading (paraphrase)

$\forall t$ . where  $t$  is a time when Prof. K conducted an experiment:  $\forall x$ . where  $x$  was a doctor in 1990 &  $x$  was a participant at  $t$ :  $x$  fainted at  $t$

Context

Between 2000 and 2005, Prof. K conducted several experiments. For each experiment, he selected participants among former doctors and lawyers (Prof. K was interested in individuals that had been doctors or lawyers in 1990, but who were fired before the year 1992). At each experiment, all participants that were former doctors fainted.



Given the context, RT covaries with the time of the experiment. The experiment in 2000 used a different set of participants than the experiment in 2003, which used a different set of participants than the experiment in 2005 etc. The implicit domain restriction (i.e RT) seems to be bound by the universal quantifier over times of the whenever-clause. Importantly, the ET of the nominal is free: the set of doctors is determined at the contextually salient past interval [1990] and does not covary with the time of the experiment. We thus end up with the reading: For all times  $t$  at which Prof K conducted an experiment, the individuals that were both *doctors in 1990* and *participants at  $t$* , fainted at  $t$ . Crucially, this indicates that RT has an independent life from ET, since it can be selectively bound without necessarily affecting the value of ET. Example (20) illustrates the Bound RT+Free ET-reading for singular definites.

- (20) Immer wenn das Parlament eine Gedenkfeier veranstaltet hat, hat *der Soldat*  
 always when the parliament a commemoration hosted has has *the soldier*  
 eine kritische Rede gehalten.  
 a critical speech held  
 ‘Whenever the parliament hosted a commemoration, *the soldier* gave a critical speech.’

Bound RT+Free ET-reading (paraphrase)

$\forall t$ . where  $t$  is a time when the parliament hosted a commemoration event: the unique individual that was a soldier in 1950 & that was invited to the commemoration at  $t$  gave a critical speech at  $t$

Context

In the 1950s, a nation fought a devastating war. In the years 2000, 2010, and 2020, there were events commemorating the casualties. At each of the events, the organizers invited a different former soldier (a war veteran) to give a speech. Each time, the veteran gave a speech criticizing the government.

Next, consider (21).

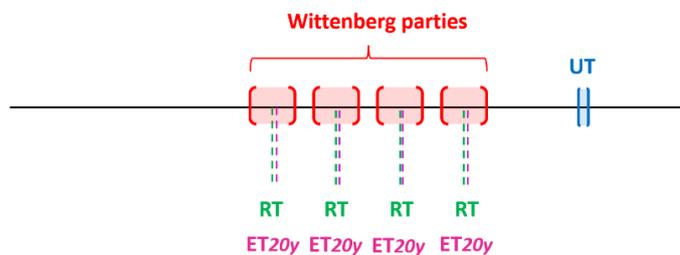
- (21) Immer wenn Familie Wittenberg ein Fest gefeiert hat, hat *jeder*  
 always when family Wittenberg a fest celebrated has has *every*  
*20-Jährige* eine Gans erschossen.  
 20-year-old a goose shot  
 ‘Whenever the Wittenberg family hosted a party, *every 20-year-old* shot a goose.’

Bound RT+Bound ET-reading (paraphrase)

$\forall t$ . where  $t$  is a time when the Wittenberg family hosted a party:  $\forall x$ . where  $x$  was a 20-year-old at  $t$  &  $x$  was a guest at  $t$ :  $x$  shot a goose at  $t$

Context

Over the last 150 years, the Wittenberg family (a rich aristocratic family) hosted annual parties, where it was custom for every 20-year old guest (i.e. guests who were 20 years old at the time of the party) to shoot a goose.



In example (21), the set of 20-year-olds varies with each year of the festivities, creating a Bound-ET-reading. Notice that in the relevant reading, it is also the case that RT is bound: RT presumably helps to pick out the set of guests that are present at each party, which, for the first and the last gathering (which are 150 years apart), will be a completely different set of individuals.<sup>8, 9</sup> The result is a reading where both RT and ET are bound (the Bound RT+Bound ET-reading).

We also find readings where both ET and RT appear to be free.

<sup>8</sup> We are not talking about 20-year-old servants at  $t$ . Indeed, (21) is perfectly fine in a context where the serving staff at each party included 20-year-old servants who (since they are not guests) were excluded from the individuals that were supposed to shoot a goose at  $t$ . This highlights the independent contribution of the implicit domain restriction even in cases where RT and ET denote the same time.

<sup>9</sup> Instead of a Bound RT+Bound ET-reading, one could consider an alternative where RT is free and picks out the salient interval of the past 150 years, e.g. 1870–2020. When ET is bound (i.e. the set of 20-year-old's covaries with the time of the party), the Bound RT+Bound ET-reading would intersect the 20-year-old's at each party time  $t$  with the set of party guests from that time  $t$  and claim of every individual in the resulting set that it shot a goose at  $t$ . The Free RT+Bound ET-reading, on the other hand, would intersect the set of 20-year-olds at  $t$  with the set of all individuals that, at some time between 1870–2020, were party guests of the Wittenberg's and claim that each individual in the resulting set shot a goose at  $t$ . Are these two readings equivalent? Not quite. Imagine an individual (call him Gustav) that was 20 in 1930, but that was first invited to a Wittenberg-party in 1935 (i.e. when he was 25). Given the Wittenberg traditions, Gustav was never required to shoot a goose since he was never a 20-year-old guest when he attended a party. However, this is only captured by the Bound RT+Bound ET-reading. The Free RT+Bound ET-reading would include Gustav among the people that shot a goose in 1930: He was 20 years old in 1930 and he was a party guest at some point between 1870–2020.

- (22) Immer wenn Valentin in den Jahren 2005–2010 ein Fest gefeiert hat, always when Valentin in the years 2005–2010 a party celebrated has waren *die Minister* (alle) betrunken. were *the ministers* (all) drunk  
‘Whenever Valentin hosted a party in the years 2005–2010, *the ministers* were (all) drunk.’

Free RT+Free ET-reading (paraphrase)

$\forall t$ . where  $t$  is a time when Valentin hosted a party in the years 2005-2010:  $\forall x$ . where  $x$  was a passenger on the plane in 2019 &  $x$  was a minister in 2019:  $x$  was drunk at  $t$

Context

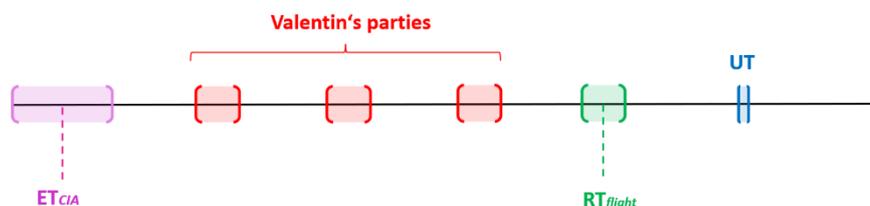
Between the years 2005 and 2010, Valentin hosted several parties for the rich and powerful, which included mayors, ministers, CEOs, among others. Archibald, Karl, Magnus, and Julius were present at each of Valentin’s parties. Back then, the four of them were still young members of parliament. In 2018, they were each chosen to become ministers in the newly formed government. In 2019, while on a plane to Paris, a passenger records a conversation between the four ministers and two ambassadors in which they make racist comments about the prime minister. When the recording is leaked and the four politicians have to resign, Augustus is not shocked, since he is familiar with their behavior from meeting them at Valentin’s parties. He says: ‘I am surprised that the ambassadors are racist. However, I’m not shocked by the others on that plane. Whenever Valentin hosted a party I attended, *the ministers* were (all) drunk. And they are always like this when they are drunk.’

In (22), neither ET nor RT covaries with the time of Valentin’s parties. Instead, (22) is about individuals that were ministers on some (contextually referenced) flight a few years after Victor’s last party took place. In this example, ET and RT overlap. One might wonder whether the Free RT+Free ET-reading also allows ET and RT to be temporally disjoint. The answer seems to be yes. Consider (23).

- (23) Immer wenn bei Valentins Party jemand vergiftet wurde, war *jeder* Always when at Valentin’s party someone poisoned was was *every* CIA-Agent unter den Gästen. CIA agent among the guests  
‘Whenever someone was poisoned at one of Valentin’s parties, *every CIA agent* was among the guests.’

Free RT+Free ET-reading (paraphrase)

$\forall t$ . where  $t$  is a time when someone was poisoned at one of Valentin’s parties:  $\forall x$ . where  $x$  was a passenger in 2013 &  $x$  was a CIA agent in the 1990s:  $x$  was among the guests at  $t$



Context

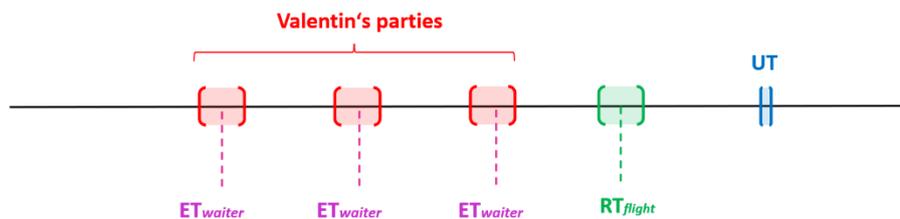
Between the years 2005 and 2010, Valentin hosted several parties for the rich and powerful. At three of these parties, a guest was poisoned. Larissa and Hannah are investigating the incidents. In 2015, the evidence suggests that, in 2013, the culprits must have been on a flight on Valentin's private jet. Incidentally, several passengers on that flight attended one of Valentin's parties in the past. However, three passengers stand out: Brad, Bill, and Tom were CIA agents in the 1990s who had left the CIA by the early 2000s under suspicious circumstances. While it was not uncommon to find several former CIA agents at Valentin's parties (there were a dozen of former CIA agents at each party), Brad, Bill and Tom were present at all parties where someone was poisoned. Larissa asks Hannah which passengers she finds most suspicious. She answers: 'Not every passenger on the flight was at a party where someone was poisoned. However, what seems to be the case is this: *Whenever someone was poisoned at one of Valentin's parties, every CIA agent was among the guests.*'

Finally, let us consider the Free RT+Bound ET-reading in (24).

- (24) #Immer wenn Valentin in den Jahren 2008–2010 eine Party gefeiert hat, always when Valentin in the years 2008–2010 a party celebrated has hat *jeder Kellner* ein Getränk vergiftet. has *every waiter* a drink poisoned  
'Whenever Valentin hosted a party in the years 2008–2010, *every waiter* poisoned a drink.'

Free RT+Bound ET-reading (paraphrase)

$\forall t$ . where  $t$  is a time when Valentin hosted a party in the years 2008–2010:  $\forall x$ . where  $x$  was a passenger in 2013 &  $x$  was a waiter at  $t$ :  $x$  poisoned a drink at  $t$

Context

Between the years 2008 and 2010, Valentin hosted three parties. At these parties, guests were poisoned. Larissa and Hannah investigate the incidents. In 2015, they get an anonymous tip that the culprits have been passengers on a flight in 2013. Unfortunately, several passengers from that flight can be tied to Valentin's parties, either as a guest or as a member of the catering staff. Among them are Joe, Will, Jonathan, and Henry. Finally, Larissa finds out the following information:

- **Joe** poisoned a drink at Party 1 and 2
- **Will** poisoned a drink at Party 1, 2 and 3
- **Jonathan** poisoned a drink at Party 3

The list of waiters at each party:

- Waiters at Party 1: **Joe, Will, Jonathan**, Chris, Leonard

- Waiters at Party 2: **Joe, Will**, Chris, Bill
- Waiters at Party 3: **Will, Jonathan**, Bill, Thomas

Larissa shows this information to Hannah and concludes: ‘This information narrows down the list of passengers from that flight to the most likely suspects, since we now know: #Whenever Valentin hosted a party, *every waiter* poisoned a drink.’

As (24) illustrates, judgments on the Free RT+Bound ET-reading rely on a lot of contextual information, which makes it hard to test. Indeed, the judgments elicited for this reading have been less consistent than for other RT+ET-readings. Even though it is possible that later testing might call the result into question, the tests so far have indicated that the Free RT+Bound ET-reading is not available (at least for native speakers of German). To further demonstrate this, let us look at another (similar) example involving a singular definite.

- (25) #Immer wenn Valentin in den Jahren 2008–2010 eine Party gefeiert hat,  
 always when Valentin in the years 2008–2010 a party celebrated has  
 hat *der Kellner* ein Getränk vergiftet.  
 has *the waiter* a drink poisoned  
 ‘Whenever Valentin hosted a party in the years 2008–2010, *the waiter* poisoned a drink.’

Free RT+Bound ET-reading (paraphrase)

$\forall t$ . where  $t$  is a time when Valentin hosted a party in the years 2008-2010: the unique  $x$  where  $x$  was a passenger in 2013 &  $x$  was a waiter at  $t$ :  $x$  poisoned a drink at  $t$

Context

Same context as in (24), but Larissa gets the slightly different information below:

- **Joe** poisoned a drink at Party 1
- **Will** poisoned a drink at Party 2
- **Jonathan** poisoned a drink at Party 3

The list of waiters at each party:

- Waiters at Party 1: **Joe**, Chris, Leonard
- Waiters at Party 2: **Will**, Chris, Bill
- Waiters at Party 3: **Jonathan**, Bill, Thomas

Larissa shows this information to Hannah and concludes: ‘This piece of information narrows down the list of passengers from that flight to the most likely suspects, since we now know: #Whenever Valentin hosted a party, *the waiter* poisoned a drink.’

Assuming a standard semantics for definites that is based on a uniqueness condition, (26) should be able to express the Free RT+Bound ET-reading: Since Joe, Will, and Jonathan were waiters at different parties, it is the case that there is a unique individual at each party time  $t$  that was a waiter at  $t$  *and* a passenger on the flight in 2013. Based on the judgments that I have elicited, this reading is not acceptable for the sentence in (25). With the caveat that this conclusion might turn out to be premature, I therefore assume the generalizations in (26) and (27).

(26) *No Free RT+Bound ET-reading*

The evaluation time (ET) of a noun cannot receive a bound variable reading if the resource time (i.e. the time of the implicit domain restriction of the same DP) receives a free reading (or equivalently: RT cannot be free if ET is bound).

(27) *(Partial) independence of ET and RT w.r.t. variable behavior (Bound RT+Free ET)*

The resource time (RT) of a DP's implicit domain restriction can have a bound variable reading when the evaluation time (ET) of the DP's noun is free.

The absence of the Free RT+Bound ET-reading is unexpected under the two variable solution. Since the predicted independence of ET and RT is only partial when it comes to binding, we need to ask if we can find other cases where the independence of ET and RT breaks down. Specifically, since time is an inherently relational concept, the next section will ask whether there are any restrictions when it comes to possible temporal relations between ET and RT.

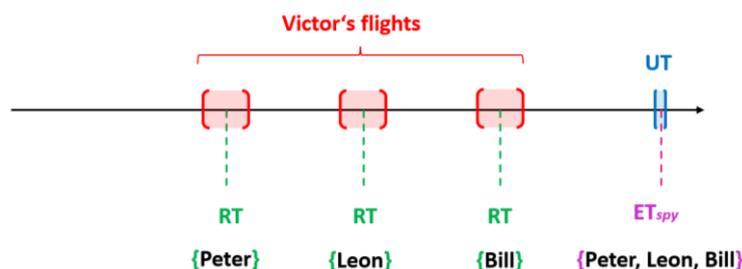
#### 4. The (partial) dependence of ET and RT: DP-internal temporal relations

Times are inherently ordered in relation to other times. There are three possible relations a given time interval T1 can have in relation to another time interval T2: *anteriority* ( $T1 < T2$ ), *overlap*<sup>10</sup> ( $T1 \circ T2$ ), and *posteriority* ( $T1 > T2$ ). If the two variable solution is correct, the ordering between ET and RT should be unrestricted, since each time is derived by the independent indexing of a time pronoun. Considered from the perspective of ET, we have already seen instantiations of two temporal relations: anteriority ( $ET < RT$ , e.g. (2)–(7), (19), (20), (23)) and overlap ( $T1 \circ T2$ , e.g. (21), (22)). So far, we have not seen an example for the relation  $ET > RT$  (or equivalently:  $RT < ET$ ). One way to clearly bring out the  $ET < RT$ -relation is to bind RT to a time in the past of ET. We can thus use the Bound RT+Free ET-reading as a testing ground.

- (28) #Immer wenn Victor mit seinem Privatflugzeug geflogen ist, hat *der Spion*  
 always when Victor with his private.jet flew is has the spy  
 den Kommunismus verteufelt.  
 the communism demonized  
 ‘Whenever Victor flew on his private jet, *the spy* condemned communism.’

Bound RT+Free ET-reading, where  $RT < ET$  (paraphrase)

$\forall t$ . where  $t$  is a time when Victor flew on his plane: the unique  $x$  where  $x$  is a spy **in 1988** &  $x$  was a passenger on Victor's plane at  $t$ :  $x$  condemned communism at  $t$



<sup>10</sup> Including identity (i.e.  $T1 = T2$ ).

Context

In 1988, a CIA agent reports on his recruitment of spies: ‘Between 1975 and 1978, I had installed bugs on the private jet of a wealthy man named Victor. The individuals that Victor invited on his plane were well-connected, so the CIA was interested in recruiting them as spies. A curious thing about Victor was that he never invited the same guest twice, so there were always different people on his plane. When listening to the recordings, I was looking for someone who would be ideologically aligned with me. At each of the flights I listened in, there was one individual that stood out to me because he condemned communism. After about ten years of slow persuasion, each individual that had condemned communism indeed became a spy for the CIA. In fact, every one of them is now a very capable spy for our agency. So, you are wondering how I decided which person to recruit? Well, the essence is this: #Whenever Victor flew on his private jet, *the spy* condemned communism.’

- (29) #Immer wenn Prof K ein Experiment durchgeführt hat, ist *jeder Arzt*  
 always when Prof K an experiment conducted has is every doctor  
 eingeschlafen.  
 fallen.asleep  
 ‘Whenever Prof K. conducted an experiment, every doctor fell asleep.’

Bound RT+Free ET-reading, where RT<ET (paraphrase)

$\forall t$ . where  $t$  is a time when Prof K. conducted an experiment:  $\forall x$ . where  $x$  is a doctor  
**in/after 2010** &  $x$  was a participant at  $t$ :  $x$  fell asleep at  $t$

Context

Between the years 1990-1993, Prof. K conducted several experiments with children (age 5–8). Every child that would later (i.e. after the year 2010) become a doctor fell asleep while it was a participant at one of the experiments.

- Children in 1990-1993 that became doctors as adults: **Mike, Tom, Bill, Chris, George, Herbert, Bernd**
- Participants at Experiment 1 (in 1990): **Mike, Bill**, Steve, Leon, Greg, ...
- Fell asleep at E1: **Mike, Bill**, Steve
- Participants at E2 (in 1991): **Tom, Chris, George**, Ludwig, Karl, ...
- Fell asleep at E2: **Tom, Chris, George**
- Participants at E3 (in 1992): **Herbert, Mike, Bernd**, Michael, ...
- Fell asleep at E3: **Herbert, Mike, Bernd**
- Participants at E4: (in 1993): **Bill, Herbert**, Ludwig, Stefan, ...
- Fell asleep at E4: **Bill, Herbert**, Ludwig

In 2023, a student of Prof K. conducts a follow-up study, in which she tries to find out about long-term effects on the participant’s future. Finding out about the occupation of the participants, she notes to herself: ‘#Whenever Prof. K. conducted an experiment, *every doctor* fell asleep.’

The context in (29) aims to bring out a reading in which i) RT is bound to the past times of Victor’s flights (i.e. the unique individual that condemned communism covaries with the time of the flights) and ii) ET is free and into the future of RT (i.e. the individual condemning communism at RT becomes a spy only later on). Since at each flight, there is always a unique

individual that condemned communism and became a spy in the future, this reading should be possible. However, although the judgments are difficult and should not be taken at face value, (29) seems considerably worse to most informants when compared to similar cases in which the temporal relation is reversed (i.e.  $ET < RT$ , as in (19)–(20)). Example (29) tries to test the same reading for a universal quantifier. Consider now simpler cases where  $RT$  is bound to the tense time. Let us compare the two contexts, where one tries to bring about the  $ET < RT$ -reading and the other the  $RT < ET$ -reading.

- (30) Bei einem Flug im Jahr 2005 wurde *jeder CIA-Agent* verletzt.  
 on a flight in year 2005 was every CIA agent injured  
 ‘On a flight in the year 2005, *every CIA agent* was injured.’

*ET < RT-context*

10 years after their retirement, a few former CIA agents and a few former FBI agents fly to Washington where they plan to take part in a ceremony in honor of their years of service. Because of severe turbulences on their flight to Washington, all former CIA agents suffer minor injuries. The former FBI agents remain unharmed.

*#RT < ET-context*

In the year 2005, a plane gets hijacked. Several passengers were injured, but in the end, the hijackers were fought down. Four young passengers (who each suffered minor injuries on the flight) were inspired by the incident to pursue a career in the CIA. By 2020, all four of them work as agents for the CIA.

The implicit content associated with  $RT$  is hard to control without the covarying reading that we get from binding with a whenever-clause. Therefore, one needs to be careful to not accidentally shift  $RT$  to the utterance time or some other time that is different from the time of the flight-situation in 2005. Indeed, the  $\#RT < ET$ -context is likely compatible with other implicit domain restrictions that pick out the relevant CIA agents without relying on a  $RT < ET$ -relation (e.g. ‘every individual  $x$  where  $x$  is a CIA agent at the utterance time and  $x$  is talked about at the utterance time’). It is hard to see how to overcome this issue without relying on some mechanisms that gives the target  $RT$ -reading an intuitively distinct character from context-compatible alternatives (e.g. by giving  $RT$  a covarying reading via binding). However, I believe once the competing readings are neglected and the focus is given to the target reading (i.e. ‘every individual  $x$  where  $x$  is a CIA agent at the utterance time and  $x$  was a passenger on the plane in 2005’), it can be seen that the  $RT < ET$ -relation is unavailable for (30) as well. Unfortunately, the nature of the examples makes it difficult to demonstrate this conclusively. Taken together, the examples (28)–(30) nevertheless give the overall indication that the relationship between  $ET$  and  $RT$  is subject to a restriction that prohibits  $RT < ET$ -relations. Without examples that show the contrary, I will thus assume the restriction in (31).

- (31) \* $RT < ET$  or No  $RT < ET$  disjointness

The  $ET$  of a DP’s noun cannot be a time that is both disjoint and into the future (i.e. posterior) to the DP’s  $RT$ .

Since the restrictions we have seen in this and the last section do not follow from the two variable solution, I will need to rethink my analysis of DP-internal temporality. First, however, I will deal with some theoretical issues that are raised by  $ET$ - $RT$  disjointness.

## 5. Further considerations

To summarize the results up to this point, the two variable solution to ET-RT disjointness is too powerful, since it predicts that the values of a DP's ET and RT should not depend on each other. The previous sections have tried to demonstrate that there are limits to the independence of ET and RT. First, a bound variable reading of ET seems to be conditioned on RT-binding (*No Free RT+Bound ET-reading*). Second, ET-RT disjointness is limited to ET<RT-relations (*\*RT<ET* or *No RT<ET disjointness*). Considering these challenges, we have arrived at a point where we need an approach that introduces a closer connection between ET and RT. But before we look at potential alternatives to the two-variable solution, there are some additional consequences of ET-RT disjointness that are worth discussion. First, it is worth pointing out that ET-RT disjointness may pose a challenge for theories of situation pronouns (e.g. Schwarz 2012; Elbourne 2013; Kratzer 2021). It is widely assumed in these approaches that DPs contain a single situation pronoun. A major appeal of situation theories is that a single DP-internal situation pronoun is used to account for a range of seemingly disparate phenomena. In particular, the situation pronoun is supposed to take care of both the DP's implicit domain restriction and the (world and time) evaluation of the noun. The idea is that a DP such as *every student* roughly translates to 'every individual that is a student in *s*', where the situation *s* is contributed by the situation pronoun and no further device of domain restriction is needed. Without further assumptions, this predicts that the implicit domain restriction and the noun's modal/temporal-evaluation should always rely on identical temporal and modal values (after all, their time and world information is based on information provided by the same situation pronoun). It is apparent that this prediction clashes with ET-RT disjointness: The situational information that goes into determining the implicit domain restriction (i.e. the resource situation) can be temporally disjoint from the situational information that determines a noun's evaluation (i.e. the evaluation situation). Since spatiotemporal contiguity is presumably a prerequisite for calling different parts of a world a single situation, ET-RT disjointness cannot be derived by a single situation pronoun.<sup>11</sup> Of course, nothing prevents us from adopting a two variable version of a situation pronoun theory. However, by employing two independent situation pronouns and thereby giving up on any connection between nominal evaluations and domain restrictions, the situation pronoun theory would lose some of the conceptual advantage that made it an attractive theory in the first place.

There is another result from the literature that might be challenged by ET-RT disjointness: ET-RT disjointness contradicts the *Intersective Predicate Generalization* (Keshet 2008, 2010).

(32) *Intersective Predicate Generalization (IPG)*

Two predicates interpreted intersectively may not be evaluated at different times or worlds from one another.

(Keshet 2010:388)

The IPG was formulated based on the observation that sentences such as (33) cannot have the meaning in (34).

(33) # In 1984, *the professor in kindergarten* learned how to fingerprint.

(Keshet 2010:390)

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<sup>11</sup> At least as long as we assume that the evaluation of a predicate is *directly* established by the situation pronoun and not via additional situational information that is related to the situation pronoun.

- (34) The unique individual  $x$  so that  $x$  is a *professor at the utterance time (2023)* &  $x$  was in kindergarten in 1984 learned how to fingerpaint in 1984.

Ignoring worlds, the IPG claims that the evaluation times of two intersecting predicates (i.e. predicates that are composed via Predicate Modification) *cannot* be temporally disjoint. Since I assumed that the implicit domain restriction is essentially a predicate that is intersected with the noun, ET-RT disjointness is a generalization that stands in polar opposition to the IPG: It claims that two intersecting predicates *can* be evaluated at two disjoint times. How do we resolve this conflict? A potential solution would be to propose a different analysis for implicit domain restrictions in which they do not intersect with the noun. One could implement this by assuming that a determiner takes the implicit restriction and the nominal predicate as two separate restrictor arguments. For instance, a quantificational determiner such as *every* would then denote a function of type  $\langle\langle e,t \rangle, \langle\langle e,t \rangle, \langle\langle e,t \rangle, t \rangle\rangle\rangle$ , where the first two  $\langle e,t \rangle$ -type arguments are saturated by the noun and the implicit domain restriction, respectively. This would mean that the domain restriction and the noun never intersect (at least not in a direct, compositional way via the application of Predicate Modification), and IPG would not be violated.<sup>12</sup> I have nothing to say against an approach where a noun and the implicit domain restriction are independently selected by the determiner. However, I will propose instead that the conflict can be remedied by clarifying the meaning of the phrase ‘evaluated at different times’ as it is used in the formulation of the IPG in (32). For this, I will use the slightly modified formulation in (35).<sup>13</sup>

- (35) *(Revised) Intersective Predicate Generalization*  
Two predicates which are combined via Predicate Modification must share their time (and world) argument.

In essence, (35) forces Predicate Modification to apply to two predicates of type  $\langle i, \langle e,t \rangle \rangle$  instead of the standard (extensional) version which applies to  $\langle e,t \rangle$ -type functions.

- (36) *Predicate Modification (PM, intensional version)*  
If  $\alpha$  is a branching node and  $\{\beta, \gamma\}$  is the set of  $\alpha$ 's daughters, and  $\llbracket \beta \rrbracket^{g,c}$  and  $\llbracket \gamma \rrbracket^{g,c}$  are both of type  $\langle i, \langle e,t \rangle \rangle$ , then  $\llbracket \alpha \rrbracket^{g,c} = \lambda t_i. \lambda x_e. \llbracket \beta \rrbracket^{g,c}(t)(x) \ \& \ \llbracket \gamma \rrbracket^{g,c}(t)(x)$

Applying this to the example analysis from earlier (see (15)), the nominal predicate and the domain predicate would have to compose via Predicate Modification before their time arguments are saturated by a time pronoun. Only a single time pronoun (I will call it *proResT*, where *ResT* stands for *restrictor time*) could then apply to saturate the shared time argument.

<sup>12</sup> Note, however, that the two predicates still intersect in a looser sense. Whatever the determiner meaning specifies for its two restrictor arguments will likely involve the intersection of the two predicate sets, because it is the intersection that derives the final domain of the determiner. This solution is thus only a solution as long as the IPG is specifically about the composition principle Predicate Modification.

<sup>13</sup> O’Leary (2022) develops a proposal that is very similar to the one presented here. O’Leary (2022:101) proposes a revised version of the IPG essentially forces two intersecting predicates to share their semantic time argument, just like (35). Interestingly, O’Leary’s approach is partly motivated by the observation that a noun and an intersecting noun-modifier can (under certain circumstances) show temporal disjointness.

(37) *Compositional semantics for (4)*

- a.  $\llbracket \text{student} \rrbracket^{g,c} = \lambda t_i. \lambda x_e. x \text{ is a student at } t$
- b.  $\llbracket \text{Dom}_8 \rrbracket^{g,c} = g(8) = \lambda t_i. \lambda x_e. x \text{ is present at the reunion at } t$
- c.  $\llbracket [\text{student Dom}_8] \rrbracket^{g,c} = \lambda t_i. \lambda x_e. x \text{ is a student at } t \ \& \ x \text{ is present at the reunion at } t$
- h.  $\llbracket \text{proResT}_5 \rrbracket^{g,c} = g(5) = \mathbf{ResT}^*$
- i.  $\llbracket \text{NP}_{\text{rest}} \rrbracket^{g,c} = \llbracket [\llbracket \text{student Dom}_8 \rrbracket \text{proResT}_5] \rrbracket^{g,c}$   
 $= \llbracket [\text{student Dom}_8] \rrbracket^{g,c} (\llbracket \text{proResT}_5 \rrbracket^{g,c})$   
 $= \lambda x_e. x \text{ is a student at } \mathbf{ResT}^* \ \& \ x \text{ is present at the reunion at } \mathbf{ResT}^*$

By adhering to (35), I am effectively forced to adopt a theory that is akin to the situation pronoun theory in that one pronoun takes care of the temporal (or situational) dimension of both the noun and the implicit domain restriction. Of course, I am still stuck with the original conflict: Although this system derives the IPG, it does not derive ET-RT disjointness. Still, I argue that the one variable approach is superior to an approach with two variables. The goal of the next section is to show that, with certain modifications, the one variable approach can derive ET-RT disjointness. That is, instead of deriving ET-RT disjointness by blocking time argument-sharing between the two predicates, I will adopt a strategy that achieves ET-RT disjointness by increasing the temporal complexity of predicate denotations. In addition to preserving a closer connection between implicit domain restrictions and the evaluation of nominal predicates (and thereby upholding the IPG), the resulting *one variable solution* will also derive the restrictions on possible ET-RT-relations.

6. *A one variable solution?*

Kusumoto (2005) first observed that the evaluation time of a noun cannot be (exclusively) determined by a time pronoun. The idea that the ET of a noun is the value of a time pronoun goes back to Enç (1981, 1986) who famously showed that the only coherent reading of (38) is one where the ET of *fugitive* is a contextually salient time in the past of the tense time.

(38) *Every fugitive is now in jail.*Coherent reading

$\forall x$ . where  $x$  is a fugitive at a contextually salient time before the tense time/utterance time:  $x$  is in jail at the utterance time

For Enç, the fact that ET could be established contextually meant that ET is contributed by a time pronoun. However, Kusumoto (2005) noticed that (38) can be used to talk about five individuals that were fugitives at different past times (and that are now in jail). Kusumoto concluded that ET could not be the contextually assigned value of a time pronoun, since the value of a pronoun would not vary for each individual.<sup>14</sup> To make sure that the individuals in the domain of *every* can be fugitives at different times, she proposed (like Musan 1995) that ET is existentially quantified. Then again, if one simply assumes that ET is existentially quantified, one would have trouble accounting for the fact that ET allows bound variable readings. Accordingly, recent proposals (e.g. Schwarz 2012; Tonhauser 2020; O’Leary 2022) have

<sup>14</sup> Note that this argument presupposes that for an individual  $x$  to be a fugitive at  $t$  means that  $x$  is a fugitive *throughout*  $t$ .

assumed that the evaluation of a noun is determined by the interaction of two times, one being introduced by an existential quantifier, the other being the value of a time pronoun that is restricting the domain of the existential quantifier. Let us adopt this strategy:

- (39)  $[[\text{Nom}]]^{\text{g,c}} = \lambda t_i. \lambda x_e. \exists t' [t' \text{ o } t \ \& \ x \text{ is a } \textit{nom} \text{ at } t']$   
 (where *nom* stands for a property described by a particular noun and *o* expresses the relation of temporal overlap)

This now raises the question of whether the implicit domain restriction likewise introduces existential quantification over RT. Since the properties described by implicit domain predicates are hard to pin down exactly, this question is not easy to answer. However, at least for the implicit domain restriction that was assumed in the examples (2)–(7) (i.e. ‘x was present at the reunion in RT’), a similar treatment seems necessary. One probably does not want to restrict the domain of the determiners to individuals that were present *throughout* the whole duration of the reunion (RT), since the individuals at the reunion might arrive and leave at different times. For this reason, I will assume an existential quantifier over times as part of the denotation of domain predicates as well.

- (40)  $[[\text{Dom}_h]]^{\text{g,c}} = \text{g}(h) = \lambda t_i. \lambda x_e. \exists t' [t' \text{ o } t \ \& \ x \text{ is a } \textit{dom} \text{ at } t']$   
 (where *dom* stands for a contextually salient property)

Following the IPG, the next step in building the restrictor  $\text{NP}_{\text{rest}}$  involves combining  $\text{Nom}$  and  $\text{Dom}_h$  via Predicate Modification, which results in time argument sharing.

- (41)  $[[[\text{Nom } \text{Dom}_h]]]^{\text{g,c}}$   
 $= \lambda t_i. \lambda x_e. [\exists t' [t' \text{ o } t \ \& \ x \text{ is a } \textit{nom} \text{ at } t']] \ \& \ [\exists t'' [t'' \text{ o } t \ \& \ x \text{ is a } \textit{dom} \text{ at } t'']]$

In order to arrive at the right type for the restrictor argument ( $\langle e, t \rangle$ ), the time argument of (41) must be saturated by combining with a time pronoun  $\text{proResT}$ .

- (42)  $[[\text{NP}_{\text{rest}}]]^{\text{g,c}} = [[[[\text{Nom } \text{Dom}_h] \text{ proResT}_5]]]^{\text{g,c}} = [[[\text{Nom } \text{Dom}_h]]]^{\text{g,c}} ([[ \text{proResT}_5 ]])^{\text{g,c}}$   
 $= \lambda x_e. [\exists t' [t' \text{ o } \mathbf{ResT}^* \ \& \ x \text{ is a } \textit{nom} \text{ at } t']] \ \& \ [\exists t'' [t'' \text{ o } \mathbf{ResT}^* \ \& \ x \text{ is a } \textit{dom} \text{ at } t'']]$

So far, we arrive at a result that upholds (some version of) the IPG. Moreover, (42) derives the fact that both ET and RT can receive bound variable readings. Specifically, (42) derives the Bound RT+Bound ET-reading. Once  $\text{proResT}$  is bound by a quantifier over times, both RT (now, the existentially quantified time of the domain predicate) and ET (the existentially quantified time of the noun) must covary by virtue of being indirectly ‘bound’ through the overlap relation to  $\text{ResT}$ . For example, the Bound RT+Bound ET-reading from (21) could now be paraphrased as (43).

- (43) Whenever the Wittenberg family hosted a party, *every 20-year-old* shot a goose.

*Bound RT+Bound ET-reading (revised informal description)*

$\forall \mathbf{t}$ . where  $\mathbf{t}$  is a time when the Wittenberg family hosted a party:  $\forall x$  such that there is a time that overlaps with  $\mathbf{t}$  at which  $x$  was a 20-year old & there is a time that overlaps with  $\mathbf{t}$  at which  $x$  was a guest at  $\mathbf{t}$ :  $x$  shot a goose at  $\mathbf{t}$



denotations that are possible for the restrictor  $NP_{rest}$ , then imposters of the type Free RT+Bound ET are indeed ruled out, since these readings would require a relation between RT and ResT that is different from temporal overlap. Moreover, from (42) and (44b) alone, a restrictor can also never take on a reading in which ET is into the future of RT. Based on the temporal relations in (42) and (44b), ET can only overlap or precede RT, but never follow it. This derives both the generalizations *No Free RT+Bound ET-reading* and *No RT<ET disjointness* (see (26) and (31)), respectively. If one assumes the lexical entries in (39) and (44a) for nominal predicates (or a single entry that is compatible with both denotations) and the lexical entry in (40) for implicit domain predicates, then this results in the right empirical coverage.

(46) *Advantages of the one variable solution*

- a. It derives ET-RT disjointness
- b. It derives the Bound RT+Bound ET-reading, Free RT+Free ET-reading
- c. It derives the Bound RT+'Free' ET-reading
- d. It derives the absence of Free RT+Bound ET-readings (*No Free RT+Bound ET*)
- e. It derives the absence of RT<ET-relations (*No RT<ET disjointness*)
- f. It derives variation of ET between individuals in the domain
- g. It is compatible with the IPG

A word of modesty is in order. Although the one variable solution achieves a decent empirical coverage, it does so by relying on a number of stipulations that are left unexplained. For example, deriving *No Free RT+Bound ET* means accepting the stipulation that the lexical entry of Dom may involve temporal overlap between RT and ResT, but no other temporal relation. Similarly, *\*RT<ET*, although derived, remains as mysterious as before. Why would nominal predicates allow *o* and *<*, but not the posteriority relation *>*? These questions are related to O'Leary's (2022) observation that not all nouns allow the same temporal relations: So-called *flexible nouns* (e.g. *student*) allow both *o* and *<*, while so-called *inflexible nouns* (e.g. *bachelor*) allow only *o*. Based on this classification, implicit domain predicates fall into the later category. However, this does not explain *why* implicit domain predicates must be inflexible. Nor does it explain why there is no third category of nouns that allows *>*-relations.

(47) *Stipulation A of the one variable solution (to be explained)*

RT must overlap with ResT

(48) *Stipulation B of the one variable solution (to be explained)*

No ET<ResT

### 7. A few open questions and some potential extensions

The discussion above leaves many questions unanswered. For one thing, we have yet to see how the constraints on ET-RT-relations relate to potential restrictions on the relation between DP-times and verbal tense, which have been a frequent topic of discussion in the literature (e.g. Musan 1995; O'Leary 2022). Related to this is the question of how much temporal complexity is needed for the representation of simple DPs. The one variable solution seemed to rely on three times to capture the temporal behavior of DPs, two existentially quantified times (ET, RT) and one time contributed by a time pronoun (ResT). Under closer inspection, this turns out to be only partly true. The introduction of the existential quantifier crucially relied on the use of

the overlap relation  $o$  to establish a dependence on the time pronoun. Importantly, the  $o$  itself relies on an additional existential quantifier in its definition.

(49) *The temporal overlap relation  $o$* 

A time interval  $t$  and a time interval  $t'$  stand in a temporal overlap relation  $o$  iff *there is a time interval  $t''$  such that  $t''$  is a subinterval of  $t$  and  $t''$  is a subinterval of  $t'$ .*

Thus, the denotation of  $\text{NP}_{rest}$  could have been written out as in (50).

$$(50) \quad \llbracket \text{NP}_{rest} \rrbracket^{g,c} = \lambda x_e. [\exists t' [\exists t'' [t'' \text{ is a subinterval of } t' \ \& \ t'' \text{ is a subinterval of } \mathbf{ResT}^*]] \ \& \ x \text{ is a } \mathit{nom} \text{ at } t'] \ \& \ [\exists t''' [\exists t'''' [t'''' \text{ is a subinterval of } t''' \ \& \ t'''' \text{ is a subinterval of } \mathbf{ResT}^*]] \ \& \ x \text{ is a } \mathit{dom} \text{ at } t''']]$$

It seems that even the one variable solution cannot avoid attributing a considerable amount of temporal complexity to the denotation of simple DPs. A goal for further research could be to find ways to reduce the temporal information that is stipulated as part of DP-meanings. Adopting a situation semantic framework, for instance, one could attempt to order individuals directly to situations, instead of introducing a time as an intermediary. This is possible if individuals and situations are both of the same entity type  $s$ . I assume that an individual  $x$  is equivalent to the situation that contains exactly (and exclusively) itself throughout its whole temporal extendedness — i.e. from the moment it begins existing to the moment it ceases to exist. One could thus define situational overlap  $o_s$  as a relation that can hold between an individual (or situation)  $x$  and a situation  $s$  if  $x$  and  $s$  share some sub-situation  $s'$ . This approach could potentially reduce the contribution of implicit domain restrictions to that of the (content-less) overlapping function in (52b), which essentially required the individuals in the domain to overlap with the situation of the situation pronoun.

(51) *The situational overlap relation  $o_s$* 

A situation  $s$  and situation  $s'$  stand in a situational overlap relation  $o_s$  iff *there is a situation  $s''$  such that  $s''$  is a part of  $s$  ( $s'' \leq s$ ) and  $s''$  is a part of  $s'$  ( $s'' \leq s'$ )*

(52) *Lexical entries in a situation semantics framework*

- a.  $\llbracket \text{Nom} \rrbracket^{g,c} = \lambda s_s. \lambda x_s. \exists s' [s' o_s s \ \& \ x \text{ is a } \mathit{nom} \text{ throughout } s']$   
 $= \lambda s_s. \lambda x_s. \exists s' [[\exists s'' [s'' \leq s' \ \& \ s'' \leq s]] \ \& \ x \text{ is a } \mathit{nom} \text{ throughout } s']$
- b.  $\llbracket \text{Dom} \rrbracket^{g,c} = \lambda s_s. \lambda x_s. s o_s x = \lambda s_s. \lambda x_s. \exists s' [s' \leq s \ \& \ s' \leq x]$
- c.  $\llbracket \text{proResS}_i \rrbracket^{g,c} = g(i) = \mathbf{s}_{rest}^*$
- d.  $\llbracket [ \llbracket \text{Nom Dom} \rrbracket \text{proResS}_5 ] \rrbracket^{g,c} =$   
 $= \lambda x_s. [\exists s' [[\exists s'' [s'' \leq s' \ \& \ s'' \leq \mathbf{s}_{rest}^*]] \ \& \ x \text{ is a } \mathit{nom} \text{ throughout } s']] \ \& \$   
 $[\exists s''' [s''' \leq \mathbf{s}_{rest}^* \ \& \ s''' \leq x]]$

Note that if I assume that the domain restriction reduces to a bare overlapping function, then my semantics for the whole restrictor argument in (52d) contains a peculiar redundancy. If the denotation of  $\text{Nom}$  is defined as in (52a) — with ET overlapping  $\mathbf{s}_{rest}^*$  — then the meaning of the nominal predicate *entails* the meaning of  $\text{Dom}$ . That is, if an individual  $x$  has the property  $\text{Nom}$  *throughout* a situation that shares a subsituation  $s'$  with  $\mathbf{s}_{rest}^*$ , then it follows that  $x$  shares a substitution with  $\mathbf{s}_{rest}^*$  (namely  $s'$ ), making the overlapping function that is contributed by

Dom unnecessary. Specifically, the denotation of the restrictor predicate  $\text{NP}_{rest}$  without Dom (see (53)) is truth-conditionally equivalent to (52d) (the denotation with Dom).

$$(53) \quad \begin{aligned} & \llbracket [\text{Nom proResS}_5] \rrbracket^{g,c} \\ & = \lambda_{s_s}. \lambda_{x_s}. [\exists s' \llbracket [\exists s'' [s'' \leq s' \ \& \ s'' \leq s_{rest.*}] \ \& \ x \text{ is a } nom \text{ throughout } s'] \rrbracket] \end{aligned}$$

Does that mean that I can get rid of Dom entirely? Not quite. The redundancy of Dom followed from the fact that Nom was specified for temporal overlap. However, since the analysis needs to derive cases of ET-RT disjointness, it also needs an anteriority-version of Nom, in which case one again needs Dom to guarantee that RT still overlaps with  $s_{rest.*}$  (in other words: one needs to guarantee that the individuals in the domain actually have to be *in*  $s_{rest.*}$  at some point and not just in some situation in the past of  $s_{rest.*}$ ). Since I thus need the overlapping function contributed by Dom, one may ask the reverse: Do I need to put the overlapping relation into the meaning of Nom? One may get rid of it if by adopting a more decompositional perspective on temporal relations. Specifically, let us assume that temporal relations are never part of the lexical entries of (nominal) predicates, but are instead always introduced by independent operators. The lexical entry for Nom would then strip down to (54).

$$(54) \quad \llbracket [\text{Nom}] \rrbracket^{g,c} = \lambda_{s_s}. \lambda_{x_s}. x \text{ is a } nom \text{ throughout } s$$

Dom would be an operator that takes a predicate of type  $\langle i, \langle e, t \rangle \rangle$  as an argument and introduces the overlap relation.<sup>16</sup> Combining Dom with Nom would then derive all cases in which ET and RT are non-disjoint.

$$(55) \quad \llbracket [\text{Dom}/\text{Op}_{\text{Overl}}] \rrbracket^{g,c} = \lambda_{P \langle s, \langle e, t \rangle \rangle}. \lambda_{s_s}. \lambda_{x_s}. \exists s' \llbracket [s' \leq s \ \& \ s' \leq x] \ \& \ P(s')(x) \rrbracket$$

$$(56) \quad \begin{aligned} & \llbracket \llbracket [\text{Dom}/\text{Op}_{\text{Overl}} \text{Nom}] \text{ proResS}_5 \rrbracket \rrbracket^{g,c} \\ & = \lambda_{x_s}. \exists s' \llbracket [s' \leq s_{rest.*} \ \& \ s' \leq x] \ \& \ x \text{ is a } nom \text{ throughout } s' \rrbracket \end{aligned}$$

In order to derive temporal disjointness, it is necessary to define a second operator that introduces temporal/situational anteriority.<sup>17</sup>

$$(57) \quad \llbracket [\text{Op}_{\text{Past}}] \rrbracket^{g,c} = \lambda_{P \langle s, \langle e, t \rangle \rangle}. \lambda_{s_s}. \lambda_{x_s}. \exists s' [s' <_s s \ \& \ P(s')(x)]$$

$$(58) \quad \llbracket \llbracket [\text{Op}_{\text{Past}} \text{Nom}] \rrbracket \rrbracket^{g,c} = \lambda_{s_s}. \lambda_{x_s}. \exists s' [s' <_s s \ \& \ x \text{ is a } nom \text{ throughout } s']$$

$$(59) \quad \begin{aligned} & \llbracket \llbracket \llbracket [\text{Dom}/\text{Op}_{\text{Overl}} [\text{Op}_{\text{Past}} \text{Nom}]] \text{ proResS}_5 \rrbracket \rrbracket \rrbracket^{g,c} \\ & = \lambda_{x_s}. \exists s' \llbracket [s' \leq s_{rest.*} \ \& \ s' \leq x] \ \& \ \exists s'' [s'' <_s s' \ \& \ x \text{ is a } nom \text{ throughout } s''] \rrbracket \end{aligned}$$

The decompositional approach gives a relatively simple semantics that does not require the stipulation of a lexical ambiguity. Of course, many issues remain. For instance, nothing in the lexical entry of  $\text{Op}_{\text{Overlap}}$  and  $\text{Op}_{\text{Past}}$  blocks them from applying in the reverse order. Applying  $\text{Op}_{\text{Past}}$  after  $\text{Op}_{\text{Overlap}}$  again would end in a reading in which the individuals in the domain would

<sup>16</sup> In effect, one could think of Dom as a nominal version of the present tense.

<sup>17</sup> It is not trivial to define temporal anteriority between situations. This would require a temporal ordering on situations that was not needed for the definition of situational overlap (where mereological parthood was sufficient).

not have to be in  $s_{rest.*}$ , only some situation in the past of  $s_{rest.*}$ . To avoid this, one could assume that  $Op_{Overlap}$  is not an independent syntactic operator and that its meaning is instead part of the meaning of determiners. A determiner would then take a bare (or  $Op_{Past}$ -manipulated) NP of type  $\langle s, \langle e, t \rangle \rangle$  and a situation pronoun as its arguments, and relate in its meaning the situation argument of the NP and the proResS-situation via the overlap-relation.  $Op_{Past}$  would only apply to the Nom, and the  $Op_{Past}$ -over- $Op_{Overlap}$ -issue would not arise. This approach shares similarities with the analysis in Schwarz (2012), in which both ET's existential quantification and its relation to the pronoun situation  $s_{rest.*}$  are put into the lexical entry of the determiner. Alternatively, one could block the  $Op_{Past}$ -over- $Op_{Overlap}$ -ordering by some syntactic stipulation.

Similarly problematic, nothing prevents one from combining proResS directly with the noun. Again, one could prevent this with a stipulation that restricts the position of proResS. Perhaps more elegantly, this issue would be resolved if the determiner had to combine with an NP of type  $\langle s, \langle e, t \rangle \rangle$ . If proResS combines directly with the noun, its situation argument would be saturated before it combines with the determiner. Since determiners do not take arguments of type  $\langle e, t \rangle$ , we end up with a type mismatch.

Finally, I want to draw attention to another restriction on DP-times that has remained mostly unnoticed but that seems relevant in the context of the present discussion. Consider (60).

(60) #In 1805, Napoleon believed that *a spy* gave a speech.

Context (Opaque + Attitude Time<ET)

In 1805, Napoleon was at an event where Louis, Pierre and Jean gave a speech. The night before, dreamt that one of the threm would become a Prussian spy in the future. At the event, he said: 'I don't know who exactly, but one of the speakers today will be recruited as a Prussian spy, so keep an eye on them. By the year 1810, one of them will work as a Prussian spy.' Historians assume that Napoleon was wrong and that Louis, Pierre and Jean remained French loyalists for the rest of their lives. In 2022, a historian gives a lecture on Napoleon, concluding with (61).

(61) *Upper Limit Opaqueness (ULO)*

A nominal predicate that is opaque when it comes to its modal evaluation cannot be evaluated at a time that is (exclusively) later than the matrix tense time (e.g. the perspective time of the attitude).

Since we are talking about history, the ET for *spy* does not overlap the utterance time. ET is also into the future of the (embedded and matrix) tense time, since, at the event, Napoleon did not think that the speakers had already been recruited spies. Also, *spy* requires an opaque reading since the speakers never became spies in the actual world. Such cases, in which the ET of an opaque nominal is into the future of the attitude time, are unacceptable.<sup>18</sup> Based on the discussion in this paper, one might wonder about RT's role in ULO-effects. It would be curious if ET were subject to anti-posteriority constraints with two unrelated times (RT and the attitude time). For ULO to reduce to  $*RT < ET$ , one would have to show that RT of an opaque noun always overlaps with the attitude time. Interestingly, this is a direct prediction of the situation version of the analysis in (52). Since situations take care of both the world and time component, an opaque reading would involve ResS being bound by the attitude verb. Since RT must always

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<sup>18</sup> This constraint shows obvious similarities to the Upper Limit Constraint (ULC) (e.g. Abusch 1997).

overlap with ResS, this would also bind RT to the attitude time, thereby tying the ULO to \*RT<ET (see Meisenbichler 2023).<sup>19</sup>

### 8. Conclusion

In this paper, I examined the different ways in which complex temporal relations show up in simple DPs. The focus was on the relationship between the evaluation time (ET) of nominal predicates and the resource time (RT) of implicit domain restrictions. For a start, it was observed that ET and RT can be temporally disjoint. This fact, together with the observation that ET and RT are (at least partially) independent when it comes to free and bound variable readings, seemed to necessitate an analysis that relied on two DP-internal time pronouns. However, once the predictions of the two variable solution were pursued, it turned out that the independence of ET and RT breaks down in ways that reveal their underlying dependence. Although further empirical testing might be needed to corroborate these generalizations, I have argued for two constraints on possible ET-RT-relations: First, there is no Free RT+Bound ET-reading. Second, ET cannot be into the future of RT. Finally, I discussed how an analysis with one time/situation variable can account for these restrictions.

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<sup>19</sup> O'Leary (2022) is the only work I know that observes a similar generalization. Specifically, O'Leary observes that an opaque nominal in the scope of a past tense attitude verb cannot be evaluated at the utterance time. This observation describes a subcase of the ULO. However, the ULO is more general, since O'Leary did not extend her discussion to contextually assigned times (i.e. (61)). Accordingly, while O'Leary argues for ET's scope dependence (since opaque=narrow scope), I propose that the effect is more closely tied to the opacity.

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# Attitudes towards gender-neutral language in Norwegian

Margareta Berg

As of 2022, a new, gender-neutral pronoun has entered the Norwegian language: *hen* ‘they (singular)’. In this paper, I have looked into the attitudes towards, and use of, gender-neutral pronouns in Norwegian. I also explored how speakers of Norwegian feel about the insertion of a gender-neutral pronoun in the language. In this paper, I discuss my findings, which had a great diversity, though there were more positive attitudes than expected. Speakers of Norwegian were generally accepting of the insertion of *hen* ‘they (singular)’ and thought it would have a positive effect on our society.

## 1. Introduction

The gender-neutral pronoun *hen* ‘they (singular)’ is, as of 2022, officially allowed to be used in Norwegian and will enter the dictionaries as the first gender-neutral pronoun in the language.<sup>1</sup> *Hen* ‘they (singular)’ has been used increasingly over the past ten years, and because Norwegian previously lacked a gender-neutral pronoun, *hen* ‘they (singular)’ seems to be the best alternative, according to the Norwegian Language Council, Språkrådet. The reason for this is that *hen* ‘they (singular)’ is a word that fits the Norwegian grammar and has already been incorporated into the Scandinavian languages (Sendén et al. 2015).<sup>2</sup> However, this is not the only gender-neutral pronoun people want to use. Words such as *de/dem* ‘they/them’, *hin* ‘they (singular)’ and *xi* ‘they (singular)’ are only some of the pronouns people prefer.<sup>3&4</sup>

In this paper, I explore the attitudes towards gender-neutral pronouns in Norwegian. I do this through the use of an online questionnaire to see if people accept and use gender-neutral language. I have looked at the pronouns *hen* ‘they (singular)’ and *de/dem* ‘they/them’ as

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<sup>1</sup> See: Språkrådet (2022) Høringsnotat. Section 4.1.1. Retrieved 2<sup>nd</sup> May 2022, from <https://www.sprakradet.no/globalassets/vi-og-vart/hoyringar/2022/horing-februar-2022--horingsnotat-med-vedlegg.pdf>

<sup>2</sup> See: Fallmyr, S. S., S. R. Olaisen & S. F. Moen (2022). Språkviter: – «Hen» hadde vært enklere. Retrieved 2<sup>nd</sup> June 2022, from <https://www.nrk.no/nordland/helene-uri-tror-hen-som-pronomen-om-ikke-binaere-hadde-vaert-enklere-enn-de-dem-1.15813664>

<sup>3</sup> See: Ulheim, P. (2022). – Han, hun, hen, de, xe. Kall meg hva du vil! Retrieved 2<sup>nd</sup> May 2022, from <https://p3.no/meninger/mening/b3182b73-bc70-4e60-9190-a0e5f55db975>

<sup>4</sup> See: Olaisen, S. R. & D. Tegnander (2022). Ravn (19) er hverken han, hun eller hen: - Vil helst bli kalt de. Retrieved 15<sup>th</sup> May 2022, from <https://www.nrk.no/nordland/hen-snart-i-ordboka--de-og-dem-blir-populaere-pronomen-om-kjonnsidentitet-1.15798497>

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personal pronouns when referring to a non-binary person, and when the gender is unknown, as an alternative to the traditionally used *vedkommende* ‘the person in question’ and *han eller hun* ‘he or she’: *Spør hen, de/dem som kjørte bilen.* ‘Ask them who drove the car.’ My findings show that people are generally positive to gender-neutral pronouns, especially that people should be able to choose other pronouns than the binary if they wish to do so. There is a tendency that people prefer *hen* ‘they (singular)’ to *de/dem* ‘they/them’. Moreover, some say that they already use gender-neutral language and some say that they might over time, while others do not want to be forced to use gender-neutral pronouns.

## 2. Background

### 2.1. Theoretical background

Språkrådet, the Norwegian Language Council, suggested in 2022 that *hen* ‘they (singular)’ should be allowed in official use in the two writing systems: Nynorsk and Bokmål, and be added to the dictionaries. Språkrådet argues that the use of *hen* ‘they (singular)’ as a gender-neutral pronoun has increased since 2014, and especially since 2019.<sup>1&5</sup> Because personal pronouns belong to a closed word class in Norwegian, Språkrådet had to have a hearing about adding the word to the dictionaries. This means that authorities and the public could respond to Språkrådet’s suggestion. There were forty responses, and twenty-seven of them were positive to the insertion of *hen* ‘they (singular)’.<sup>1&6</sup>

The word *hen* ‘they (singular)’ is a loan from Swedish, where the word was first introduced in 1966, and later added to dictionaries in 2015. *Hen* ‘they (singular)’ originated from the Finnish *hän* ‘he, she’ being the only third person singular pronoun in the Finnish language. Even though Norwegian has lacked a gender-neutral pronoun, there is a variety of pronouns, especially in spoken Norwegian. Further, the Saami languages only have one third person, singular pronoun *son* ‘he, she’.<sup>7</sup>

However, there is an increased use of another gender-neutral pronoun: *de/dem* ‘they, them (singular)’. This is likely influenced by the English equivalent, ‘they/them’. This is especially popular amongst younger non-binary people who are not using *hen* ‘they (singular)’ because it sounds familiar to the male pronoun *han* ‘he’.<sup>8</sup> *De/dem* ‘they/them’ will probably not get the same gender-neutral status for a while, because the word already has two different uses in Norwegian, both a plural meaning, and the more outdated, singular, formal use with capitalized initial letter *De/Dem* ‘They/Them (formal)’.<sup>2&9</sup>

<sup>5</sup> Berg-Olsen, S. (2021) F3 16/21 Vedtakssak: Normering av hen. Oslo. Retrieved 10<sup>th</sup> May 2022, from <https://www.sprakradet.no/globalassets/vi-og-vart/hoyringar/2022/sakspapir-juni-2022-normering-av-hen.pdf>

<sup>6</sup> See: Olavsens, D. (2022). Språkrådet ønsker «hen» i ordboka: – Uvanlig mye engasjement. Retrieved 14<sup>th</sup> April 2022, from

<https://www.nrk.no/vestland/sprakradets-onske-om-hen-i-ordboka-skaper-reaksjoner-1.15938718>

<sup>7</sup> See: Oahpa/UiT (n.d.). Om Pronomen - Personlige Pronomen. Retrieved 6<sup>th</sup> June 2022, from

<https://oahpa.no/sme/gramm/pronomen.nob.html#Personlige+pronomen>

<sup>8</sup> See: Aasmundsen, J. S. (2022). Kjønnsnøytrale pronomen skaper debatt: – Toleransen min slutter når folk skal lage sin egen grammatikk. Retrieved 15<sup>th</sup> May 2022, from:

<https://www.aftenposten.no/kultur/i/G3XgmB/kjoennsnoeytrale-pronomen-skaper-debatt-toleransen-min-slutter-naar-folk-skal-lage-sin-egen-grammatikk>

<sup>9</sup> See: Språkrådet (2022). Høflighetsformene De, Dem og Deres. Retrieved 6<sup>th</sup> June 2022, from

<https://www.sprakradet.no/svardatabase/sporsmal-og-svar/hoflighetsformene-de-dem-og-deres/>

## 2.2. Background literature

In Lauren Ackerman's paper from 2019, they define three types of gender: grammatical, conceptual, and biosocial gender. Grammatical gender is the formal syntactic and semantic feature, whereas conceptual gender is the association of masculine and feminine properties to lexical items. This can often bring gender biases. Biosocial gender is 'fundamentally, an individual's gender as it is experienced internally' (Ackerman 2019), meaning the gender of a person based on a series of factors, such as gender expression, gender identity, cultural norms, etc. Further, Ackerman discusses 'neopronouns' with English being a leader of change in this field (Ackerman 2019).

Evan Bradley explains in their paper on singular 'they', that open word classes easily add vocabulary, however, closed word classes, such as pronouns, can also experience change. A study from Sweden suggests that attitudes towards gender-neutral pronouns can change rapidly. The study from 2015 looks at the change in attitudes over the course of four years. In 2012, there were mostly negative attitudes towards *hen* 'they (singular)', whereas a small minority was positive to the gender-neutral pronoun. However, three years later, there were mostly very positive attitudes and only a small minority was very negative to the use of the word *hen* 'they (singular)' (Sendén et al. 2015). 'They' has been used as a singular pronoun when the gender is unknown for a long time, to avoid the use of 'it', which is used to refer to inanimate objects and animals (Bradley 2020).

Almost all the participants in Bradley's study found singular 'they' to be grammatical (Bradley 2020). Conrod has shown that the acceptance for 'they' used with proper names has increased and propose how to syntactically use singular 'they' (Conrod, to appear). Bradley further explains that attitudes towards gender-neutral language use, both gender-neutral and non-binary use, are closely related to both linguistic and non-linguistic factors. The psychological variables correlate to acceptance of the singular 'they'. This means that the attitudes on gender in general affect the way you look at language, and that, for instance, transphobic people are more likely to misgender others. Moreover, Bradley explains how gender exclusive language can have negative effects, and lead to misgendering or to exclusion of others by using masculine terms (Bradley 2020).

A Swedish study from 2020 shows, through eye-tracking, that gender-neutral pronouns are just as easy for people to process as gendered pronouns (Vergoossen et al. 2020). Another Swedish study, from 2018, shows that *hen* 'they (singular)' can help reduce gender bias. Out of all pronouns assessed, *hen* 'they (singular)' had the least gendered bias (Lindqvist et al. 2018).

## 2.3. Research question

In this paper, I seek to explore and explain how speakers of Norwegian feel about gender-neutral language. To do so, I will ask the following questions:

- (1) How do speakers of Norwegian feel about the introduction of gender-neutral pronouns?
- (2) How do speakers of Norwegian use gender-neutral pronouns, if at all?

- (3) How do speakers of Norwegian feel about the use of gender-neutral language, and do they have a preference between *hen* ‘they (singular)’ and *de/dem* ‘they/them’?

Based on the findings in the Swedish study (Lindqvist et al. 2018), I expect there to be a great diversity in the answers. My assumption is that *hen* ‘they (singular)’ is generally more accepted than *de/dem* ‘they/them’, and that people accept the use of gender-neutral pronouns more when the gender is unknown than when referring to a non-binary person. I also expect many to not accept the use of gender-neutral language at all.<sup>8</sup> The reason for this is that the use of gender-neutral language is quite new to Norwegian, as the use of gender-neutral pronouns has increased over the course of the past ten years.<sup>8</sup> Moreover, *de/dem* ‘they/them’ already has two different uses in Norwegian.<sup>2&9</sup> Considering earlier research on language change, I also expect younger women to be more innovative and older men to be more conservative (Wells 1982:18).

### 3. Method

#### 3.1. The questionnaire

The method used in this paper is an online questionnaire created in Nettskjema, UiO’s application for surveys. The questionnaire was distributed through personal networks, shared by family and friends, as well as shared in two different Facebook groups: *Nettverk Nittedal* ‘network Nittedal’ and *Språkrådets venner* ‘friends of the Language Council’. The former group has members from a municipality outside of Oslo, called Nittedal. The members are of all ages, with the most active members being above the age of 40. The latter group has members across Norway that share an interest in language. Many of the active members in this group are above the age of 40 as well. The groups were used in order to get older participants and participants from rural places in Norway.

The questionnaire received 260 responses. The questionnaire consists of ten questions, in addition to the background information. The participants were also asked to give reasons for their answers in several instances. Because the questionnaire had open-text answers, I needed to apply for NSD approval.<sup>10</sup> At the beginning of the survey, the participants were given information about the project and had to consent for their answers to be used. This was so that the participants would be able to withdraw, change or review their answers. The participants were able to do this until the paper was submitted, in June 2022. They could do this through an e-mail that was provided to them upon completing the questionnaire. The answers were anonymized for analysis.

In the questionnaire, the participants were asked about age range, which gender they identify as, and what pronouns they prefer that others use when referring to them. The participants were given questions and statements with a five-point Likert scale, and they were, in several cases, asked to give a reason for their answers and specify with qualitative information, in order to understand the attitudes better.

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<sup>10</sup> NSD is The Norwegian Centre for Research Data, responsible for privacy protection in research in Norway.

### 3.2. The participants

There were a total of 260 participants, with a majority of people who prefer the pronouns ‘she/her’, as shown in Table 1. All speakers of Norwegian were eligible participants.

<b>Personal pronouns</b>	<b>Number of participants</b>	<b>Percentage</b>
<i>Hun/henne</i> She/her	193	71.5%
<i>Han/ham</i> He/him	65	24%
<i>De/dem</i> They/them	5	1.9%
<i>Hen</i> They (singular)	3	1.1%
<i>Usikker</i> Uncertain	2	0.7%

Table 1. Personal pronoun preference

The reason for the uneven gender distribution can be due to uneven gender-representation in personal networks. Since the questionnaire was online, it may have excluded older people, since older people may not be as familiar with technology. The age range was quite evenly distributed as shown in Table 2.

<b>Age</b>	<b>Number of Participants</b>	<b>Percentage</b>
18-25	59	22.7 %
26-35	43	16.5 %
36-45	55	21.2 %
46-55	54	20.8 %
56-65	33	12.7 %
66-75	12	4.6%
76-85	4	1.5 %

Table 2. Age distribution

## 4. Results

## 4.1. How do speakers of Norwegian use gender-neutral language, if at all?

Firstly, I have looked at how people use, if at all, gender-neutral pronouns. Below, in Table 3, you can see that the majority never or rarely use gender-neutral pronouns, in a gender-neutral manner. The results also suggest that people have both more positive and negative attitudes towards *de/dem* ‘they/them’, as more people have answered both *aldri* ‘never’ and *alltid* ‘always’.

	<i>Aldri</i> ‘Never’	<i>Sjeldent</i> ‘Rarely’	<i>Noen ganger</i> ‘Sometimes’	<i>Ofte</i> ‘Often’	<i>Alltid</i> ‘Always’
<i>Bruker du ‘hen’ i situasjoner der kjønnnet er uvisst eller irrelevant?</i> ‘Do you use <i>hen</i> ‘they, sg.’ in situations where the gender is unknown or irrelevant?’	100 (38.5%)	54 (20.8%)	62 (23.9%)	33 (12.7%)	10 (3.9%)
<i>Bruker du ‘de/dem’ i situasjoner der kjønnnet er uvisst eller irrelevant?</i> ‘Do you use ‘they/them’ in situations where the gender is unknown or irrelevant?’	129 (48.6%)	34 (13%)	29 (11.1%)	39 (15%)	32 (12.3%)

Table 3. Use of pronouns, where gender is not known

Further, when asked in which situations *hen* ‘they (singular)’ and *de/dem* ‘they/them’ were used when the gender is unknown or irrelevant, there were a wide variety of answers. 170 participants wrote an answer when asked about *hen* ‘they (singular)’, and 136 answered when asked about *de/dem* ‘they/them’. Some said that they did not use any of the two pronouns at all. Many said that they used both of the pronouns orally, or in a conversation. *Hen* ‘they (singular)’ seems to be the preferred pronoun in written language, especially in formal settings. Under 5% said that they used *de/dem* ‘they/them’ in formal, written situations.

## 4.2. How do people feel about the use of gender-neutral pronouns, and do they have a preference?

To understand if people have a preference between gender-neutral pronouns, they were asked which pronouns they preferred to use when referring to a non-binary person. As shown below, in Table 4, fifty percent of the participants said that they prefer to use *hen* ‘they (singular)’. Many people were unsure or preferred to use the male and female pronouns *han/ham* ‘he/him’ and *hun/henne* ‘she/her’.

	Number of participants	Percentage
<i>Han/ham eller hun/ho/henne</i> He/him or she/she/her	63	24.2%
<i>De/dem</i> They/them	39	15%
<i>Hen</i> 'they (singular)'	130	50%
<i>Vet ikke</i> Do not know	55	21.2%
<i>Annet</i> Something else	23	8.8%

Table 4. Preferred pronouns when referring to a non-binary person

Of the people who wanted to write their own answer, people said that they liked to use the person in question's name, their preferred pronouns, or *vedkommende* 'the person in question'.

In Table 5, you see the answers to how natural people would find it if someone had asked them to be referred to as *hen* 'they (singular)' and *de/dem* 'they/them'.

	<i>Helt unaturlig</i> Completely unnatural	<i>Noe unaturlig</i> Somewhat unnatural	<i>Usikker</i> Unsure	<i>Noe naturlig</i> Somewhat natural	<i>Helt naturlig</i> Completely natural
<i>Hvordan opplever du det hvis noen hadde bedt deg om å bli referert til som 'hen'?</i> How would you perceive it if someone had asked you to be referred to as 'they (singular)'?	40 (15.4%)	44 (16.9%)	26 (10%)	69 (26.5%)	81 (31.2%)
<i>Hvordan opplever du det hvis noen hadde bedt deg om å bli referert til som 'de/dem'?</i> How would you perceive it if someone had asked you to be referred to as 'they/them'?	66 (25.4%)	59 22.7%	33 (12.7%)	42 (16.2%)	60 (23%)

Table 5. Use of pronouns, when referring to a non-binary person

Around 58% of people find it somewhat or completely natural to refer to someone as *hen* 'they (singular)', whereas only around 40% feel the same way about *de/dem* 'they/them'. On the other hand, around 48% find it somewhat or completely unnatural to refer to someone as *de/dem* 'they/them', with only around 32% feeling the same way about *hen* 'they (singular)'.

Furthermore, the participants were given statements that they were to answer on a five-point Likert scale, where 1 = completely disagree and 5 = completely agree. They were also given open questions with qualitative answers, where the participants were asked to give a reason for their answers. When asked about whether or not people should be able to choose other pronouns than *han/ham* 'he/him' and *hun/henne* 'she/her', 80% agreed or completely agreed, as shown in Figure 1 below. The average answer was 4.15.

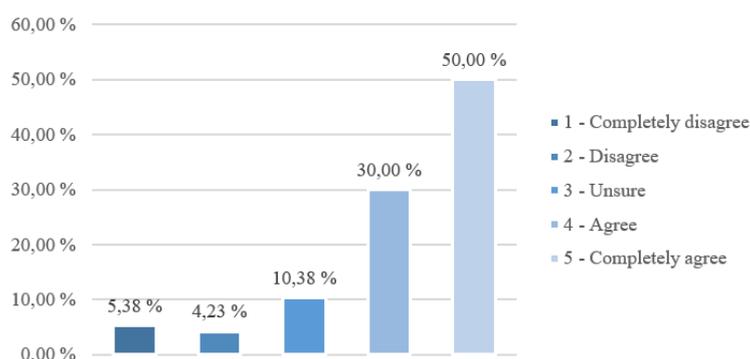


Figure 1. People should be able to choose other pronouns

Moreover, from the 152 written reasons for the answers, there was a lot of accept. The general opinion seemed to be that people should be able to choose their own pronouns, however, without necessarily expecting others to use these. A representative quote for the most prominent theme in the answers is *'Det handler om respekt.'* 'It is about respect.'. Some people, on the other hand, find changing the language, and the way we use the language, to be difficult. *'Jeg er litt usikker rundt det å endre språk, det står så sterkt.'* 'I am a bit uncertain about changing the language, its position is so strong.'.

The participants were also asked if people should accept that some want to use other pronouns than 'he/him' and 'she/her'. Just over 82% agreed or completely agreed with this statement, shown below, in Figure 2. The average answer to this statement was 4.25.

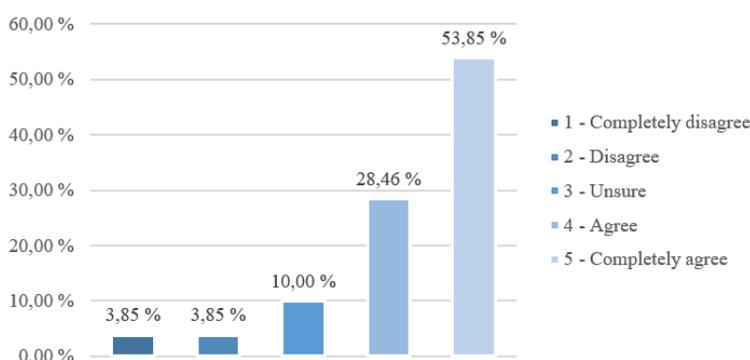


Figure 2. People should accept that some want to use other pronouns

116 people gave a reason for their answer, and the majority that did so, expressed a lot of accept towards people who want to use other pronouns. A good representation for the answers is this quote: *'Det er viktig å ha et språk hvor alle kan føle seg sett og ivaretatt.'* 'It is important to have a language where everyone can feel seen and taken care of.'.

### 4.3. How do speakers of Norwegian feel about the insertion of gender-neutral pronouns?

The participants were asked if they think Norwegian has a need for other pronouns than *han/ham* ‘he/him and *hun/henne* ‘she/her’, to understand how people feel about the insertion of gender-neutral pronouns. Figure 3 below shows that the majority of people are positive about having gender-neutral pronouns in the language, with the average answer being 3.7.

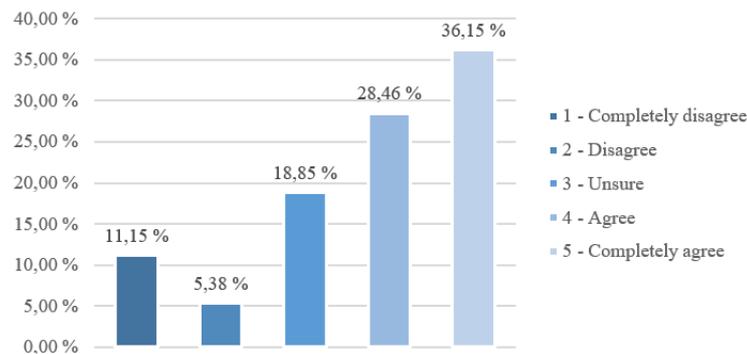


Figure 3. Norwegian has a need for more pronouns

Out of the 174 people who gave a reason for their answer, a majority of people had an inclusive attitude. Many seem to think that gender-neutral pronouns in Norwegian are necessary because the language does not reflect its people without gender-neutral pronouns. *Det er viktig at alle skal kunne føle seg inkludert, også gjennom språket vi bruker.* ‘It is important that everyone should feel included, also though the language we use.’ Some are also saying that *hen* ‘they (singular)’ is important for our society to be less discriminating, and to reduce gender bias. *Jeg mener det er et enkelt steg på veien mot et mindre diskriminerende samfunn.* ‘I believe this is a simple step towards a less discriminating society.’ On the other hand, others write that it feels unnatural and unnecessary. *For meg er et menneske enten han/ham, hun/henne, alt annet blir for meg unaturlig.* ‘To me, a person is either he/him or she/her, everything else seems unnatural to me.’

When the participants were asked if they agreed with the statement *Å legge til flere pronomen er unødvendig* ‘adding more pronouns is unnecessary’, many disagreed and strongly disagreed, shown in Figure 4. The average answer was 2.5.

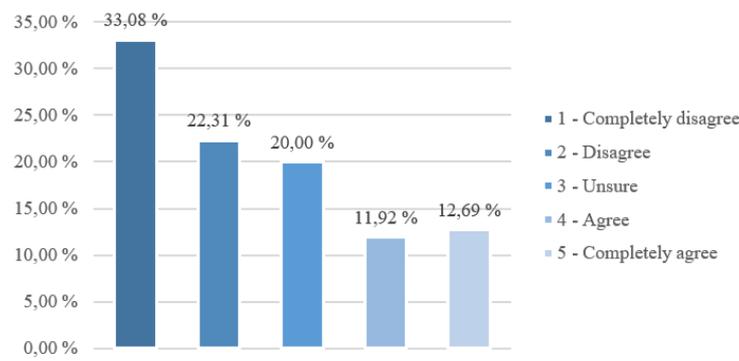


Figure 4. Adding more pronouns is unnecessary

From the 134 answers, it seems that people were uncertain if *hen* ‘they (singular) was considered as already added to the language or not. Some seem afraid that there will be too many pronouns, and that it would be hard to keep track of the pronouns. *Vi har nok pronomen for alle nødvendige formål.* ‘We have enough pronouns for all necessary purposes.’.

The final statement, about whether or not one can expect people to use one’s preferred pronouns, has a vast variety of answers, both in the level of agreement and in the answers. The average answer is 2.9.

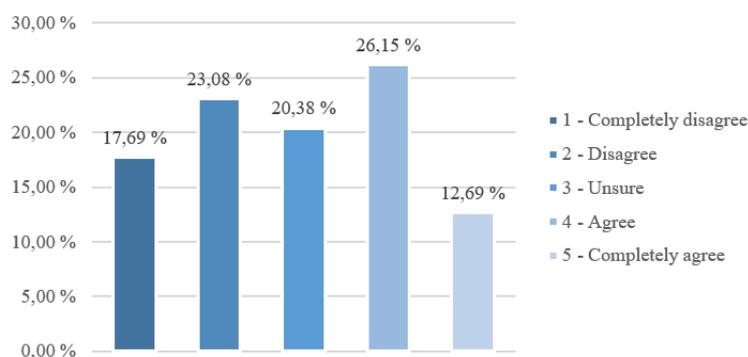


Figure 5. People cannot expect that others should use one’s preferred pronouns

From the 130 qualitative answers, there are some who are afraid that the expectations of always using the correct pronouns will be too high. They seem afraid of having to guess pronouns and being forced to use language with which they are not comfortable. Additionally, some believe that it would be difficult to insert a new pronoun in the adult population. *Du vil aldri få alle i den voksne generasjon til å endre på noe de har benyttet hele livet.* ‘You will never be able to get the whole adult generation to change something they have used their whole lives.’. On the other hand, some think that this is a given and that it at least can be expected from the people who are aware of a person’s preferred pronouns. *Så lenge andre vet om at det er det foretrukne pronomen burde de kunne forvente det.* ‘As long as others know that it is preferred pronouns, they should be able to expect that.’.

### 5. Discussing the findings

My findings show that there is a lot of acceptance towards the use of gender-neutral pronouns. From the Figures 1 and 2, we can see that the majority has a positive attitude, and many used inclusive language in their reasonings. For instance, *Det handler om respekt* ‘It is about respect’ and *Alle må føle seg inkluderte* ‘Everyone should feel included’. This shows that it is important to people to respect others’ wishes and needs. The amount of people with a positive attitude is somewhat unexpected, as in the Swedish study from 2015, the attitudes were more negative (Sendén et al. 2015). Furthermore, it seemed important to people to insert gender-neutral language, in order to have an inclusive society, with comments such as *Jeg mener det er et enkelt steg mot et mindre diskriminerende samfunn.* ‘I believe it is a simple step towards a less discriminating society.’ and *Vi er et moderne land, med moderne verdier, og da synes jeg det passer godt med et moderne språk som matcher.* ‘We are a modern country, with modern values, and therefore I think it is only appropriate with a matching modern language.’. When

looking at Figure 2, we can see that the majority think people should accept that some want to use other pronouns, however, when asked if Norwegian has a need for gender-neutral pronouns, the percentage who agrees is lower, as we can see in Figure 3. This may suggest that people have a wish to live in an open and accepting society, without necessarily changing their own language or attitudes.

Furthermore, people want to use and incorporate gender-neutral language in Norwegian, in order to reduce gender bias, exemplified by this one participant's answer below:

*Dessuten mener jeg det er behov for det der kjønn er irrelevant, for eksempel for å bekjempe stereotyper. Ofte omtaler vi med de største selvfølgeligheter håndverkere som 'han' og barnehagelærere som 'henne', selv når vi ikke kjenner vedkommendes kjønn eller kjønnsidentitet. Da mener jeg det er mer hensiktsmessig å bruke 'hen'.*

'Furthermore, I believe there is a need where gender is irrelevant, for instance to combat stereotypes. Often, we, with the greatest matter of course, refer to craftsmen as 'he' and preschool teachers as 'her', even when we are unaware of their gender or gender identity. Then I think it is suitable to use 'they (singular)'.'

According to Lindqvist et al., *hen* 'they (singular)' will most likely help to reduce the gender bias in our language, as the pronouns are created to be beyond the binary (Lindqvist et al. 2018). This can help even out the conceptual and biosocial genders. The results clearly suggest that this is important to people, and that they want to have a society where gender is less important. This will be easier now, as *hen* 'they (singular)' is allowed in official use.<sup>1</sup>

Some of the participants find it hard to use gender-neutral pronouns as of now, because it seems unusual to them, as it is a relatively novel word. *Uvant med hen, noe som har kommet etter at jeg selv ble voksen.* 'Unusual with they (singular), which came after I became an adult.'. However, people seem to think that over time, it will become more natural for them to use. *...men vil nok bruke det med tiden* '...but will probably use it over time'. This is in line with the Swedish study from 2015, where people got a more positive attitude towards *hen* 'they (singular)' over time (Sendén et al. 2015). Others are afraid that there will be too many pronouns, and that each pronoun will have a narrower meaning. *Jeg tror det kan bli negativt om det blir for mange også, da det fort kan gjøre de enkelte pronomene ganske 'trange'.* 'I think it can be negative if there are too many as well, making each pronoun quite 'narrow'.'

Even though many people have a very positive attitude towards the use and insertion of gender-neutral pronouns, there are, on the other hand, many who think that there is no need for this change. Many of these do not see the need for other pronouns. *Jeg har ikke kjent på dette selv. Kjenner ikke noen heller så vidt jeg vet.* 'I have not experienced this myself. Neither do I know anyone who has, as far as I know.'. Others are hesitant to change the language. *Språket står så sterkt.* 'The language has such a strong position.'. This might be because pronouns are a closed word class, that rarely experiences any change. Some think that it is unnatural, possibly for the same reason. *Det er unaturlig for mange å bruke andre pronomen.* 'It is unnatural for many to use other pronouns.'. In addition, many of the people who are negative to the insertion of gender-neutral pronouns mention biology as a factor, with comments such as *Fra medisinsk og biologisk ståsted finnes det kun to kjønn.* 'From a medical and biological standpoint, there are only two genders.' and *Kjønn er binært og defineres av biologien. Man er født som kvinne eller mann og skifter ikke kjønn selv om man definerer seg annerledes.* 'Gender is binary and defined by biology. You are born as a woman or a man and you do not change gender even if you feel different.'. It seems to be difficult for these people to differ gender-neutral pronouns

from gender politics. This is in line with Bradley's findings, where they explain how people that are transphobic will also have a negative attitude towards gender-neutral language (Bradley 2020).

Table 3 suggests that people prefer *hen* 'they (singular)' to *de/dem* 'they/them' both when the gender is unknown, but especially when referring to a non-binary person, as shown in Tables 4 and 5. The findings also show that *hen* 'they (singular)' has a more diverse usage, than *de/dem* 'they/them', as people seem to prefer the latter only in oral, informal situations, while the former could be used orally, and in both formal and informal written texts. The participants who prefer that others refer to them as *hun/ho/henne* 'she/her' have generally more positive attitudes than the ones who prefer *han/ham* 'he/him'. This is expected since women are considered more innovative language users than men. Those who prefer the male pronouns are more accepting of *de/dem* 'they/them' as pronouns than those who prefer the female pronouns. Those who prefer people to refer to them with the pronouns *de/dem* 'they/them' are more accepting of *de/dem* 'they/them' as pronouns, and those who prefer *hen* 'they (singular)' are also more accepting of their own pronouns. All the participants who prefer gender-neutral pronouns have positive attitudes towards the use of gender-neutral pronouns but disagree on whether or not it should be expected of others to use the preferred pronouns.

When comparing the answers to the age of the participants, we find that the most accepting age group is 18-25. This age group is the most positive to gender-neutral language in every question. This is expected since it is common that younger people are more innovative. However, the second most accepting age group, is between 46 and 55 years old. This age group accepts *hen* 'they (singular)' more than *de/dem* 'they/them', perhaps because they are used to the formal use of *de/dem* 'they/them'. The participants between the ages of 36 and 45 are also quite accepting but prefer *de/dem* 'they/them' to *hen* 'they (singular)'. This could be because they are more used to *de/dem* 'they/them' in a singular use, without necessarily having used it much themselves. The least accepting, are those above the age of 66 and between 26 and 35. That the latter is one of the least accepting may seem surprising. This group is not used to the singular use of *de/dem* 'they/them', as the ones older than them. In addition, they may not be as innovative as the ones that are younger than them and could therefore find it harder to incorporate and accept *hen* 'they (singular)'. Furthermore, the least accepting age groups, 66 and above and 26-35, are also the ones with the highest percentage of men, 44% and 33% respectively. This could mean that the reason for the participants between 26 and 35 are more conservative, might be because there were more men answering, than in some other groups. In the age groups 36-65, the percentage of men is between 13 and 20, which might explain why they have more accepting attitudes (Wells 1982:18).

This paper is not necessarily a representative study, since the questionnaire is distributed through personal networks. Because of this, it is likely that the participants mostly come from urban areas, and mainly live in Eastern Norway. There is also a majority of female respondents, and few who identify as other than male and female. With a greater variation in both gender and geographic location, and perhaps a larger number of people, the results can be different.

## 6. Conclusion

In this paper, I set out to explore the attitudes towards and use of gender-neutral pronouns in Norwegian, and how speakers of Norwegian feel about the insertion of gender-neutral pronouns. The findings had a great diversity, though there were more positive attitudes than expected. This is not in line with the Swedish study from 2015, where the attitudes were less positive and more negative (Sendén et al. 2015). My results show that speakers of Norwegian are generally positive to the insertion of *hen* ‘they (singular)’, and that it will have a positive effect on our society. Whether or not speakers of Norwegian use gender-neutral pronouns vary a lot, with younger people being more accepting, with the exception of the ages between 26 and 35, and those who prefer ‘she/her’ are more accepting than those who prefer ‘he/him’. The participants seem to prefer *hen* ‘they (singular)’, especially in written text and when referring to a non-binary person, though some prefer *de/dem* ‘they/them’ as well. People accept the use of gender-neutral language just as much when referring to a non-binary person, as when the gender is unknown.

It would be interesting to further explore the attitudes towards gender-neutral pronouns, with a broader, more representative group of participants. Another interesting thing to investigate is why the age group 26-35 is less accepting of gender-neutral language in Norwegian than expected, or if this is because of the particular participants in this study. Further research can explore the attitudes more in-depth, perhaps through interviews or a survey with a greater number of questions.

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# Automatic activation of orthographic information during spoken word recognition in Bangla

Moumita Mukherjee

Research in spoken word recognition shows traces of orthographic interference and similar effects were found in Bangla word recognition in a rhyme detection task where rhyming word pairs with similar orthographic representations were recognised faster than word pairs with dissimilar orthographic representations. The current paper reports findings of a priming task, where the primes and the targets shared phonological segments which were orthographically either similar or dissimilar. The intent was to examine whether the lexical decision time showed a difference in the two conditions and to account for the difference using the Cohort Model of word recognition.

## 1. Introduction

The aim of the paper is to investigate whether orthographic information is automatically accessed during auditory word recognition by literate adults. A previous rhyme detection study on Bangla (Mukherjee 2023) showed a significant influence of orthographic knowledge in spoken rhyme detection, which raised the question of whether orthographic mediation is automatic or strategic. The present study examines whether orthographic access during spoken word recognition in literate speakers is automatic and prelexical or strategic and post-lexical.

A lexical decision task was used, where participants were presented with a prime followed by a target word. The prime was either orthographically similar or dissimilar to the target in their initial segments. In this task, words which had common orthographic information in the initial segments were used. Shared initial information<sup>1</sup> is known to play a critical role in spoken word recognition because of the temporal nature of speech inputs. The Cohort Model of word recognition postulates that word-initial information is particularly informative during spoken-word processing (Marslen-Wilson & Zwitserlood 1989) since it activates lexical candidates sharing similar acoustic-phonetic properties as that of the received auditory inputs during the initial processing stage. The assumption was that when the prime and target were matched orthographically in their initial segment, it would take less time to recognise the target word, and the time taken to do so would throw light on whether the orthographic access is automatic or strategic. If the orthographic information facilitates word recognition, the reaction time

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<sup>1</sup> This refers to the phonetic/orthographic information that is shared by the initial segments of two words (Slowiaczek et al. 2003).

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(henceforth RT) would reflect it, compared to when it is inhibitory, in which case it would show latency. The facilitatory and inhibitory influence of orthography draws from the connectionist model where ‘abstract, amodal, lexical representations and sublexical (e.g., phonological and/or orthographic) representations are interlinked in a network’ (Slowiaczek et al. 2003:234).

Let us read a bit more to understand the Cohort Model that forms the theoretical framework of the paper. This model proposes that a word’s visual and auditory inputs are directly mapped onto a word that exists in the hearer’s mental lexicon. Thus, each time a person hears a speech segment (a phoneme), all words beginning with that phoneme are ‘activated’. With the next phoneme, words which do not have matching segments automatically get inhibited, and thus drop out of the search mechanism. This process continues until the person reaches a point when only one word remains in the cohort. This is the word which consists of all the segments that correspond to the input signals that gets selected. This entire process takes place in three stages.

First, we have the access stage, during which hearers encounter the first few sound segments of a word, which results in the activation of all such words that begin with the same segments in the hearer’s mental lexicon. All these possible words are called cohorts.

As more and more sound segments are heard, there is a decrease in the activation of those words which no longer match the speech signals. As a result, they get eliminated. This stage is called ‘activation and selection’, and continues till what is called the ‘recognition point’, or the stage at which all the competitors have been eliminated, and only one word remains.

The final stage is integration. It is at this stage that the syntactic and semantic information of the words are encoded and integrated into the higher levels of utterance.

In fact, this theory suggests that the initial stage of processing involves the activation of lexical candidates that share initial acoustic-phonetic information with the incoming signal. Such a model emphasises the significance of word-initial auditory information.

Priming experiments seek to expose the nature of the facilitatory and/or inhibitory connections in a network. The activation of information in the primes that are initially presented, such as phonemes, graphemes, or syllables, tends to influence the responses of participants to the targets given their proximity. It is generally assumed that automatic activation of sub-lexical information occurs pre-lexically, whereas processes influenced by strategies or bias occur post-lexically. The focus of the current paper is to report an experiment that can reduce the influence of strategic processes by participants, thereby illustrating the extent to which phonological and/or orthographic priming in word recognition tasks occur automatically.

The experiments that were conducted revealed that orthographically similar primes facilitated word recognition in similar pairs, while orthographically dissimilar primes led to higher RTs in the recognition of the target words. The observations and findings will be discussed in detail in the later sections.

The paper is organised as follows: section 2 reviews studies that show automatic orthographic influence in word processing tasks, followed by a note on Bangla orthography in section 3. I have provided the experiment and analysis of findings in section 4 and the discussion and implications in section 5. The concluding remarks have been presented in section 6.

## *2. Orthographic influence on lexical decision*

While semantic priming (Neely 1977; Tweedy et al. 1977; den Heyer 1985) and phonological priming in word recognition tasks (Redeau et al. 1989; Sauval et al. 2017) have been studied

extensively, fewer studies that assess the influence of orthography in auditory word recognition tasks are available. In fact, the effects of orthographic priming were realised much later, and accidentally, when differences in orthography were found to increase the time taken to make judgements in phonologically rhymed primes and targets, and assumed to interfere in oral judgement tasks (e.g., Radeau et al. 1989; Goldinger et al. 1992; Slowiaczek & Hamburger 1992; Hamburger & Slowiaczek 1996; Goslin & Floccia 2007). This led researchers to investigate the role of orthography in auditory word recognition.

Burton et al. (1993) used a shadowing and lexical decision task to investigate the interference of orthography. Four experimental conditions were used, where the prime and the target were: (i) phonologically related but not orthographically similar, (ii) orthographically related but not phonologically similar, (iii) both phonologically and orthographically related or (iv) unrelated. The conditions have been summed up in the following table:

	<b>Orthography</b>	<b>Phonology</b>	<b>Prime</b>	<b>Target</b>
<i>Condition A</i>	dissimilar	similar	clue /klu:/	zoo /zu:/
<i>Condition B</i>	similar	dissimilar	head /hed/	bead /bi:d/
<i>Condition C</i>	similar	similar	porch /pɔ:tʃ/	torch /tɔ:tʃ/
<i>Condition D</i>	dissimilar	dissimilar	zoo /zu:/	bead /bi:d/

*Table 1.* Experimental conditions of Burton et al. (1993)

When the prime and the target were phonologically and orthographically similar (porch–torch), the reaction time was lower than when they were dissimilar (head–bead; clue–zoo). The unrelated controls took the longest time to be recognised.

Dijkstra et al (1995) used a phoneme monitoring task in Dutch, where the appearance of the phoneme /k/ had to be reported. The phoneme /k/ can be represented orthographically as <k> or <c>, with the former being used as a primary spelling. The monitoring RT for /k/~<k> (phonologically-orthographically regular) was faster recognised than /k/~<c> (phonologically-orthographically irregular), thus hinting that orthographic information was being accessed during the task.

Jakimik et al. (1985), conducted a priming task using monosyllabic targets that were preceded by polysyllabic primes. There were four conditions, where the initial syllables of the polysyllabic prime and monosyllabic target matched in (i) only phonology, (ii) only orthography, (iii) both phonology and orthography and (iv) neither phonology nor orthography. This has been summarised in the following table:

	<b>Orthography</b>	<b>Phonology</b>	<b>Prime</b>	<b>Target</b>
<i>Condition A</i>	no match	Match	chocolate /tʃɒkələt/	chalk /tʃɒk/
<i>Condition B</i>	match	no match	fighter /fɑɪtə/	fig /fɪg/
<i>Condition C</i>	match	Match	napkin /næpkn/	nap /næp/
<i>Condition D</i>	no match	no match	blanket /blæŋkɪt/	pill /pɪl/

*Table 2.* Experimental conditions of Jakimik et al. (1985)

The experiment was so designed that each participant heard the target word twice. In one instance, they were related to the prime while in the other, the two were unrelated. There was a significant difference in response times of primes that were phonologically and

orthographically related in comparison with unrelated pairs. This suggests that spelling plays a facilitatory role in the process of auditory word recognition.

Slowiaczek et al. (2003) designed experiments modelled after Jakimik et al. (1985). The first experiment replicated Jakimik et al. (1985) with polysyllabic primes and monosyllabic targets and had similar results. Experiments which presented polysyllabic targets instead of monosyllabic ones<sup>2</sup> showed no change in the results. When the primes and targets had a difference in the number of shared graphemes even though the number of shared phonemes remained constant (e.g., ‘border’ /bɔːdə/ and ‘borrow’ /bɒrəʊ/), still the results were the same. With each experiment, Slowiaczek et al. (2003) tried to ensure that the use of strategic methods was minimised, but the orthographic information access remained constant, and this served as the basis for claiming that access to orthographic information in spoken word recognition is automatic and not strategic.

For our research, we have used the lexical decision task to assess the influence of spelling variations on auditory word recognition in Bangla speakers. Lexical decision tasks play a crucial role in studying word recognition processes (Berbery & Borst 2021). In these tasks, participants are asked to determine whether a sequence of letters presented on the screen is a real word or a nonword. By analysing the behavioural differences between different types of words and nonwords, researchers can gain insights into the cognitive processes involved in word identification. It helps in understanding how factors (orthographic variation in our case) influence the speed and accuracy of word recognition.

### 3. Bangla phonology-orthography mapping

Orthographic inconsistency in Bangla can result from a variety of reasons, depending on the position of the syllable in the word. This paper, however, is concerned with orthographic inconsistencies in the word-initial position only.

In the case of vowels, orthographic inconsistencies result from the following reasons: Some graphemes in Bangla may have multiple phonetic realisations. These letters are <অ> which represents /ɔ/ and /o/ and <এ> which represents /e/ and /æ/. This has been illustrated in the table below:

Grapheme	Phonetic Realisation	Words	Transliteration	Phonetic Representation	Meaning
<অ>	/ɔ/	অচল	(achal)	/ɔʃɔl/	‘immovable’
	/o/	অধীন	(adhin)	/od <sup>h</sup> in/	‘subordinate’
<এ>	/e/	এবং	(ebong)	/eboŋ/	‘and’
	/æ/	একলা	(ekla)	/ækla/	‘alone’

Table 3. Explanation of vowel inconsistencies (multiple sounds, single graphs)

<sup>2</sup>This was done to prevent strategic methods. If polysyllabic targets were used with monosyllabic rhymes, participants could use this relationship to predict the patterns of target-prime occurrences and this could affect their decisions. In order to prevent this, paired targets and primes had the same number of syllables.

The reverse is also true. This means that there are certain sounds which can have more than one orthographic representation. This is so in the case of the graphs <ই> and <ঈ>, which represent the sound /i/ and <উ> and <ঊ> which represent /u/.

Graph	Phonetic Realisation	Words	Transliteration	Phonetic Representation	Meaning
<ই>	/i/	ইতিহাস	(itihās)	/itihaj/	‘history’
<ঈ>		ঈশা	(Isha)	/ija/	‘Jesus’
<উ>	/u/	উট	(ut)	/ut/	‘camel’
<ঊ>		ঊষা	(Usha)	/ujfa/	‘dawn’

Table 4. Explanation of vowel inconsistencies (multiple graphs, single sound)

In the case of consonants, however, the mapping inconsistency results from multiple realisations of a single phoneme. This is observed particularly for the phones /j/ and /ʃ/ in the initial position. The phoneme /dʒ/ is represented by <জ> and <য>; and <স>, <শ>, and <ষ> represent /ʃ/.

Graph	Phonetic Realisation	Words	Transliteration	Phonetic Representation	Meaning
<জ>	/dʒ/	জগৎ	(jagat)	/dʒagot/	‘world’
<য>		যাদু	(Jadu)	/dʒadu/	‘magic’
<শ>	/ʃ/	শেষ	(shesh)	/ʃeʃ/	‘end’
<ষ>		ষোল	(Shola)	/ʃolo/	‘sixteen’
<স>		সবুজ	(sobuj)	/ʃobudʒ/	‘green’

Table 5. Explanation of consonantal inconsistencies (multiple graphs, single sound)

Inconsistencies pertaining to consonant clusters result mostly when the second consonant is /m/, /dʒ/, or /b/. These clusters are called the *ma-phala*, *ja-phala* and *ba-phala* respectively. Though their effects vary in different word positions, we shall look at their effects on the initial position only.

When the *ma-phala* occurs in the word-initial positions in clusters like <স্ম> /sm/ and <শ্ম> /ʃm/, the sound of /m/ is lost, and the preceding character gets nasalised. This can be noticed in words like <স্মরণ> (smaran) /ʃron/ ‘to remember’.<sup>3</sup> Thus, orthographic inconsistencies result when the nasalised consonants are used instead of the clusters.

The case of *ja-phala* is similar. Word initially, there is no change in the utterance of the consonant preceded by the *ja-phala*. For example, <দ্যুত> (dyuta) /dʒuto/ ‘gamble’. This leads to

<sup>3</sup> The words have been glossed in the order: orthographic representation within angular brackets, transliteration within round brackets, phonetic transcription within slashes and meanings with quotation marks.

confusion about the spelling, as to whether one should use the consonant cluster or simply the consonant only.

Words belonging to the *ba-phala* category exhibit the same property. The sound of /b/ is lost and the sound of the first consonant is retained. This can be seen in words like <স্বর> (svar) /ʃɔr/ ‘voice’.

Inconsistencies in spellings also occur in words that have consonants with modifiers of the consonant /r/, *ra-phala* followed by the /i/ sound, and the diacritic of <ঋ> or <ঌ> /ri/. Thus, spellings of words like <প্রিয়> (priya) /prija/ ‘favourite’ and <ত্রণ> (trina) /trino/ ‘grass’, both of which have a /ri/ sound, lead to confusion.

The sound /r/ also has a vocalic representation in Bengali as <ঋ>. In word-initial positions, sounds representing /ri/ can be spelt both with <ঋ> as in <ঋষি> (RiShi) /riʃi/ ‘monk’ and <রীতি> (riti) /riti/ ‘custom’, leading to orthographic inconsistencies.

Yet another inconsistency, where the sound of the second consonant of a consonant cluster is retained, is the case of <ক্ষ> which is a combination of /k/ and /k<sup>h</sup>/. In this case, the sound of the second consonant, that is /kh/, is retained as in <ক্ষেত> (khset) /khet/ ‘harvest field’.

The task reported below has been designed keeping in mind these different types of inconsistencies. The stimuli used and the inconsistencies tested will be discussed in further detail in the next section.

#### 4. The study

The aim of the present study is to investigate the role of orthography in spoken word recognition in Bangla. The inconsistencies resulting from the factors discussed in the previous section will be considered, and the interference resulting from them (if any) will be investigated. The questions that this study wishes to find answers to are:

1. Does orthographic inconsistency in the word-initial position affect their auditory word processing speed?
2. Do different kinds of orthographic inconsistency impact the lexical decision time differently?

The study wishes to investigate the relationship shared between the various levels of information stored in the lexical representation of Bangla words. In order to find out whether the orthographic interference occurs post-lexically or is automatically activated, the experiment consists of prime-target pairs that have shared initial segments as opposed to those that have similarities in their last segments along the lines of Marslen-Wilson & Welsh’s (1978) ideas as postulated in the Cohort Theory.

##### 4.1. Participants

32 (13 female and 19 male) native speakers of Bangla participated in the experiment. They were all above 18 years with a mean age of 23;0 (SD=2.85). Each participant had had formal education in Bangla and could read, write and speak the language with fluency. None of them had reported any sort of hearing problems or neurological disorders.

## 4.2. Task stimuli

The lexical decision task had 18 target pairs each of primes and targets. All the words used in the task were disyllabic. They were controlled for their frequencies.<sup>4</sup> Further, there were no semantic connections between the targets and the primes.

There were two experimental conditions. In the first condition, the primes and targets were phonologically as well as orthographically similar, as in <ব্যামো> (byamo) /bæmo/ ‘affliction’ and <ব্যাপার> (byapar) /bæpar/ ‘matter’. In the second experimental condition, the primes and targets were phonologically similar but orthographically dissimilar, as in <ব্যামো> (byamo) /bæmo/ ‘affliction’ and <বেলা> (bela) /bæla/ ‘noon’.

The orthographically dissimilar target words were designed such that the various spelling inconsistencies mentioned earlier could be taken into account. These have been discussed in the below:

- (1) Consonant allographs:
  - a. জ and ষ for /dʒ/
    - <জবাব> (jabab) /dʒɔbab/ ‘answer’
    - <যমজ> (jamaj) /dʒɔmodʒ/ ‘twins’
  - b. স and শ for /ʃ/
    - <সকল> (sakal) /ʃɔkol/ ‘all’
    - <শপথ> (shapath) /ʃɔpoth/ ‘vow’
- (2) Vowel allographs:
  - a. অ and ও for /o/
    - <অতি> (ati) /oʈi/ ‘excess’
    - <ওঝা> (ojha) /oʈʒha/ ‘shaman’
  - b. ই and ঈ for /i/
    - <ঈষৎ> (Ishat) /iʃɔʈ/ ‘little’
    - <ইতি> (iti) /iʈi/ ‘end’
  - c. উ and ঊ for /u/
    - <মূত্র> (mUʈro) /mutro/ ‘urine’
    - <পুত্র> (putro) /puʈro/ ‘son’
  - d. এ vs অ্যা for /æ/
    - <ব্যাপার> (byapar) /bæpar/ ‘matter’
    - <বেলা> (bela) /bæla/ ‘noon’
- (3) C<sub>1</sub>C<sub>2</sub> – C<sub>1</sub>:
  - a. ja-phala
    - <জ্যোৎস্না> (jyotsna) /dʒɔtsna/ ‘moonlight’
    - <জোগাড়> (jogar) /dʒɔgar/ ‘arrangement’
  - b. ba-phala
    - <স্বর্ণ> (svarna) /ʃɔrno/ ‘gold’
    - <সর্প> (sharpa) /ʃɔrpo/ ‘snake’

<sup>4</sup> The word <রিঠে> (rithe) /rithe/ ‘soap nut’ could not be controlled for its frequency for lack of similarly structured words.

- (4)  $C_1C_2 - C_2$ :  
 combination of /k/ and /k<sup>h</sup>/  
 <ক্ষমা> (khsama) /k<sup>h</sup>ɔma/ ‘mercy’  
 <খরা> (khara) /khɔra/ ‘draught’
- (5) Vocalic /R/ and consonantal /r/:  
 ঋ and রি for /ri/  
 <ঋণী> (Rini) /rini/ ‘debtor’  
 <রীতি> (riti) /riti/ ‘custom’

20 filler pairs of words and 18 nonwords were included in each version of the stimuli. There were four conditions. In the first condition, the filler pairs were semantically related and both phonologically and orthographically unrelated (example (6)). In the second condition, they were unrelated semantically, and they were phonologically and orthographically dissimilar (example (7)). The filler pairs in the third condition were semantically unrelated but orthographically and phonologically similar in their final segments (example (8)). In the fourth condition, the word pairs were semantically unrelated and orthographically dissimilar, but they were phonologically similar (example (9)).

- (6) <আকাশ> (akash) /akaʃ/ ‘sky’  
 <চন্দ্র> (chandra) /tʃɔndro/ ‘moon’
- (7) <বন্ধু> (bandhu) /bond<sup>h</sup>u/ ‘friend’  
 <কুঞ্জ> (kunja) /kundʒo/ ‘garden’
- (8) <চুক্তি> (chukti) /tʃukt̪i/ ‘terms’  
 <যুক্তি> (jukti) /dʒukt̪i/ ‘logic’
- (9) <ভক্তি> (bhakti) /b<sup>h</sup>ok̪ti/ ‘devotion’  
 <চাকতি> (chakti) /tʃakt̪i/ ‘disc’

This was done to check the RTs for semantic facilitation and rhyming words.

All the nonwords used in the experiment were all phonologically related to the primes.

The targets and the fillers were randomized. The stimuli were recorded at a sampling rate of 44kHz. The entire experiment was conducted using the PsychoPy software.

#### 4.3. Experimental design

The task was a lexical detection task. Participants were auditorily presented with prime and target pairs, where the targets were either words or nonwords. Their task was to determine whether a given target was a word or not. For words, they had to press the ‘WORD’ button and in case of a non-word, they had to press the ‘NONWORD’ button on the laptop. The RTs were recorded.

Each participant heard only one version of the stimuli, i.e., either an orthographically similar target-prime pair or a dissimilar one. This was done to avoid practice effects. The framework of the experiment has been illustrated below.

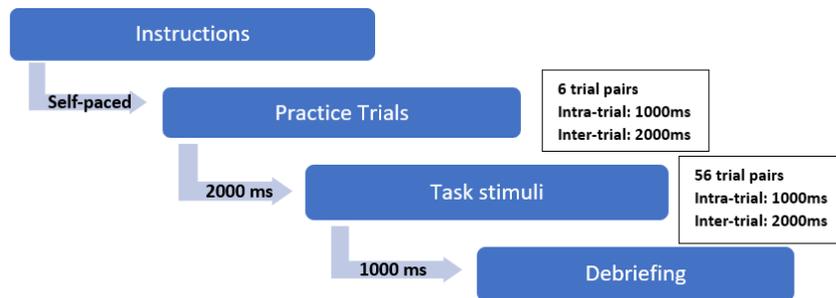


Figure 1. The framework of the study

The participants were first presented with the instructions, after which they performed a trial task. This was followed by the main experiment. For both trial words and target words, the targets were presented 1000ms after the primes. The inter-trial interval was 2000ms. The main experiment was followed by debriefing the interested participants about the nature of the study.

#### 4.4. Results

The first task was to analyse the mean RTs of all the experimental pairs that were generated by PsychoPy. Following this, a Pythonic framework was developed to traverse and parse through these multiple files and compute the final mean RTs of all the participants for all the word pairs.

The orthographic effects in terms of the differences in the RTs for similar and dissimilar pairs were assessed. An analysis of variance test (ANOVA) conducted on the lexical decision response time for the two conditions — orthographically similar and dissimilar pairs — showed a significant difference ( $F(1,574)=35, p < .05$ ). The mean RT for similar pairs was 498.09 ms ( $SD=268.42$ ) and for dissimilar pairs, it was 676.19 ms ( $SD=433.04$ ). The average difference of 178.11 ms between the RTs of the two pairs was statistically significant.

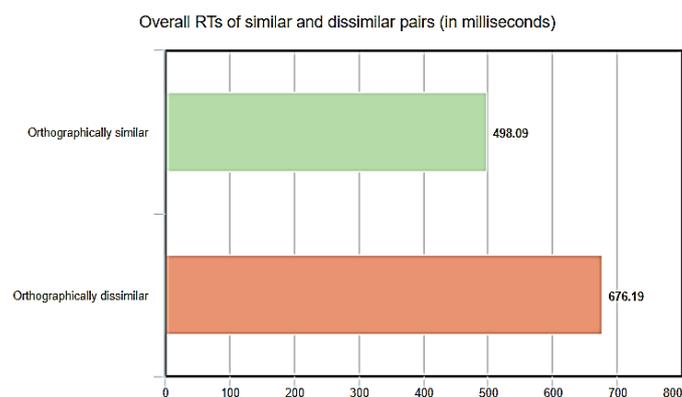


Figure 2. RTs of orthographically related and unrelated pairs (in milliseconds)

I have summarised the RTs for the different types of inconsistencies in the table given below to check whether the difference in each pair was statistically significant or not.

Type of dissimilarity	Mean RT of similar pairs	Mean RT of dissimilar pairs	df	F	P
<i>Vowel allographs</i>	503.8413125 (282.67)	667.63 (398.54)	(1,190)	10.78	p < .05
<i>Consonant allographs</i>	457.36 (217.48)	631.83 (542.98)	(1,126)	5.69	p < .05
$C_1C_2 - C_1$	481.63 (244.88)	772.78 (409.67)	(1,126)	23.81	p < .05
$C_1C_2 - C_2$	427.87 (295.4)	590.19 (357.24)	(1,62)	3.92	ns
<i>Vocalic /R/ and consonantal /r/</i>	665.39 (280.86)	683.45 (387.57)	(1,62)	0.04	ns

Table 6. Statistical analysis of the RTs of different types of inconsistencies

As shown above, the highest difference of 291.15 ms in the RTs was observed for  $C_1C_2-C_1$  pairs. The difference was also statistically significant. This was followed by the consonant allographs which had a difference of 174.45 ms and vowel allographs which had a difference of 163.78 ms. The results for both these pairs were also statistically significant.

However, the differences of 162.39 ms and 18.05 ms between the similar and dissimilar pairs of  $C_1C_2-C_2$  pairs and vocalic /R/ and consonantal /r/ respectively, were not statistically significant, though the RTs were still higher for the dissimilar pairs.

In the case of fillers, we observed the following:

Type of dissimilarity	Mean RT of similar pairs	Mean RT of dissimilar pairs	df	F	P
<i>Semantically related</i>	350.1 ms	721.04 ms	(1, 318)	50.47	p < 0.05
<i>Orthographically related</i>	480.07ms	735.9 ms	(1, 318)	14.32	p < 0.05

Table 7. Statistical analysis of the RTs of fillers

The mean RTs were highest for identifying non-words — 923.36 ms. Several factors, including word frequency, semantic context and concreteness could have resulted in this. However, focusing on the non-word analysis is not relevant to my current investigation.

### 5. Discussion and implications

In the first experimental condition, where the targets and the primes were orthographically related, the consistency of the phoneme-grapheme mapping facilitated the recognition of the

targets that were preceded by primes that had the same shared initial orthographic information. This can be explained using the Cohort Model of auditory word recognition (Marslen-Wilson & Welsh 1978; Marslen-Wilson 1987) as discussed before. The initial string of syllables presented in the prime enabled the activation of all such words that had the shared phonological and orthographic information in the mental lexicon of the participants. Consequently, the appearance of a target that had a similar initial segment as that of the prime facilitated its recognition.

In the second experimental condition, however, the participants took more time to identify the words. This delay was caused by the mismatch in the orthography of the initial segments. Because of the inconsistency in the phoneme-grapheme mapping, they had to retrace the phonological similarities with the prime after facing an initial setback resulting from the orthographic inconsistency. In other words, though the prime-target pairs seemed phonologically similar to the participants, their judgements were delayed because of the orthographic dissimilarities as they expected consistency in the phoneme-grapheme mappings. This led to an increase in the RTs of these words.

With regard to the performance of the various types of inconsistencies, it was expected that the highest difference would be noted for the  $C_1C_2-C_1$  pairs. This can be attributed to the orthographic complexity of these structures.

In the case of vowels and consonants, we observed a significant difference between the RTs. However, it is surprising that a significant difference was not noticed for the  $C_1C_2-C_2$  pairs. In an earlier rhyming experiment, this group of inconsistency recorded a much higher difference between the similar and dissimilar pairs, where the differences occurred in the word-final positions. This brings to attention the issue of whether the word positions of the orthographic inconsistencies may exert influences on word recognition.

Similarly, the results of the vocalic /R/ and consonantal /r/ pairs were also not statistically significant. A possible cause for this could be that the word *ঝিঠে* <rithe> /rit<sup>h</sup>e/ ‘soap nut’ could not be controlled for its frequency for lack of similarly structured words. This might have increased the overall RTs for similar pairs.

In the case of the filler words, it was found that semantically related pairs were processed fastest, followed by orthographically related pairs. In fact, latencies for semantically unrelated pairs were also higher than orthographically unrelated ones. This shows that semantic facilitation is strongest, followed by orthographic facilitation.

## 6. Concluding remarks

Hence, the influence of orthography on auditory word recognition can be assessed from the aforementioned experiment. This was in tune with the results found from an earlier rhyme monitoring experiment (Mukherjee 2023) conducted on native Bangla speakers, where it was found that orthographic dissimilarity in rhyming words led to an increase in the response time of rhyming judgements.

However, it was not possible to discern the level at which orthographic information gets activated in speakers from the experimental structure of the previous experiment as the interference could result from both automatic activation or post-lexical judgements, and this had to be explored further. As a result, the framework of a lexical decision task with primes and targets with shared initial information was opted for. Since a significant difference in the RTs between orthographically similar and dissimilar pairs was observed in this experiment as well, it may now be concluded that there is some degree of orthographic activation that is initiated

automatically during word recognition. I have used the phrase ‘some degree’ because of the irregularities that I found for certain word types. These irregularities need to be investigated further and accounted for. I attempt to do this in future studies.

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# Effects of evaluation and prominence on the resolution of German demonstratives

Anne Lützeler & Robert Voigt

This paper deals with German demonstratives from the *der, die, das* (DPros) and *dieser, diese, dieses* (DemPros) paradigms. We investigated the hypothesis that DPros can refer to a discourse referent that is information structurally prominent when the speaker is available as perspective-taker while DemPros are not sensitive to perspective taking. The second hypothesis is that DemPros show a stronger preference towards the last-mentioned referent than DPros. We conducted an experiment combining offline- and online-measurements. Our results suggest that perspective plays a role in pronoun resolution and that prominence gives rise to more nuanced preferences among several antecedents.

## 1. Introduction

German has a variety of pronouns (see Table 1). In addition to the frequently used personal pronouns, speakers of German use forms of two demonstrative paradigms, *der, die, das* (DPros) and *dieser, diese, dieses* (DemPros), to anaphorically pick up a discourse referent.<sup>1</sup> An example for this use is listed in (1). In this example, the two demonstratives can be used to refer back to the discourse referent *einen Hund* (a dog) just as the English personal pronoun *it* would do. In contrast to English, the German version also has a second reading available: One could also interpret the demonstrative pronouns as referring to the male referent *Marko* in this context. Based on gender and contextual cues, both interpretations are equally likely. Still, we know from psycholinguistic research (Fuchs & Schumacher 2020) that most people would prefer to interpret the demonstratives as referring to *the dog* in this context. The current study deals with linguistic factors that might guide the interpretation of referentially ambiguous demonstratives as in (1).

- (1) Marko hat einen Hund. Der/Dieser ist schön.  
Marko have.3SG a.INDEF dog.ACC it.DEM be.3SG beautiful.ADJ  
'Marko has a dog. It is beautiful.'

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<sup>1</sup> For other functions of demonstratives, see Himmelmann (1997); Diessel (1999, 2019); Doran & Ward (2019), and König (2020).

When faced with an ambiguous pronoun as in (1), an addressee must resolve it by identifying a suitable referent. While, recently, more research about the differences of DPros and DemPros has been conducted (Fuchs & Schumacher 2020; Patterson & Schumacher 2021; Bader et al. 2020), it remains unclear which factors influence the resolution of these two demonstratives.

Zifonun et al. (1997) propose that DPros can refer to the information structurally prominent (topical) referent as well as the less prominent (non-topical) referent, while DemPros can only refer to the linear closest possible referent. However, empirical research only partially supports this claim (Patil et al. 2020; Patterson et al. 2022; Patterson & Schumacher 2021; Voigt 2022a, 2022b). Other empirical work suggests that evaluation in terms of perspective taking by an abstract speaker affects the use and interpretation of DPros and DemPros. (Hinterwimmer & Bosch 2017; Hinterwimmer et al. 2020; Patil et al. 2023; Repp & Schumacher 2023). However, this has only been tested once so far by Patil et al. (2023) using an offline design. Therefore, it is not quite clear yet whether speaker perspective actually affects the use of the two demonstratives.

In the study reported here, two experimental methods – a forced-choice preference task and a measurement of reaction times – were combined to test the following two hypotheses: The first hypothesis, based on Patil et al. (2023), is that DPros can refer to a discourse referent that is information structurally prominent when the (abstract) speaker is prominent as perspective-taker whereas DemPros are not sensitive to prominence manipulations through perspective taking. The second hypothesis, based on Zifonun et al. (1997), is that DemPros show a stronger preference towards the last-mentioned referent compared to DPros.

The rest of the paper is structured as follows: In the second section, we discuss the effects of the notions of discourse prominence and speaker evaluation on the resolution of DemPros and DPros in German. The third section reports the methods, predictions, and results of our empirical study. The paper closes with a general discussion in the last section.

Grammatical gender	PPros	DPros	DemPros	Corresponding English pronoun
female	sie	die	diese	she
male	er	der	dieser	he
neuter	es	das	dieses	it

Table 1. Overview of German third person personal and demonstrative pronouns

## 2. The notions of prominence and evaluation

### 2.1. Prominence

Following Schumacher et al. (2022), we argue that anaphorically used demonstratives in German can fulfill three functions in discourse: The first function is the so-called backward-looking function of these demonstratives. This means that they are one of several referential forms that signal the cognitive accessibility of the anaphorically picked up referent. A large amount of research suggests that more accessible referents are picked up by more reduced linguistic forms (e.g. zero pronouns, personal pronouns, demonstrative pronouns), whereas less cognitively present referents are referred to with more elaborated linguistic forms (e.g., indefinite DPs, definite DPs). Thus, in a dialogue which centers around a single person the whole time, it would be likely that the two interlocutors will refer to this referent using a very reduced linguistic form (like a personal pronoun or a zero pronoun), since it is clear to both of them who is talked about.

However, in a dialogue about two persons where one person has not been mentioned in a while and one of the interlocutors wants to re-introduce this referent to the discourse, it would be more likely that this interlocutor uses a more elaborate linguistic form (like a full DP) to refer to this referent, so the other interlocutor knows who is meant (von Heusinger & Schumacher 2019, Ariel 2001). In addition to that, German demonstratives also have the potential to shift the status of their antecedent referents in upcoming discourse, which is referred to as forward-looking function. Fuchs & Schumacher (2020) show that the use of a demonstrative to anaphorically refer to a referent can boost the referents' prominence, so it will be rementioned more often in the following discourse. This effect seems to be more robust for DPros than for DemPros. Finally, they have discourse-pragmatic functions that contribute to the structuring of discourse. For example, it has been argued that the two demonstratives differ in respect to their sensibility to language register and modality; with DPros being preferred in informal spoken language and DemPros in formal written language (Schumacher et al. 2022). In the current paper, we focus on linguistic factors affecting the backward-looking functions of the two demonstratives, e.g., factors that influence which referents will become suitable antecedents for a reference with *der* or *dieser*.<sup>2</sup>

As already mentioned, the backward-looking functions of demonstratives are highly connected with the cognitive accessibility of a potential antecedent. Therefore, resolution preferences of German demonstratives have generally been discussed with regard to the concept of discourse prominence as it has been formulated in von Heusinger & Schumacher (2019). Based on the more general definition of prominence as a linguistic concept by Himmelmann & Primus (2015),<sup>3</sup> von Heusinger & Schumacher (2019) propose three basic definitions of discourse prominence: First, prominence is a relational principle that singles out one element from a set of elements of equal type and structure. This first definition includes the higher accessibility of certain referents in discourse compared to other less accessible referents. An important aspect is that the prominence of a certain element in discourse (e.g., the prominence of a discourse referent) always must be seen in relation to the prominence of other elements in discourse (e.g., the other discourse referents). Second, the prominence status of an element shifts in time. This means, discourse prominence is not a static concept, but rather highly dynamic, because certain elements in discourse become more or less prominent as discourse unfolds. A referent can be the entity most talked about at a certain point of the dialogue and another referent can be the entity most talked about at another point of the dialogue.<sup>4</sup> Third, prominent elements are structural attractors, i.e., they serve as anchors for larger structures they are constituents of, and they may license more operations than other elements in discourse. For example, it has been argued that more prominent referents allow for more variation regarding the anaphoric expressions referring to them (von Heusinger & Schumacher 2019:118–121).

In psycholinguistic literature, it has been shown that demonstrative pronouns, in contrast to personal pronouns, prefer referents as antecedents that are not the most prominent referents in

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<sup>2</sup> For current research on the forward-looking functions of German demonstratives, see for example Schumacher et al. (2022), Fuchs & Schumacher (2020), and Schumacher et al. (2015). Current studies investigating discourse structuring functions of demonstratives are Patil et al. (2020), Voigt (2022a,b), or Cokal et al. (2023).

<sup>3</sup> Himmelmann & Primus (2015) propose three criteria for prominence in grammar: (i) linguistic units of equal rank compete for the status of being in the center. (ii) their status may shift. (iii) prominent units act as structural attractors in their domain.

<sup>4</sup> The forward-looking potential of German demonstratives is highly connected with this second definition, since demonstratives have been argued to shift the prominence status of their antecedent in upcoming discourse (Fuchs & Schumacher 2020).

discourse (von Heusinger & Schumacher 2019). According to Fuchs & Schumacher (2020), linguistic features boosting the prominence of a discourse referent are agentivity, subjecthood, topicality, and being a perspective holder. This means that a referent who is the semantic agent is more prominent than referents with other thematic roles such as a patient, a grammatical subject is more prominent than an object, a topic is more prominent than a non-topical referent, and the referent who is the holder of the speaker perspective is more prominent than the other referents. If a referent has one or several of these features, the referent becomes more prominent and thus it becomes more likely that it will be picked up by a personal pronoun and less likely that a demonstrative pronoun will be chosen as referential expression. This is one of the main reasons why in (1), repeated here as (2), most people would prefer to refer to the dog with the demonstratives, even though the male referent potentially would be a fitting candidate as well. The male referent *Marko* in (1) is subject, agent, and topic, which makes this referent more prominent than the dog. Thus, it will be dispreferred by the demonstratives.

- (2) Marko hat einen Hund. Der/Dieser ist schön.  
 Marko have.3SG a.INDEF dog.ACC it.DEM be.3SG beautiful.ADJ  
 ‘Marko has a dog. It is beautiful.’

It is well known which linguistic factors affect the prominence status of a referent and therefore determine whether it is more likely picked up by a personal pronoun (as a medium to highly prominent referent), or by a demonstrative pronoun (as not the most prominent referent). In contrast to this clear pattern, it is not well known which linguistic factors determine whether a referent will be anaphorically taken up by *der* or *dieser*. One possible factor that can be connected to the concept of discourse prominence is proposed by Zifonun et al. (1997): the linear position of the potential antecedents in the preceding sentence.

Zifonun et al. (1997) claim that anaphoric expressions like third person personal pronouns are typically used to express thematic continuity. Therefore, personal pronouns typically pick up referents that are the topic of an utterance, and therefore highly prominent, independent of their position in the sentence. Zifonun et al. (1997) classify the two types of demonstratives as anadeictic expressions which usually shift topics, and thus anaphorically refer back to less prominent referents. Because of that, demonstratives of the *der*, *die*, *das* paradigm are less flexible in their referential choice than personal pronouns. They are only able to refer to an antecedent with a smaller local distance to them. Finally, *dieser*, *diese*, *dieses* demonstratives are claimed to be the most restricted. They are only able to refer to the referent closest to them. This means, they should be unable to pick up another referent than the nearest one in the preceding sentence (Zifonun et al. 1997:544–560).

- (3) Peter will einen Benz kaufen. Der/\*Dieser  
 Peter.NOM want.3SG a.INDEF Benz.ACC buy.INF he.DEM  
 hat wohl zu viel Geld.  
 have.3SG must.3SG too.PART much.QUANT money.ACC  
 ‘Peter wants to buy a Mercedes Benz. He must have too much money.’  
 (German; Zifonun et al. 1997:558–559)

Zifonun et al. (1997:558–559) discuss that in an utterance as (3), the demonstrative *dieser* is not able to refer to the referent *Peter*, since the linear distance between the potential antecedent and the referential expression is too long. *Der*, in contrast, seems to be able to refer to the referent further away.

Empirical research investigating this hypothesis produced mixed results: While some investigations regarding the referential preferences of DPros and DemPros were able to find an effect of linear order, others were not. Two studies with results partly supporting the hypothesis of an effect of linear order are the empirical investigations by Patterson & Schumacher (2021), and Patterson et al. (2022). However, empirical studies by Patil et al. (2020), Voigt (2022a), and Voigt (2022b) could not find evidence for linear order effects. Thus, it is unclear whether a topicality-based linear order effect actually causes differences in the interpretative preferences of DPros and DemPros.<sup>5</sup>

## 2.2. Speaker perspective and evaluation

Another linguistic factor that might cause a difference in the referential preferences of DPros and DemPros is speaker perspective. Kaiser & Fedele (2019) assume that perspective could be a factor influencing the choice of antecedents for personal pronouns and demonstratives in several languages. On a similar line is a theoretical account that proposes speaker perspective as a major factor influencing people’s choice to choose a DPro or a DemPro in German to refer to an antecedent.

Hinterwimmer & Bosch (2018) and Hinterwimmer et al. (2020) propose a theory according to that *der*-demonstratives are not able to anaphorically pick up so-called perspectival centers. According to the authors, discourse referents are perspectival centers if the rest of the sentence can be interpreted as expressing their thoughts, utterance or perception (Hinterwimmer & Bosch 2018). In a sentence like *Peter thinks the weather is nice*, the referent *Peter* functions as the perspectival center of the rest of the sentence. The authors empirically investigated this hypothesis in Hinterwimmer et al. (2020) with two offline-rating tasks. They interpret their results in a way that DPros indeed do not seem to be able to pick up the discourse referent that is the perspectival center and that the most-prominent topical referent automatically functions as perspectival center if there is no clear center in the utterance. Therefore, they conclude, *der*-demonstratives typically avoid to pick up perspectival centers or topics in their absence.

Building on these results, Patil et al. (2020) hypothesize a difference between DemPros and DPros might lie in their ability to pick up perspectival centers. They suggest DPros avoid to

<sup>5</sup> Note that of these studies only Patil et al. (2020) explicitly varied linear order as an independent variable of their experimental design. Nonetheless, the other studies did yield results that can be interpreted as speaking in favor or against a last-mentioned preference.

pick up the perspectival centers as antecedents whereas DemPros avoid the most prominent referents irrespective of their role as perspectival centers (Patil et al. 2020:17–18). If this were the case, DPros should potentially be able to pick up a prominent referent as long as there is some sort of a speaker instance available. DemPros, on the other hand, should always avoid the most prominent referent no matter whether a speaker is present or absent as perspectival center.

Some evidence for this hypothesis comes from Repp & Schumacher (2023). The authors wanted to investigate the processing of DPros and personal pronouns in more naturalistic contexts. Therefore, they played participants an audio book of the popular youth-novel *Tschick* while recording their ERPs. Prior to this experiment, they annotated the referential expressions in a text corpus. Surprisingly, they found that most DPros in their corpus appeared in subject and agent positions referring back to subject and agent referents. This behavior of the *der*, *die*, *das* demonstratives is not predicted by the discourse prominence account, since subject and agent referents are usually highly prominent. Repp & Schumacher (2023) explain their finding with the narrative structure of the novel: since there was a clear speaker perspective available throughout the text, the DPros were able to refer to the highly prominent referents in subject and agent position.

An experiment empirically investigating this hypothesis is found in Patil et al. (2023). Based on the theoretical and empirical work discussed so far, they assume that a speaker evaluation affects the use of DPros and DemPros in different ways. More concretely, they hypothesize that DPros avoid perspectival centers as antecedents, while DemPros just avoid prominent referents. Therefore, the presence of an evaluation by the speaker should increase the use of DPros, while there should be no such effect for DemPros. To test this hypothesis, they designed an acceptability rating study in a 2x2 design using a 7-point Likert scale. They varied the pronoun type (DPros vs DemPros) and the type of evaluation (evaluative vs. neutral sentences). Additionally, their items consisted of half positive and half negative evaluations. Furthermore, they varied the degree of evaluation. The statistical analysis of the results could show an interaction effect between pronoun type and evaluation. The highest ratings were given to evaluative conditions with DPros. All other conditions showed no statistically significant difference. There was no reliable effect of evaluation type (positive/negative), but they could find an interaction effect of the degree of evaluation and the pronoun type: The conditions with DPros received higher ratings when the degree of evaluation was higher. Based on these results, the authors conclude that DPros are indeed able to refer to prominent antecedents when there is a prominent speaker in the utterance while DemPros are not. Thus, the results of Patil et al. (2023) indicate an effect of evaluation on the use of DPros and DemPros. However, further research with varying methodology is needed to gain more clarity about an effect of evaluation on the resolution of German demonstratives.

### 3. Current Study

In the study reported here, two experimental methods – a forced-choice preference task and a measurement of reaction times – were combined to test whether evaluative expressions have an influence on the degree of prominence of a discourse referent and thus on the choice of pronoun (*der* vs. *dieser*) referring to this referent. The aim of the study was to further differentiate the discourse functions of DPros and DemPros, using the PPro as a baseline since it is the least restricted of all pronouns. In essence, we wanted to contrast the antecedent preference for the two demonstratives in evaluative and non-evaluative contexts.

We hypothesized that DPros as well as DemPros show a strong preference to refer to the last-mentioned referent. However, assuming a graded sensitivity to referent prominence for both demonstrative pronouns (see Patterson & Schumacher 2021), DPros should be less strongly influenced by a final position preference than DemPros and can refer to both referents from a set. Furthermore, compared to both types of demonstratives, PPros should not show any antecedent preference as they showed a higher degree of flexibility in their antecedent selection in previous studies (Schumacher 2016). Lastly, in an evaluative context, DPros should be processed faster than in a neutral context, as reference ambiguity is ruled out by a maximally prominent perspective taking (abstract) speaker. In contrast to this, the antecedent preference of DemPros should not be influenced by an evaluative context. This sets the study in line with Patil et al. (2023) who showed that (i) DPros can refer to a discourse referent that is information structurally prominent when the (abstract) speaker is prominent as perspective-taker while (ii) DemPros are not sensitive to prominence manipulations through perspective taking.

### 3.1. Method

In the experiment, participants were presented with sets of two sentences. Each set consisted of a context sentence, and a target sentence starting with either a DemPro, a DPro or a PPro. The target sentence differed in the way that it was either evaluative or non-evaluative/neutral.

After each set, participants were asked to answer a comprehension question with two response options given for each set, a forced-choice preference task. The response options were the two referents introduced in the context sentence. For each response, reaction times were measured from the time participants were shown the question by clicking on a separate button. The exact structure of the test material as well as the experimental procedure is reported in Section 3.2. of this paper.

#### 3.1.1. Forced-choice preference task

A forced-choice preference (FC) task was employed for the intended comparisons because – apart from offering an easy and economical way to detect qualitative differences between conditions – FC tasks increase statistical power to detect differences between conditions (see Schütze & Sprouse 2014). Moreover, as Schütze & Sprouse (2014:33) point out, “FC tasks are the only task explicitly designed for the comparison of two (or more) conditions; the other tasks compare conditions indirectly through a response scale (either yes-no, or a numerical scale)”. Nonetheless, Schütze & Sprouse (2014:33) also point to one of the limitations of a FC task by mentioning that it “provides no information about where a given sentence stands on the overall scale of acceptability”. This is another reason why our test material included sentences with a PPro instead of demonstratives, as it gave us a baseline with which to compare and indirectly infer the acceptability of sentences with DPros and DemPros (see Patil et al. 2023).

### 3.1.2. Reaction time measuring

Apart from investigating the referential choice by means of an offline method (i.e., the FC task), reaction times (RTs) were measured to indicate the cognitive processes involved in pronoun resolution. The use of RTs as an indicator is based on the idea that the time required for processing a linguistic stimulus reflects its degree of difficulty. That is, the more complex the stimulus and/or its processing, the longer processing time it requires (see Gillioz & Zufferey 2020: 112). This is consistent with our hypothesis that DPros should be processed faster in an evaluative context than in a neutral context because processing is easier and therefore faster when reference ambiguity is ruled out. The present experiment thus offers the possibility to shed light on the same process from different perspectives by combining the two methods.

### 3.2. Design and materials

Participants were shown sets of two sentences such as (4) which always contained a context sentence and a target sentence. The context sentence was the same across all conditions and consisted of a verb of action that took two animate subjects of the same gender (NP1 and NP2) as well as an object. This structure was chosen to make the two referents as equally prominent as possible. The pronoun occurred as the subject of the following target clause and was ambiguous as it could refer to both subject antecedents. Apart from the type of the pronoun, conditions differed in the way that the target sentence was either evaluative or non-evaluative/neutral. Evaluation was obtained by particles (*einfach/just*, *scheinbar/apparently*, *tota/totally* etc.) or by personal beliefs, that is, by verbs that indicate a feeling (*lieben/love*, *mögen/like*, *hassen/hate* etc.). As Patil et al. (2023) found no reliable effect of evaluation type (positive/negative), the experimental items of the current study were not counterbalanced for the type of evaluation. Furthermore, to avoid other external variables confounding the results, all sentences and words had approximately the same length and complexity and for all referents no complex noun phrases, but proper names were used.

(4) a. **Context sentence**

Lisa hat mit Anna ein Kräuterbeet angelegt.  
 Lisa.NOM have.3SG with.PREP Anna.DAT a.INDEF herb bed.ACC created.  
 ‘Lisa has created herb bed with Anna.’

b. **Non-evaluative/neutral**

Die/Diese/Sie will mit frischen Zutaten kochen.  
 She<sub>DPro.F/DemPro.F/PPro.F</sub> want.3SG with.PREP fresh.ADJ ingredients.ACC  
 cook.INF  
 ‘She wants to cook with fresh ingredients.’

c. **Evaluative**

Die/Diese/Sie hat einfach einen grünen Daumen.  
 She<sub>DPro.F/DemPro.F/PPro.F</sub> have.3SG simply.ADV a.INDEF green.ADJ thumb.ACC.  
 ‘She simply has a green thumb.’

Altogether, this resulted in a 2x3-design with the factors being PRONOUN (DPro, DemPro, PPro) and EVALUATION (non-evaluative/neutral, evaluative). Crossing these factors led to six conditions which are listed in Table 2.

Condition	Column A	Column B
A	NEUT-der/die	neutral context, target sentence with DPro
B	NEUT-dieser/diese	neutral context, target sentence with DemPro
C	NEUT-er/sie	neutral context, target sentence with PPro
D	EVAL-der/die	evaluative context, target sentence with DPro
E	EVAL-dieser/diese	evaluative context, target sentence with DemPro
F	EVAL-er/sie	evaluative context, target sentence with PPro

Table 2. Overview of the six conditions tested in the experiment

In total, there were 24 experimental items randomly interspersed with 48 filler items across six lists. To align the fillers with the test material, sets of two sentences were chosen with the first sentence serving as a context sentence and the second sentence containing two animate referents. The following comprehension questions were constructed such that only one of the two response options given was correct. This care was taken so that the fillers could serve as an anchor point for checking the reliability of the data. Only participants having good accuracy on fillers (>85%) were included into the analysis. An example filler is shown in (5).

(5) a. **Filler sentence**

Im Büro klingelte das Telefon ununterbrochen.  
 In the office.DAT ring.3SG the phone.NOM continuously.ADV  
 Der Berater sagte der Kundin, dass sie einen Termin  
 The consultant.NOM tell.3SG the client.DAT that she.NOM an.INDEF appoint  
 ment  
 vereinbaren müsse.  
 make.INF need.3SG

‘In the office the phone rang continuously. The consultant told the client that she needed to make an appointment.’

b. **Comprehension question**

Wer muss einen Termin vereinbaren?  
 Who.NOM need.3SG an.INDEF appointment.ACC make.INF?  
 ‘Who needs to make an appointment?’  
 der Berater die Kundin  
 ‘the consultant’ ‘the client’

### 3.3. Procedure

The experiment was run on the online survey platform PCIBex through a single participation data collection link (<https://farm.pcibex.net/p/AFLPpX/>). Participants received this link and ran the experiment from home on their laptops. In this way, it was possible to quickly find test subjects. However, it was thus not possible to check exactly where and when the participants

carried out the survey. Before the start of the experiment, participants were given written instructions and then had to perform three test trials to get familiar with the design of the experiment as well as with the interface of PCIbex. Once the trial runs were completed, the experiment got started. Participants were automatically and randomly assigned to one of the six lists of the experiment.

In total, nineteen native speakers of German were recruited in the experiment by the students that took part in the project (7 male, 11 female, 1 with unspecified gender, mean age = 32.53 years, age range = 21–63 years). All of them had normal or corrected-to-normal visual acuity and were not diagnosed with a reading disability by their own report. None of the participants had to be excluded as all of them had good accuracy on fillers (> 85%).

### 3.4. Predictions

For the experimental factor PRONOUN, our main predictions regarding the referential choice are: (i) The first referent (NP1) is most likely to be referred to with the PPro, (ii) DemPros are strongly influenced by a final position preference and are therefore most likely to refer to NP2 compared to PPros and DPros, and (iii) assuming a graded sensitivity to referent prominence, DPros are less strongly influenced by a final position preference than DemPros but less likely to refer to NP1 than PPros.

Additionally, our main predictions regarding the response times are: (i) The longest RTs are expected for DPros in a neutral context, while (ii) the shortest RTs are expected for DPros in an evaluative context. Moreover, (iii) the RTs for DemPros should not differ with regards to the type of context (evaluative vs. non-evaluative) and should be shorter than for DPros in a neutral context but longer than for DPros in an evaluative context. Lastly, (iv) the RTs for PPros should also not differ depending on the type of context and should be approximately located between the reading times of DPros in a neutral context but longer than for DPros in an evaluative context. To visualize our predictions, we put them the formulas listed under (6) where the term ‘P(referent|condition)’ represents the pronoun interpretation bias, i.e., upon hearing a pronoun in a particular type of context, the probability that the addressee will resolve it to a particular referent (e.g., NP2). The capital letters A–F represent the different conditions (see Table 1). For response times, the term RT(condition) simply represents the RTs of a condition (e.g., A). The symbols ‘>’ and ‘<’ are used to arrange both the probability with which a given pronoun refers to a referent and the RTs on a scale, placing them in a hierarchy that approximates the prominence hierarchy. (see Patterson & Schumacher 2021; Tomaszewicz-Özakın & Schumacher 2022)

- (6) Predictions for referential choice:  $P(\text{NP1}|\text{C}, \text{F}) > P(\text{NP1}|\text{A}, \text{D}) > P(\text{NP1}|\text{B}, \text{E})$   
 Predictions for response times:  $\text{RT}(\text{A}) > \text{RT}(\text{C}, \text{D}) ? \text{RT}(\text{B}, \text{E}) > \text{RT}(\text{D})$

### 3.5. Results

The response percentages for each option (NP1 vs. NP2) across all conditions are displayed in Figure 1. Additionally, Figure 2 shows the mean response times across all conditions. Within the next section, the results are discussed while referring to these two figures.

The results plotted in Figure 1 reveal that DemPros are clearly influenced by a final-position preference. That is, participants interpreted them to refer to NP2 in 77.6% (condition B) respectively in 80.3% (condition E) of the cases. On top of that, there seems to be no effect of the type of context (evaluative vs. non-evaluative/neutral) on DemPros. Thus, our predictions for DemPros regarding the referential choice are fully matched.

PPros, on the other hand, are most likely to refer to NP1 in 69.7% (condition C) and in 84.2% (condition F) of the cases. There also is a reliable effect of evaluation on PPros as NP1 is less likely to be chosen in the evaluative condition. This only partially matched our predictions because we did not expect the context type to influence the referential choice of the PPro.

Finally, DPros also show a clear preference to being resolved towards the last-mentioned referent. Thus, the prediction that DPros are less strongly influenced by a final position preference than DemPros could not be matched. However, there seems to be a slight effect of context type on the referential choice of DPros: They are more likely to refer to NP1 within an evaluative context (82.9%) compared to a neutral context (71.1%).

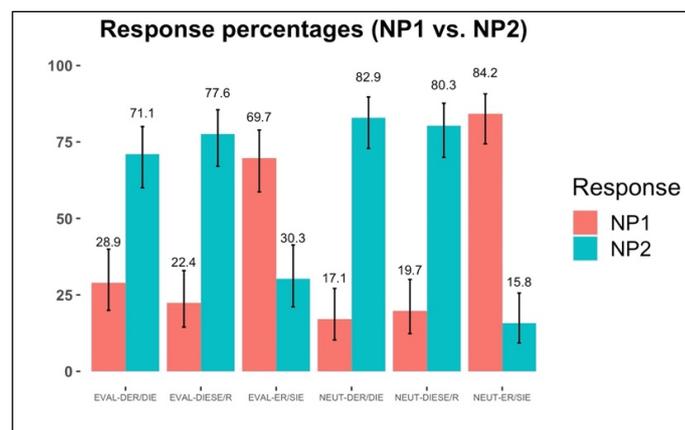


Figure 1. Response percentages of referential choice across all conditions

If we now look at the mean response times across all conditions, it becomes clear that a well-defined hierarchy of RTs like it is assumed in the predictions could not be confirmed. However, there are some numerical trends that give further insights into the resolution of the different types of pronouns in different types of contexts. First, we can again observe a clear final position preference of DemPros: When participants chose NP1 as referent of the DemPro, RTs were longer compared to when NP2 was chosen. Again, no influence of context type on the referential choice of DemPros could be observed. This fully matches the predictions.

In contrast, when comparing the RTs for the conditions containing a DPro, it becomes evident that there is an effect of context type on the referential choice: That is, in a neutral context, RTs were significantly longer when referring to NP2, while in an evaluative context, the RTs were roughly the same for the two responses (i.e., NP1 and NP2). Additionally, DPros in an evaluative context yielded the shortest RTs across all conditions. Hence, the predictions made for the RTs of DPros were fully matched.

For PPros, RTs were longer when NP2 was chosen as a referent. Additionally, RTs for the PPro were shorter in an evaluative context compared to in a neutral context. Thus, there again seems to be an effect of context type on PPros which was not expected. The overall results and their implications on a theory of pronoun resolution and prominence are now considered within a general discussion.

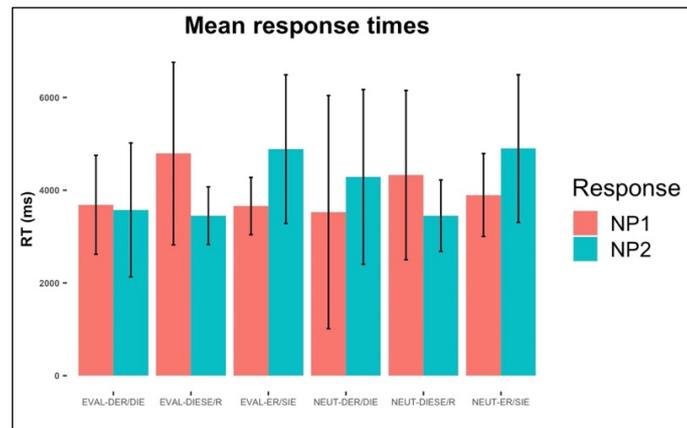


Figure 2. Mean response times (RTs) of referential choice across all conditions

#### 4. General Discussion

In this section, we discuss the results of the experiment regarding their implications for a prominence-based theory of pronoun resolution. The results of the experiment support the hypothesis of a graded sensitivity to referent prominence across the different types of pronouns. That is, the preference to refer to the last-mentioned (less prominent) entity is stronger for DemPros compared to DPros and PPros, regardless of the type of context (evaluative vs. non-evaluative/neutral). Thus, DemPros are not sensitive to prominence manipulations through perspective taking by means of an evaluative context. DPros and PPros, in contrast, seem to be sensitive to perspective taking.

Furthermore, the finding that DPros are processed faster in an evaluative context can be accounted for with the fact that reference ambiguity is ruled out by a maximally prominent perspective-taking speaker. That is, when expressing an evaluation by the narrator, an external perspective is made salient whereby the discourse topic becomes available as an antecedent for the DPro. Previously, Hinterwimmer & Bosch (2016, 2018) proposed that DPros are “anti-logophoric pronouns avoiding (maximally prominent) perspective takers”. Patil et al. (2020) claim that it is not subject- or topic-avoidance but perspective-taking that matters, i.e., DPros can indeed refer to the most prominent discourse referent in the presence of a prominent external perspective taker. Therefore, one can conclude that, like DemPros, DPros avoid the most prominent discourse referents as antecedents, but for them perspective-taking plays a role in calculating prominence. This again is in line with the findings of Patil et al. (2023) who found that an evaluative-DPro condition is rated higher than a neutral-DPro condition. We thus also claim that DPros can refer to a discourse referent that is information structurally prominent when the (abstract) speaker is prominent as perspective-taker.

Furthermore, our results might indicate that the presence of a speaker evaluation does not only affect the referential choice of DPros, but also the referential choice of personal pronouns.

Interestingly, with personal pronouns the effect seems to go into the reverse direction: While evaluation seems to increase references by DPros to the first mentioned referent, it seems to decrease them for personal pronouns. This was neither predicted by us nor by Bosch & Hinterwimmer (2018) and Hinterwimmer et al. (2020). The unexpected result that the type of context influences the referential choice of the PPro – which should have a high degree of flexibility in antecedent selection – confirms the general claim that prominence in terms of perspective taking can be influenced by evaluative expressions expressed by particles and/or personal beliefs, and also be modulated by the degree of evaluation (see Patil et al. 2023).

However, it should be taken into account that the notion of evaluation partly overlaps with the notion of informality. Patil et al. (2020) showed that language formality is a distinguishing feature such that DPros prefer informal whereas DemPros prefer formal language. The fact that, in an evaluative context, response times when referring to NP1 were longer for DPros than for DemPros might simply be accounted for by the fact that particles (*einfach/just, scheinbar/apparently, tota/totally* etc.) or verbs of personal beliefs (*lieben/love, mögen/like, hassen/hate* etc.), automatically render a sentence more informal. Hence, DemPros might be dispreferred due to language formality and not only due to prominence modulation resulting from evaluation of the discourse referents. All in all, it seems conceivable that the demonstratives from both paradigms (DemPros, DPros) behave similarly as far as avoiding the most prominent discourse referent is concerned, but they diverge along the dimensions of language formality and logophoricity.

In the experiment reported in this paper, we have tested the behavior of DemPros, DPros and PPros in evaluative and non-evaluative contexts. The following hypotheses could be confirmed: (i) DPros as well as DemPros show a strong preference to refer to the last-mentioned referent, (ii) assuming a graded sensitivity to referent prominence for both demonstrative pronouns, DPros are less strongly influenced by a final position preference than DemPros and can refer to both referents from a set, (iii) in an evaluative context, DPros are processed faster than in a neutral context, as reference ambiguity is ruled out by a maximally prominent perspective taking (abstract) speaker and (iv) the antecedent preference of DemPros is not influenced by an evaluative context. On a more methodological level, these findings support the idea that it might be beneficial for empirical research to combine offline- and online-methods in the same experiment to gain a more fine-grained picture about a language phenomenon. The diverging results in prior studies about linear order and reference might be due to the different designs of the studies. In our experiment, the difference in reference resolution of the demonstratives based on linear order were only visible when combining the offline and online results. In contrast, it could not be confirmed that, compared to both types of demonstratives, PPros do not show any antecedent preference as they showed a higher degree of flexibility in their antecedent selection in previous studies (Schumacher 2016). In fact, PPros were also influenced by the type of context, which was not predicted by us. This might indicate that the chosen construction was not completely equal in terms of prominence (topicality, order of mention).

On the whole, our results are compatible with the stronger version of the anti-logophoricity account by Hinterwimmer & Bosch (2017: 105) who claim that “if the speaker makes her own perspective particularly prominent by using an evaluative expression in referring to the subject of a propositional attitude verb  $\alpha$ , a DPro contained in the complement clause of  $\alpha$  can at least for some speakers be interpreted as bound by the subject of  $\alpha$ ”. Alternatively, a strictly prominence-based account is also compatible with the experimental results reported in this paper. In this account, DPros generally avoid the most prominent discourse referents as antecedents or binders. Thus, one must assume that while speakers automatically introduce discourse referents

(Hunter 2013), narrators (i.e., external speakers) only introduce discourse referents when there is an indication of them being present as perspectival centers. Moreover, one would have to assume that discourse referents introduced by narrators are more prominent than topical discourse referents (see Hinterwimmer et al. 2020: 124). Since the empirical predictions of the prominence-based account do not differ from those of the strong version of the anti-logophoricity account, teasing apart their predictions remains a topic for future research.

To further investigate the graded sensitivity to referent prominence across the different types of pronouns, one might claim that further studies with more participants are needed. As the experiment was part of study project with limited time, the sample was relatively small and possibly too small to generate general claims.<sup>6</sup> However, Sprouse & Almeida (2011) found that the FC task is substantially more powerful than other tasks at detecting differences between conditions, especially for small and medium-sized effects. Therefore, they ran re-sampling simulations to empirically estimate the number of phenomena in *Linguistic Inquiry* (2001-2010) that would be detected with 80% power. Their results show that the FC task would be well-powered (i.e., reach 80% power) for the detection of 70% of the phenomena published in *Linguistic Inquiry* (2001-2010) with only 10 participants each providing only one judgment per phenomenon.

Nonetheless, when replicating the study, it would be ideal to not only include more participants but to also narrow down the age range in order to achieve a more homogeneous test group. The subjects of the current study were between 21 and 63 years old, which can lead to differences in reaction times. Older subjects might be slower to respond than younger subjects – especially when using online tools. Furthermore, older participants might show differences in their use of demonstratives as compared to younger participants based on the factor formality. Since the study was carried out via the PCIBex online platform, there was no guarantee as to how well the test subjects coped with the interface of the experiment. Additionally, the construction selected for the experiment must be reworked towards an even more equal construction in terms of prominence such that order of mention and topicality are aligned.

On a final note, we can conclude that the current study contributed to investigate the interaction of (referent/perspectival) prominence and evaluation in greater detail. Thus, it became clear that the two types of demonstratives differ in terms of their sensitivity to referent prominence interaction which is in line with the findings of Patterson et al. (2022). Additionally, experimental evidence was provided that evaluative expressions have an influence on the prominence of a discourse referent (see Patil et al. 2023). We were able to replicate the findings of Patil et al. (2023) in a design which combines offline and online measurements. Thus, our results further speak in favor of their hypothesis. Furthermore, we found unexpected effects of speaker perspective on the reference resolution of personal pronouns. These results yield interesting new insights and questions for further research on the effect of discourse prominence and speaker perspective on reference resolution. Still, a more nuanced notion of prominence is needed, especially when it comes to the resolution of pronouns.

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<sup>6</sup> Because of the small number of participants, we were not able to run inferential statistics. Thus, we can only report the numerical results, but are unable to tell whether these results are statistically significant.

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*Abbreviations*

3SG	third person singular	M	masculine
ACC	accusative	NP1	first mentioned referent
DEMPRO	<i>dieser/diese</i> demonstrative	NP2	second/last mentioned referent
DPRO	<i>der/die</i> demonstrative	P	pronoun interpretation bias
F	feminine	PPRO	personal pronoun
FC	forced choice	RT	response time (in ms)
INDEF	indefinite		

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# Lexical variants in the digital archives of the East-Belgian newspaper *GrenzEcho*

## A pilot corpus study

Emma Joveneau

Against the backdrop of the pluricentricity of German, this paper deals with standard variation at the lexical level in the German-speaking Community of Belgium, also known as East Belgium. After a short discussion of some important concepts such as standard varieties, variants, variables and language centres, a pilot corpus study conducted in the digital archives of the East-Belgian newspaper *GrenzEcho* will be presented. The aim of this study is to determine the occurrence of potential East-Belgian variants in the newspaper, as well as their frequencies of use as compared to other lexemes.

### 1. Introduction

The German-speaking Community of Belgium (GC for short), also called East Belgium, is one of the three language communities in Belgium, corresponding respectively to the three official languages of the country. Next to the bigger Flemish and French Communities, the GC lies in eastern Belgium, at the border with Germany, Luxembourg, and the Netherlands (see Figure 1). The GC consists of two separate parts, namely the canton of Eupen in the North and the canton of Sankt Vith in the South (see Figure 2). With its 78,604 inhabitants (source: Statbel 2022), most of which speak German as their first language, East Belgium represents only 0,7% of the whole population of Belgium. That makes it a language minority within its own country, as well as a border minority due to its location at the border with a much bigger German-speaking country, Germany (see Riehl & Beyer 2021:8). However, as a national and border minority, German in the GC is not endangered at all. German has indeed an official status in the GC and is widely used in all East-Belgian schools and in the administration.

Its location at the border has been an important factor in the history of the territory (Minke 2010). Until the end of the Ancien régime in 1795, the Northern part around Eupen belonged to the Duchy of Limbourg and the Southern part around Sankt Vith belonged to the Duchy of Luxembourg. Then, from 1795 until the Congress of Vienna in 1815, both areas were annexed to the French Republic as part of the Department of Ourthe. It was in 1815 that the areas were taken over by Prussia, until the Treaty of Versailles in 1919, when the cantons of Eupen and Sankt Vith were ascribed to Belgium. Nevertheless, only twenty-one years later, in 1940, Germany annexed both cantons and the population became German again. However, it lasted

only five years since the areas were given back to Belgium after the war. In less than three decades, the East-Belgian population thus changed its citizenship three times.



Figure 1. The GC (in dark) in Belgium



Figure 2. The nine municipalities of the GC

Source: Das Bürgerinformationsportal der Deutschsprachigen Gemeinschaft Belgiens [information website for citizens of the German-speaking Community]

Since 1945, the German-speaking cantons of Eupen and Sankt Vith have been part of Belgium without interruption. With the language legislation in 1962/63, the principle of territoriality took shape. Following this principle, one language is ascribed to one delimited area. The official German-speaking area was established, next to the Flemish and the French-speaking areas (in the North and the South, respectively), as well as the nineteen bilingual (French-Dutch) municipalities in Brussels (which now belong both to the French and the Flemish Communities).<sup>1</sup> In 1973, the German-speaking area was turned into the so-called German Cultural Community, and in 1983 into the German-speaking Community, which still exists in this form today (Parlament der Deutschsprachigen Gemeinschaft Belgiens<sup>2</sup>, see also Darquennes 2013:356).

The GC has its own parliament and government. It has powers for the cultural, educational and language-related sectors as well as in health and the assistance to persons. The GC enjoys a great constitutional autonomy since it can pass its own laws without asking the permission of the federal state.

One should note that Belgium is not only divided into three language communities, but also into three regions: the Flemish Region, the Walloon Region and the Brussels-Capital Region. The GC together with the French Community (but without Brussels) build the Walloon Region, which is therefore bilingual French-German (with a majority of French-speaking people as the

<sup>1</sup> The Dutch varieties in Belgium are called Flemish. The Dutch standard language of Belgium is also called 'Flemish'.

<sup>2</sup> [https://pdg.be/desktopdefault.aspx/tabid-4068/7164\\_read-41446/](https://pdg.be/desktopdefault.aspx/tabid-4068/7164_read-41446/) (accessed on 24.05.2023)

French Community is much bigger). Since the small GC is dependent on the Walloon Region economically speaking, French is quite important in the administration in East Belgium (Darquennes 2013:356). Therefore, the teaching of French plays an important role in the East-Belgian schools and is particularly encouraged. Although the German language must be the sole language of instruction in all schools of the GC (except for the school sections in French immersion), the teaching of French as the first foreign language was made obligatory at all educational levels through a decree in 2004.<sup>3</sup>

As stated above, the first language of most inhabitants is German.<sup>4</sup> The local dialects — Limburgish and Ripuarian in the canton of Eupen, Ripuarian and Moselle Franconian in the canton of Sankt Vith — are still spoken by some (older) people (Darquennes 2013:357–358), especially in the South of the GC. However, the use of a German vernacular — i.e. the language variety used in informal situations when the dialect is not used —, which is more or less homogeneous in the whole GC and which comprises regional peculiarities, is widespread among the East-Belgians (Küpper et al. 2017:174). Besides the local dialects and the vernacular, a further language variety is used in the GC, namely an emergent East-Belgian standard variety of German. Within the framework of the pluricentricity of German, it is the East-Belgian standard variety that this paper is investigating (see 2.3. for an operational definition of ‘standard’).

This paper first gives an overview of the pluricentricity of German by defining the most important related concepts (2.1.). It then focuses on the so-called centres of German, more particularly on the German-speaking Community (2.2.). This chapter also proposes a definition of ‘standard variety’ (2.3.) as well as an outline of past research on lexical variation in East Belgium (2.4.). Chapter 3 presents the research questions that this paper will attempt to answer, namely: which potential East-Belgian standard variants can be found in the *GrenzEcho* newspaper corpus and with which relative frequencies of use? And in what way can the corpus study complement the *Variantenwörterbuch des Deutschen* (‘variant dictionary of German’, Ammon et al. 2016, see below)? After a description of the corpus (chapter 4) and of the methodology (chapter 5), the paper presents some first results and observations (chapter 6). It ends with a conclusion and an outlook for further research (chapter 7).

## 2. The pluricentricity of German

### 2.1. Standard varieties, variants and variables

According to Ammon (2017:10), a pluricentric language is ‘a language with at least two standard varieties’ (translation EJ). This is the case for German. The pluricentricity of German states that the German language, being an official language in different states and regions, has developed different *standard varieties* that are used respectively in these states or regions, the so-called language centres of German (among them Germany, Austria and Switzerland; pluricentricity literally means ‘several centres’, see 2.2.). The standard varieties of German differ from each other through linguistic peculiarities. In the pluricentricity theory, all standard varieties of German are of equal value linguistically speaking. As opposed to a — linguistically no longer arguable — monocentric perspective on standard variation, according to which the

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<sup>3</sup> Dekret über die Vermittlung und den Gebrauch der Sprachen im Unterrichtswesen [Decree about the teaching and the use of languages in school education] (19 April 2004)

<sup>4</sup> The percentage of German native speakers in the GC can be estimated between 90 % and 95 % (Darquennes 2013:357; Küpper et al. 2017:170; Statistikportal der Deutschsprachigen Gemeinschaft Belgiens).

standard variety of Germany is the only correct one, from which all other standard varieties would deviate (Kellermeier-Rehbein 2022:34), the pluricentricity affirms that all standard varieties are equal on their respective *Geltungsbereiche* ('areas of application', Ammon 2017:10, translation Darquennes 2021:15). Pluricentricity looks at variation at the standard level only. Consequently, this paper will only be concerned with standard variation in the German language too.

Linguistic peculiarities in one standard variety as compared to another standard variety are called *standard variants*. They can be found in phonology, morphology, lexis, syntax as well as pragmatics, but it is often argued that the lexical level is responsible for most standard variation (Ammon 2017:6). This is why this paper will deal with lexical variation only. A variant can by definition be assigned to a *variable*, the expression of which are the two (or more) variants. To illustrate the concepts of variables and variants, let us look at an example (from Kellermeier-Rehbein 2022:39). The meaning 'general entrance qualification for higher education' is here the variable, which has different variants: the word *Abitur* has its area of application in Germany and *Matura* is the word used in Austria and Switzerland. The standard varieties of Germany, Austria and Switzerland thus differ from each other through these kinds of words.

A variant can be specific of one state or region. This is the case when a variant is found in only one standard variety, e.g. *Abitur* is used only in Germany. A variant can also be unspecific; this is the case when it is used in several, but not all standard varieties of German. For example, the variant *Matura* is unspecific, because it is used in Austria and Switzerland. Note that words used in all varieties of German are not variants but are rather called 'constants' (Ammon 2017:7–8, translation EJ). Another kind of specific words are designations for things or phenomena which only exist in one state or region. These words are also not variants because they cannot be assigned to any variable. The reason is that the *signifié* simply does not exist in the other states or regions where German is spoken. These specific realities are called *Sachspezifika* (singular *Sachspezifikum*) in German and this term will be used in this paper.

When looking at standard variation, not only the bare existence or absence of variants in a variety deserves attention, but also the frequencies of use of those variants. Some variants are absolute variants in an area because no other word can be used to replace them. This is the case of *Abitur*: it is an absolute variant in Germany because it cannot be replaced by any other word — it is the only lexeme used with this meaning in Germany. However, a lot of variants are not absolute, but rather relative (or 'exchangeable', Ammon 1995:104, translation EJ), because another word exists in the given standard variety that can be used instead. For example, the lexeme *Velo* is a Swiss variant ('bicycle') and it is a relative variant, because the word *Fahrrad* is also used in the Swiss standard variety of German (Kellermeier-Rehbein 2022:49). To determine the frequencies of use of these relative variants in a given area, Niehaus (2015:143) proposes the following 'relative percentage of variants' (translation EJ):

Majority variants	used at 51% or more
Common variants	used from 21% up to 50%
Rare variants	used from 5% up to 20%
Sporadic variants	used under 5%

Table 1. Relative percentage of variants according to Niehaus (2015:143)

Thus, besides absolute variants, both majority variants (above 50% of relative frequency of use) and common, rare and sporadic variants (under 50% of relative frequency of use) in a given area should be taken into account when looking at standard variation, because they all can play a part in the analysis of a standard variety.

## 2.2. The German-speaking Community as a half centre of German

As mentioned above, the language centres of German are those states and regions in which German is an official language, and which have their own standard varieties. What is meant by official language of a state is the language used for public communication between government authorities (at all levels) and the citizens, as well as for the writing of laws, in parliament and in the judicial system (Kellermeier-Rehbein 2022:22–23).

Three types of language centres can be distinguished (Ammon 2017:18–21). Firstly, the full centres of German are the states or regions where German not only is the official language (or one of the official languages), but it is also codified internally. That means that full centres produce their dictionaries and grammar books themselves and that these codices are valid on their territories (endonormative). Three full centres are normally recognised: Germany, Austria and the German-speaking part of Switzerland (see Figure 3). These also are the centres with the most speakers.



Figure 3. The full centres (*Vollzentren*) and the half centres (*Halbzentren*) of German (from Ammon 2017:20)

Secondly, the half centres of German also have German as (one of) their official language(s), but do not produce their codices internally, but rather use the codices of the full centres (exonormative). The standard variety of a half centre has linguistic peculiarities mostly at the

lexical level. The four half centres of German are Luxembourg, Liechtenstein, South Tyrol (in Northern Italy) and the German-speaking Community of Belgium (see Figure 3). Finally, a third type of language centres can be accepted, namely the quarter centres (Ammon 2017:19–20, English translation Darquennes 2021:18). The particularity of this last type of centre is that German is not an official language but has the status of an officially recognised minority language. In the quarter centres, a specific standard variety of German has developed too. Namibia, Romania and several Mennonite settlements in America are considered as quarter centres of German.

Although the theory of the pluricentricity insists on the fact that all standard varieties are of equal linguistic value — i.e. not one variety is the best nor should be considered as the point of reference for the other varieties —, in reality, a strong asymmetry between the varieties can be observed. In fact, the standard variety from Germany is often considered to be the best one or even the only correct one by a lot of speakers (cp. the monocentric perspective mentioned above, Kellermeier-Rehbein 2022:31–33). This is due to many factors. First, the number of speakers in Germany is much higher than in all other centres together. Then, the name for the German language *Deutsch* is associated with the country Germany (*Deutschland*). On top of that, mass media from Germany are widely consumed in the other centres, but it is not the case the other way around. Finally, the standard variety taught in foreign countries is most often the one from Germany. All these external factors cause the German variety to be considered as the best one, although this view cannot be justified from a linguistic point of view.

Now that the context of the language centres of German and the relation between them have been explained, let us look at one half centre in particular: the German-speaking Community of Belgium. In the GC, German is a ‘regional, solo-official language’ (Kellermeier-Rehbein 2022:25, translation EJ): ‘regional’ because in Belgium, German is an official language only on the territory of the GC (as well as at the level of the federal state, see Ammon 2015:235–236, but not in the two other language communities) and ‘solo-official’ because it is the only official language in the GC (with language facilities guaranteed for the French-speaking inhabitants, see Darquennes 2013:356). On account of its proximity with as well as the above-mentioned predominance of Germany, the standard variety of the GC is very much oriented to the one of Germany. However, a number of (potential) lexical standard variants can be found, which distinguish both standard varieties and which are the reason to consider the GC as a half centre in the first place. For the moment, one should speak of *potential* standard variants, because most of them have not been empirically verified. In this paper, we shall look at a selection of potential standard variants of the East-Belgian standard variety (*Belgicisms*, Ammon 1995:413).

### 2.3. Ammon’s model: the ‘field of social forces of a standard variety’

As already explained above, pluricentricity is concerned with variation at the standard level. Nevertheless, ‘standard’ and ‘standard variety’ are not simple to define. When summarizing the definitions of Reiffenstein (1983:20–21), Ammon (1995:71–72), Ammon et al. (2016: XVIII), Ammon (2017:7) and Kellermeier-Rehbein (2022:25) — some of the most important authors in the pluricentric theory — a standard variety in the context of pluricentricity can be defined as follows:

A standard variety is the totality of linguistic forms (phonemes, morphemes, lexemes, syntactic and pragmatic constructions) that are accepted as appropriate and correct by all members of a language centre in formal and/or public communication situations. Moreover, a standard variety of a pluricentric language consists of at least one centre-specific variant or one centre-specific combination of (unspecific) variants.

According to this definition, a standard variety is the one used in formal and public situations and in the communication with authorities. To enable all citizens to get access to it, it is the language taught in school. In this definition, the codification status of a standard variety is deliberately left out, because the standard varieties of half centres are not codified internally (they do not have their own endonormative codices).

As far as the East-Belgian standard variety is concerned, one can speak of an ‘emergent’ standard variety (Küpper et. al 2017:184) because its standardisation process is still ongoing. For example, it is unclear which potential East-Belgian standard variants are actually used for formal and written communication by the East-Belgians, because previous studies were only concerned with newspaper language (Magenau 1964; Nelde 1974; Nelde & Darquennes 2002, Ammon et. al 2004, 2016). The frequencies of use of these variants in newspapers were never analysed either.

At this point, the concept of standard variety has been defined, but the question of knowing who determines what can be accepted as standard and what not has not yet been answered. For German, there is indeed no national institution comparable to the *Académie française* for French or the *Real Academia Española* for Spanish, which have the authority to set the standard norms of those languages. To deal with this problem, Ammon (1995:73–82, see also Ammon 2017:10–18) developed the model of the ‘Field of social forces of a standard variety’ (see Figure 4). In this model, five forces are presented which are all actors in the establishment of a standard variety. That is, they all have an influence on deciding whether a lexeme (or any other linguistic form) can be part of the standard or not.

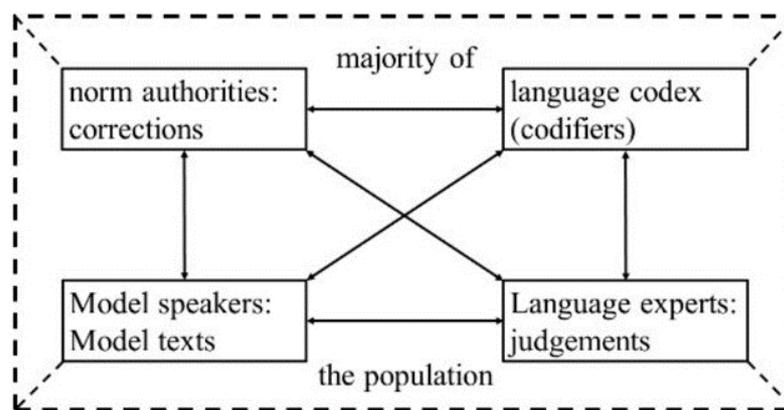


Figure 4. The field of social forces of a standard variety (Ammon 1995:80, English version from Lanwermeyer et al. 2019:147)

Let us begin with the social force that will be the most relevant in this paper. The model speakers (and writers) — and especially the model texts they produce — serve as an example in how a standard variety is used (or should be used) in a community. They are professional speakers and writers such as newscasters and journalists. Their model texts are written or

spoken texts that circulate in the media, especially on serious television programmes and in serious newspapers. They serve as an example (hence ‘model’), because speakers can refer to them in case of doubt when writing or speaking in a formal situation (e.g. ‘I read it that way in this serious newspaper, so I can use it in my email to the mayor too’). We will look at an example of an East-Belgian model text below.

The next actors in the establishment of a standard variety are the codifiers and their language codices. Language codices are dictionaries and grammar books that influence the norm of a standard variety because they seek to set the rules for correct standard language use. Speakers also refer to them in case of doubt. Language codices of a standard variety include mostly standard forms. When non-standard (vernacular or dialectal) forms are included, they are normally marked as such. As explained above, language codices play a less important role in half centres than in full centres, as half centres do not produce their own codices. Rather, speakers of a half centre have to refer to the codices of a neighbouring full centre. This is also the case in the GC, where no endonormative codex exists. Nevertheless, the database *Debeterm* can be seen as a still on-going ‘codification process’ (Möller 2017:106, translation EJ). This database lays down the binding German-speaking legal terminology for public administration in Belgium. However, it does not aim to include the whole East-Belgian standard variety, but rather only the legal and administrative terminology.

Then, language experts are professional linguists as well as lay linguists. They can criticise the codex or the general language in use in a community and bring about changes and updates to the standard norm.

Next, the so-called language norm authorities are persons who correct and influence the language of others. Norm authorities of a standard variety are schoolteachers, professors and publishing editors. They act as intermediaries between the norm and the actual language use. It is part of their profession to control and, if necessary, correct the language of others towards the standard. In that sense they have a more direct influence than the three above-mentioned forces. They differ from the three other forces in that they do not have an influence on the standard norm as such but are rather concerned with the observance of the norm. Language norm authorities are all the more important in half centres to convey the centre-internal norm as there is no endonormative codices to rely on.

Finally, the majority of the population also exerts an (indirect) influence on the standard norm. In fact, some linguistic forms can be on their way to be standardised because they are in use among the majority population. When they begin to be used in model texts, they make their way into the standard variety and, in a next step, they can enter the codex too. All social forces in Ammon’s model thus influence each other.

The model of the social forces of a standard variety can still be improved (Ammon 1995:81). For example, it is not impossible that other social forces than the five mentioned here also play a part in determining what counts as standard. It is also unclear which social force plays a more important role than the others in particular contexts. However, this model can be very useful when analysing a standard variety, both to distinguish standard from non-standard lexemes (or other linguistic forms) as well as to determine what is typical of a standard variety of one language centre as compared to other centres.

#### 2.4. Lexical variation in the GC

To document the standard varieties of all centres of German, Ammon et al. (2004, second edition 2016) published the *Variantenwörterbuch des Deutschen* ('variant dictionary of German', VWB for short). This is the first dictionary to document the standard varieties of all full, half and quarter centres of German. The VWB records only lexemes and lexical expressions which are considered as variants. That is to say, words common to all varieties of German (the constants) are not included. For the GC — such as for the other half centres — the dictionary registers essentially specific variants (Kellermeier-Rehbein 2022:211) or at least variants which are not used throughout Germany (which serves as the point of reference since it is the neighbouring full centre). The VWB records 42 lexemes marked as 'BELG', which stands for East Belgium. These lexemes were attested in different newspapers and magazines from East Belgium (the model texts) and can be regarded as parts of an emergent East-Belgian standard variety. However, the sole sources of the VWB were model texts — to a lesser extent for East Belgium also only one language expert — and the other social forces were not taken into account in the production of the dictionary. A further weakness of the VWB is that it is unclear what role the frequency of use of a lexeme in the model texts played in the inclusion or exclusion in the dictionary (Küpper et al. 2017:184).

Two older newspaper studies also analysed the East-Belgian standard variety: Magenau's study (1964) and Nelde's study (1974), both of which studied the lexis in the newspaper *GrenzEcho*, however in the then still dominant monocentric perspective, so that the linguistic peculiarities are not regarded as standard variants in their own right, but are downgraded as errors or deviations from the standard variety of Germany.

Although Ammon (1995:416) enumerates nineteen typical East-Belgian lexemes, most of them are classified as 'not correct' by the two authors Heinen & Kremer (see below) — meaning that they think most schoolteachers would not accept them. Möller (2017) also mentions numerous potential East-Belgian standard variants, but most of them have never been empirically analysed. That makes room for further research on the East-Belgian standard variety.

As far as East-Belgian peculiarities in the everyday language are concerned, which can in some cases also be used in the standard variety (see Möller & Elspaß 2015:520), contributions include the *Liste der regionalen und umgangssprachlichen Abweichungen im deutschsprachigen Gebiet Belgiens* ('list of regional and vernacular deviations in the German-speaking area of Belgium', Heinen & Kremer 1986). Nelde (1987) documented linguistic peculiarities in the form of a word atlas (*Wortatlas der deutschen Umgangssprachen in Belgien*). Heinen and Kremer, the authors of the 1986 list, also published two glossaries of everyday language in East Belgium (Heinen & Kremer 2010, 2015). The *Atlas zur deutschen Alltagssprache* 'Atlas of German everyday language' (Elspaß & Möller 2003–2023) is a wider project which records linguistic variation in all full and half centres of German, including East Belgium.

### 3. Research questions

To find out what lexemes can count as East-Belgian standard variants, one should ideally analyse the use of these lexemes empirically among all social forces (see Ammon's model in 2.3.). This paper will focus on one social force, namely the model texts, more precisely on the

East-Belgian newspaper *GrenzEcho*, in the archives of which a pilot corpus study was conducted. The aim of the corpus study is to answer the following research questions:

- a. Which potential East-Belgian standard variants can be found in the *GrenzEcho* corpus?
- b. With which relative frequencies of use do they occur in the corpus compared to the equivalent variants from Germany?
- c. In what way can the corpus study complement the *Variantenwörterbuch des Deutschen*?

#### 4. The *GrenzEcho* corpus

The corpus consists of the digital archives of the *GrenzEcho* newspaper articles from 1999 to 2019 (21 years), which are available as part of the *DeReKo*.<sup>5</sup> The *GrenzEcho* corpus comprises approximately 181 million words distributed over about 740,000 texts.

The newspaper *GrenzEcho* was founded in 1927, a few years after the cantons Eupen and Sankt Vith joined Belgium, as catholic and pro-Belgian oriented newspaper (see *GrenzEcho*).<sup>6</sup> Since 1932, it is published on a daily basis. During the Second World War, the newspaper was forbidden, but since 1945 it is published again as the sole daily newspaper in East Belgium. In the 1950s the *GrenzEcho* had a run of about 15,000 copies and in the 1980s of about 10,000 copies; in the meantime, it has become an independent newspaper. Since 1996 the *GrenzEcho* also has a digital issue on the internet and since 2002 even on its own website: [www.grenzecho.net](http://www.grenzecho.net). In 2014 the newspaper had a run of about 9,000 copies (see *Ostbelgien Direkt*)<sup>7</sup> and in 2021 of about 8,500 copies (both printed and online issues, see CIM).<sup>8</sup> In 2021, approximately 5,700 users visited on average the online pages every day. Given the population of 78,604 inhabitants in the GC, one can say that the *GrenzEcho* has a medium distribution.

#### 5. Methodology

To carry out the corpus study, 135 lexemes were selected that could potentially be considered as East-Belgian variants. The list is thus not exhaustive. The goal of the corpus study is not to establish a complete list of East-Belgian variants. Rather, the aim is to get a glimpse of lexical variation at standard level in the GC. The lexemes were chosen from different contributions that studied the (standard and vernacular) peculiarities in the language used in East Belgium. Lexemes were selected from the following four contributions: i. the VWB (Ammon et al. 2016, see above), from which 30 lexemes were chosen for this pilot study; ii. Möller's article (2017) in which the author lists a number of potential East-Belgian standard variants; iii. the project *Atlas zur deutschen Alltagssprache* 'Atlas of German everyday language' (AdA, Elspaß & Möller 2003–2023); and iv. the word list of East-Belgian peculiarities from Heinen & Kremer (1986). While the first two works provide potential *standard* variants, the last two contributions from which lexemes were taken are concerned with everyday language. Nevertheless, it still

<sup>5</sup> *Deutsches Referenzkorpus* ('German reference corpus')

<sup>6</sup> <https://www.grenzecho.net/services/grenzecho-historie> (accessed on 22.05.2023)

<sup>7</sup> <https://ostbelgiendirekt.be/tageszeitungen-talfahrt-le-soir-grenz-48893> (accessed on 22.05.2023)

<sup>8</sup> CIM Press Brand Report — March 2022: GrenzEcho

makes sense to analyse some of these lexemes, since everyday language forms can in some cases be used in the standard too (see Möller & Elspaß 2015:520). The main criterion not to include a lexeme in the corpus study was the fact that it has an entry in the online Duden without regional indication, which suggests that this word can be used in the standard varieties of all centres of German rather than being an East-Belgian variant.

Once the list of potential East-Belgian standard variants was established, together with their equivalent variants from Germany and/or the corresponding constant(s) (sometimes a word used in all varieties of German exists next to the East-Belgian variant), the lexemes were searched for in the digital archives of the newspaper *GrenzEcho*. The archives are available on the internet as part of the *DeReKo* via the corpus analysis system COSMAS II. In the *GrenzEcho* corpus, word pairs were searched for, i.e. both the East-Belgian lexeme and the corresponding lexeme(s) used in Germany were looked for, directly on COSMAS II. Within each word pair, the same word forms were searched for, e.g. the same declination or conjugation forms. From the hits obtained, all invalid results had to be excluded, such as lexemes used as proper nouns, in metalinguistic comments on the East-Belgian peculiarities, or polysemous lexemes the second meaning of which was not relevant in the study. Finally, the valid results were exported in RTF documents.

For every lexeme of a word pair, the number of valid results was calculated, as well as the relative frequency of use compared to the other lexeme of the word pair. With a one-proportion test, it was determined whether the difference in the frequencies of use is statistically significant, i.e. whether it is likely to be found again in a bigger corpus (with a probability of 95%).<sup>9</sup>

Let us look at an example to illustrate this method. Möller (2017:107) points out that an East-Belgian variant is *Rahmenplan* ‘teaching programme in school’, whereas the word used in Germany in this meaning is *Lehrplan*. The word pair consists here of *Rahmenplan–Lehrplan*. The search query in COSMAS II was ‘Rahmenplan ODER Rahmenplans ODER Rahmenplanes ODER Rahmenpläne ODER Rahmenplänen’ and ‘Lehrplan ODER Lehrplans ODER Lehrplanes ODER Lehrpläne ODER Lehrplänen’ respectively (thus basis form, GEN SG 1, GEN SG 2, PL, DAT PL). In that way, all possible noun forms are included and the same forms for both variants are looked for. In that point, the invalid results had to be removed. The word *Rahmenplan* has indeed another meaning in German (in all language centres), namely ‘framework plan or outline plan’. Since it is not the intended meaning here, those results were removed. Table 2 shows the number of valid results for both variants as well as the relative frequencies of use.

n	East-Belgian variant	Number of valid results	Relative frequency of use	Variant used in Germany	Number of valid results	Relative frequency of use	<i>p</i> -value
656	<i>Rahmenplan</i>	382	58%	<i>Lehrplan</i>	274	42%	<0.001

Table 2. Number of valid results and relative frequencies of use of the word pair *Rahmenplan–Lehrplan*

<sup>9</sup> The software used for statistics is Statistics 201 – Inference (Antoine Soetewey), available here: <https://antoinesoetewey.shinyapps.io/statistics-201/> (accessed on 17.08.2023)

In this example, the East-Belgian lexeme *Rahmenplan* is used at 58% in the corpus as compared to *Lehrplan*, which makes it a majority variant in East Belgium (or at least in the corpus). All 135 word pairs were classified according to Niehaus's classification (2015:143, see Table 1).

## 6. First results and observations

### 6.1. Classification of variants

In order to answer research questions a. and b., let us classify the lexemes. Out of the 135 analysed lexemes, 52 do not occur in the corpus at all. The reason is probably that these lexemes are too vernacular or dialectal to be used in a serious newspaper. In fact, most of them come from the word list by Heinen & Kremer (1986), the aim of which was to list vernacular East-Belgian peculiarities. Such lexemes include *sich batschen* 'to fight', *Sölder* 'attic', *knatschen* 'to eat noisily'. Also some words with French influence (loan words, loan translations) do not occur in the corpus either (e.g. *depannieren* 'to tow a car away and repair it', *Bulle* 'ball, sphere', *Etudesaal* 'study room'). Also one lexeme out of the 30 selected from the VWB does not occur in the corpus (see 6.3.).

No occurrence 0%	<i>depannieren</i> 'to tow a car away and repair it' <i>Etudesaal</i> 'study room' <i>knatschen</i> 'to eat noisily' <i>Zusatzbehör</i> 'accessories, equipment'
Sporadic variants <5%	<i>Billett</i> '(transport) ticket' <i>domiziliert</i> 'resident' <i>Feriengeld</i> 'holiday pay' <i>Penalty</i> 'penalty'
Rare variants 5-20%	<i>Farde</i> 'binder, file' <i>Garagist</i> 'car mechanic' <i>Klümmpchen</i> 'sweet' <i>Studienbörse</i> 'scholarship grant'
Common variants 21-50%	<i>doppeln</i> 'repeat a school year' <i>Kot</i> 'student share-household' <i>Zivilgesetzbuch</i> 'Civil Code' <i>Zivilstand</i> 'marital status'
Majority variants >51%	<i>Café</i> 'pub, bar' <i>Klassenrat</i> 'school staff meeting' <i>Parteikarte</i> 'party membership book' <i>Rahmenplan</i> 'school programme, curriculum'
<i>Sachspezifika</i> -	<i>Athenäum</i> 'type of secondary school in Belgium' <i>Föderalstaat</i> 'federal state' <i>Gemeindekollegium</i> 'executive power at municipality level in Belgium' <i>Schulnetz</i> 'school network supporting a number of schools'

Table 3. Classification of variants from the *GrenzEcho* corpus according to the frequency of use (sample)

As far as the other lexemes are concerned, according to Niehaus's classification of variants (see Table 1), 32 lexemes are sporadic variants and are thus hardly used in the corpus. In this case, that means that the corresponding word from Germany is used much more often than the East-Belgian lexeme. The remaining lexemes are rare (19), common (13) and majority (11) variants. Moreover, eight lexemes can be classified as *Sachspezifika*. Table 3 shows a sample of the

different types of variants as they are found in the *GrenzEcho* corpus according to their frequencies of use. Full details and results are given in the appendix.

As one can see in this sample, a lot of lexemes come from the fields of education, politics and public administration. These domains are managed in Belgium independently from Germany and do not rely on the German systems in any way. That is why East-Belgian terminology can be used here and is, by the way, often comparable with the Belgian-French words. In fact, a lot of East-Belgian lexemes are loan translations of the Belgian-French word, that is to say lexemes formed with German elements following the structure of the Belgian-French word (Magenau 1964:34), such as *Schulnetz* (French *réseau scolaire*, ‘school network’), *Klassenrat* (French *conseil de classe*, ‘school staff meeting’), *Parteikarte* (French *carte de parti*, ‘party membership book’), *Zivilstand* (French *état civil*, ‘marital status’). The predominance of French influence in the political, educational and administrative domains can be confirmed by Nelde’s observations (1974:249).

## 6.2. A few remarks on some variants

### 6.2.1. *Föderalstaat* (*Sachspezifikum*)

The lexeme *Föderalstaat* ‘federal state’ designates a state which consists of different constituent regions. Basically, it designates the state of Belgium (as opposed to the single regions and communities). Möller (2017:106) states that this lexeme is a *Sachspezifikum* because it cannot be compared to *Bundesstaat* ‘confederation [of Germany]’ due to the different underlying political systems. A look at the results and at the co-occurrence analysis confirms that the term *Föderalstaat* is used in the corpus for the state of Belgium, as in (1), and not for Germany or for any other country. The official website of the Belgian state ([www.belgium.be](http://www.belgium.be)) also uses this word on its German-speaking pages.

- (1) Die Vereinbarung war notwendig, damit der **belgische Föderalstaat** seine im Klimaabkommen von Paris festgelegten Zusagen erfüllen kann. [...]  
 ‘The agreement was necessary for the **Belgian federal state** to fulfil its commitments set out in the Paris climate agreement.’ [...]

(*GrenzEcho*, 05/09/2016, GE16/JAN.23008)

As far as the lexeme *Bundesstaat* ‘confederation’ is concerned, it is mostly used for other states (Germany, Switzerland, Canada, etc.) or for foreign political entities in its second meaning ‘constituent state, member part’, mainly for the states in the USA — however to a far lesser extent also for the state of Belgium.

### 6.2.2. *Schulnetz* (*Sachspezifikum*)

In Belgium different so-called *Schulnetze* ‘school networks’ can be distinguished according to who finances and organises the schools and school education. As the GC is competent for education on its territory, three school networks are recognised: the free subsidised education (organised by an external institution), the official subsidised education (organised and partly financed by the municipality) and the education organised and entirely financed by the GC (see Darquennes 2004:13). The lexeme *Schulnetz* ‘school network’ is a *Sachspezifikum* because this

division into different school systems is typical for Belgium and does not exist in this form in any other country (Möller 2017:107). The meaning of *Schulnetz* is illustrated in (2).

- (2) Er würdigte die finanzielle Unterstützung der DG, die es ermögliche, die Schneeklassen für die vielen Kinder aller **Schulnetze** von Burg-Reuland bis nach Kelmis erschwinglicher zu gestalten.

‘He acknowledged the financial support of the GC, which makes it possible to render school ski trips more affordable for the many children of all **school networks** from Burg-Reuland to Kelmis.’

(*GrenzEcho*, 22/11/2007, GE07/JAN.41520)

### 6.2.3. *Café* (majority variant)

The constant meaning of *Café* in all varieties of German is ‘coffee house, café’. In the GC it also has a second meaning, namely ‘pub, bar’ — in this latter meaning it is a potential East-Belgian variant. In the *GrenzEcho* corpus, it was in many cases unclear whether the lexeme meant ‘pub, bar’ or ‘coffee house’. However, in these unclear cases, the newspaper articles often dealt with a fight, usually between two men, sometimes with fatal consequences. One can deduce that these fights take place in pubs, where alcoholic beverages are consumed and where an argument (and possibly a murder) are most likely to happen, rather than in a cosy coffee house. In other cases, as in (3), the lexeme *Café* unambiguously means ‘pub, bar’.

- (3) Ehefrau nackt in **Kneipe** gefunden. Eine Frau ist am Samstag von ihrem Ehemann nackt und bewusstlos in einem **Café** in Aubel gefunden worden.

‘Wife found naked in **pub**. A woman was found naked and unconscious by her husband in a **pub** in Aubel on Saturday.’

(*GrenzEcho*, 14/05/2007, GE07/JAN.17085)

The co-occurrence analysis confirms that *Café* is used in the meaning ‘pub, bar’ in the GC, because it very often co-occurs with names of pubs located in the GC, such as *Café Trottinette* (Sankt Vith), *Café Jägerhof* (Eupen), *Café Columbus* (Eupen), *Café Penalty* (Eupen).

### 6.2.4. *doppeln* (common variant)

The verb *doppeln* has here the meaning ‘to repeat a school year’. Both lexemes *doppeln* (East-Belgian variant) and *wiederholen* (‘to repeat [a school year]’, verb used in Germany) are used synonymously. Sometimes they are both used alternately in the same article for stylistic reasons, as in (4).

- (4) Im sechsten Jahr **doppeln** dagegen nur 1,95% der Schüler. Das erste Jahr der Sekundarschule muss jeder zehnte Schüler **wiederholen**, jeder fünfte das dritte und jeder sechste das fünfte.

‘On the other hand, only 1.95% of pupils have to **repeat** the sixth year. One in ten pupils has to **repeat** the first year of secondary school, one in five the third year and one in six the fifth year.’

(*GrenzEcho*, 24/10/2007, GE07/JAN.37762)

Examples (3) and (4) illustrate the concept of relative (or exchangeable) variants very well (see 2.1.), as they show that, even within the same newspaper article, two different variants can be used.

#### 6.2.5. *Kot* (common variant)

The lexeme *Kot* ‘student share-household’ does not come from any of the four sources cited in section 5, but it was still added to the corpus study. This lexeme is a borrowing from Belgian Dutch. However, since this word is also used in Belgian French, it may have come into the East-Belgian variety via French, rather than being borrowed directly from Dutch. The borrowing history is difficult to trace back. Since in French, the word *kot* ‘student share-household’ is only used in Belgium too, one can state that this lexeme is an example of a typical national Belgian peculiarity, best representing the language situation of the country. Note that half of the results in the corpus are put in quotation marks, as in (5), which suggests that the *GrenzEcho* journalists are well aware that this word is an East-Belgian peculiarity.

- (5) Im Winter 1996/1997 hatten zahlreiche Studenten ihren „**Kot**“ verlassen, um Weihnachten und Neujahr mit ihrer Familie zu feiern, dabei aber diese Vorsichtsmaßnahme nicht beachtet.  
 ‘In the winter of 1996/1997, many students left their **student share-households** to celebrate Christmas and New Year with their families but did not follow this precaution.’  
 (*GrenzEcho*, 21/01/2013, GE13/JAN.02128)

### 6.3. Comparison with the *Variantenwörterbuch des Deutschen* (Ammon et al. 2016)

To answer research question c., the results from the corpus study were compared to the *Variantenwörterbuch des Deutschen*. The pilot corpus study revealed that some East-Belgian variants that are contained in the VWB are often used in the corpus (as majority variants), whereas other variants are hardly used (only as rare or sporadic variants). This finding suggests that the VWB should be treated with caution. Some lexemes should indeed be put into perspective: they do occur in the *GrenzEcho* corpus, but as minority variants — i.e. under 50% as compared to the corresponding lexeme from Germany. One word from the VWB marked as ‘BELG’ does not occur at all in the corpus: *Zusatzbehör*. Instead, only the word *Zubehör* (‘accessories, equipment’) is used. On the other hand, some lexemes occurring as majority variants in the corpus are missing in the VWB. Such a critical analysis of the VWB is only possible with a corpus study as the one conducted in COSMAS II. Further corpus studies as well as surveys to include the opinions of the other social forces of a standard variety (see 2.3.) should be conducted in order to confirm the tendencies observed in the *GrenzEcho* corpus. Nevertheless, the following recommendations for a possible third edition of the VWB can already be formulated.

Firstly, if further surveys confirm this result, the lexeme *Zusatzbehör* ‘accessories, equipment’ should be removed from the VWB, as it does not occur in the corpus. As far as the sporadic variants are concerned (under 5% of use in the corpus), their poor frequencies of use should at least be specified if they are to remain in the VWB (for instance with the mention ‘seldom’). That concerns the following words: *anschaulich* ‘exact’, *Billett* ‘(transport) ticket’, *domiziliert* ‘resident’, *Dossier* ‘legal case’, *Feriengeld* ‘holiday pay’, *hospitalisieren* ‘to send

to hospital', *Penalty* 'penalty', *Postpunkt* 'post office', *Stagiaire* 'trainee, intern', *Telefonbeantworter* 'answering machine'.

Secondly, a number of lexemes missing in the VWB but occurring as recurrent *Sachspezifika*, majority variants or common variants in the corpus could be added to the VWB. This is the case for *Athenäum* 'type of secondary school in Belgium', *Föderalstaat* 'federal state', *Gemeindekollegium* 'executive power at municipality level in Belgium, municipal College', *Schulnetz* 'school network supporting a number of schools' (*Sachspezifika*); *Café* 'pub, bar', *Klassenrat* 'school staff meeting', *Rahmenplan* 'school programme, curriculum' (majority variants); *doppeln* 'repeat a school year', *Harmonie* 'orchestra' and *Kot* 'student share-household' (common variants).

Thirdly, a few lexemes occurring in the corpus as majority or common variants are registered in the VWB, however not as East-Belgian variants, but rather as variants of other centres. These lexemes are *Kirmes* 'fair, funfair' (central Germany), *Speicher* 'attic' (central-western and south Germany), *Tram* 'tramway' (Austria, Switzerland, north-east and south-east Germany), *Waldbeere* 'blueberry' (central-western Germany) and *Zivilgesetzbuch* 'Civil Code' (Switzerland, South Tyrol). Their entries in the VWB could be revised by adding the mention 'BELG', even if they are unspecific variants.

Fourthly, some VWB entries should be corrected, because they contain incorrect or incomplete information. This is the case for *Bürgermeisterkollegium* and *Schöffnenkollegium*, both meaning 'College of Mayor and Aldermen' or 'municipal College' (see [belgium.be](http://belgium.be))<sup>10</sup> which are synonyms and both the former designations for *Gemeindekollegium* (the latter word should be added to the VWB, see above). The VWB claims that both words mean 'municipal or local Council' (German *Gemeinderat*), whereas this is not the case. *Bürgermeisterkollegium* and *Schöffnenkollegium* 'municipal College' are concerned with the executive power at municipality level in Belgium (government level), whereas the municipal Council (*Gemeinderat*) is concerned with the legislative power (parliament level). There is an important difference between both, also at municipal level in Belgium, as they are two separate entities. Therefore, it is an error on the part of the VWB to confuse both concepts. As there is no separation of power in Germany at municipal level, there is also no corresponding variant for *Bürgermeisterkollegium* or *Schöffnenkollegium* or *Gemeindekollegium*. These three East-Belgian lexemes are therefore *Sachspezifika*. The entries in the VWB should be corrected by taking these remarks into account. The difference between College (executive) and Council (legislative), as well as the terminology change over the years, are illustrated in example (6) from the *GrenzEcho* corpus.

- (6) Ein Beschluss des **Gemeindekollegiums**, wie das ehemalige Bürgermeister- und Schöffnenkollegium inzwischen genannt wird, wurde derweil vom **Gemeinderat** zur Kenntnis genommen. [...]

'Meanwhile, the **municipal Council** took note of a resolution of the **municipal College**, as the former College of Mayor and Aldermen is now called.' [...]

(*GrenzEcho*, 23/07/2007, GE07/JAN.25573)

An additional entry should be revised. The VWB claims that the word *Gemeindesekretär* is an East-Belgian variant and means the 'head of the municipal administration'. That was the case until 2013, when the term was replaced by *Generaldirektor*. The VWB should take this terminological change into consideration and include the term which is currently in use.

<sup>10</sup> [https://www.belgium.be/en/about\\_belgium/government/Communes/institutions](https://www.belgium.be/en/about_belgium/government/Communes/institutions) (accessed on 24.05.2023)

Example (7) illustrates this change of terminology as well as the explicit reference to the French term.

- (7) Der **Gemeindesekretär** soll künftig „**Generaldirektor**“ (frz.: „directeur général“) heißen.  
‘The **municipal secretary** is to be called "**general director**" (French: "directeur général") in future.’

(*GrenzEcho*, 23/02/2013, GE13/JAN.05841)

Finally, the entry *Ausfahrt* is also incomplete. The results from the corpus show that this word does not only mean ‘a ride with public transport’, as the VWB claims. It also means a game played on the opponent’s ground, as opposed to a home match. It is in this meaning that the lexeme was analysed. This second meaning, which does not exist in the online Duden, could be added to the VWB entry. Example (8) illustrates this meaning.

- (8) Dann folgt das Heimspiel gegen Herve und zum Saisonabschluss die **Ausfahrt** nach Amay.  
‘Then comes the home game against Herve and the season-ending **away game** against Amay.’

(*GrenzEcho*, 15/03/2008, GE08/JAN.10216)

## 7. Conclusion and outlook

The pilot corpus study shows that linguistic variation in the newspaper *GrenzEcho* represents only a small proportion of the whole lexis. Not only do some lexemes that were considered as potential East-Belgian variants not appear in the corpus at all, but many variants are also only rare or sporadic. However, common and majority variants as well as recurrent *Sachspezifika* can also be found. It is because of this small, but essential proportion of standard variation that the GC counts as a half centre of German with its own standard variants — and therefore also its own standard variety.

The corpus study made it possible to critically review the lexemes marked as ‘BELG’ in the VWB. It revealed that some variants are hardly used in the newspaper *GrenzEcho*, whereas no mention of their poor frequencies of use is made in the VWB. The corpus study also suggested that some lexemes could be added to the VWB as they occur frequently in the *GrenzEcho* archives.

One of the weaknesses of the conducted corpus study is surely the rather small size of the dataset and in line with this, the fact that only one newspaper was investigated, whereas there are many other media resources in the GC. Another limitation is that the use of variants can sometimes depend on the individual journalists as well as on the topic of the article (for example, there might be more variants in articles dealing with local subjects than with international ones). This has not been taken into account in the analysis of the variants. A further weakness of the corpus study is the fact that some polysemous lexemes had to be sorted out by hand, which means that some errors could have occurred.

As a next step, it will make sense to compare the occurrence of lexemes obtained in this corpus study with the occurrence of the same lexemes in a newspaper from Germany. By choosing a German newspaper from a region bordering the GC (for example from Aachen), it

will be possible to determine whether the variants found in the *GrenzEcho* corpus are typical for East Belgium only, or whether they are rather variants of a broader, cross-border area (see Niehaus 2015:135–139).

While it is evident that analysing the lexis of one East-Belgian model text does not enable us to make reliable statements about the whole lexical standard variation in the GC, it still shows tendencies that will have to be confirmed by analysing the variant use of other social forces (see 2.3.). To be able to confirm whether the lexical peculiarities occurring in the *GrenzEcho* corpus can actually be considered as standard variants of the East-Belgian variety, they should indeed be found in the standard language use of the majority population and be accepted by norm authorities too, two further social forces in Ammon's model *Field of social forces of a standard variety*. Therefore, the next steps of the underlying research project will be a questionnaire sent to the inhabitants of the GC to collect data about their variant use, as well as a questionnaire sent to the German schoolteachers in East Belgium to analyse their acceptance of East-Belgian variants. In fact, not only model texts should be taken into account to determine what counts as standard variants, but also the majority population and the norm authorities (see Scharloth 2005:262–264; Schmidlin 2013).

### Abbreviations

DAT	dative
GEN	genitive
PL	plural
SG	singular

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## Appendix

Classification of East-Belgian lexemes	East-Belgian lexeme	Corresponding lexeme(s) used in Germany	English translation	Source for the East-Belgian lexeme
<b>No occurrence</b>	affonieren	(auf) ex trinken in einem Zug trinken	to drink in one go	Möller 2017
	(Apfel-)Kitsch (Apfel-)Ketsch	Kerngehäuse	(apple) core	AdA
	artlich	brav artig	well-behaved	Heinen & Kremer 1986
	ausspringen	ausgehen	to switch off	Heinen & Kremer 1986
	sich batschen	sich prügeln	to fight	Heinen & Kremer 1986
	bedröpst	niedergeschlagen bedröppelt kleinlaut	depressed, downcast	Heinen & Kremer 1986
	Bic	Kugelschreiber	pen	Möller 2017
	Bigoudi	Lockenwickler	hair curler	Möller 2017
	Blötsch	Beule	bump, dent	Heinen & Kremer 1986
	Bonzelebock	Purzelbaum	somersault	Heinen & Kremer 1986
	Brick	Ziegelstein	brick	Heinen & Kremer 1986
	Cric	Wagenheber	car jack	Möller 2017
	depannieren	abschleppen	to tow a car away and repair it	Heinen & Kremer 1986
	Dispenz	Befreiung Dispens	exemption, dispensation	Möller 2017
	Etudesaal	Lesesaal Studienraum Lernraum	study room	Heinen & Kremer 1986
	gewährden lassen	gewähren lassen tun lassen	to let somebody do something	Heinen & Kremer 1986
	I-grec	Ypsilon	upsilon	Heinen & Kremer 1986
	Journal de classe	Heft für die Eintragung der Hausaufgaben	notebook to plan homework	Heinen & Kremer 1986
	Kelder	Keller	cellar	Heinen & Kremer 1986
	Klammermaschine	Tacker	stapler	Ada
	klott	wählerisch	picky	Ada
	knatschen/knätschen	schmatzen	to eat noisily	Heinen & Kremer 1986
	kneckig/knäckig/ knickig	geizig	stingy, cheap	Heinen & Kremer 1986
	knöpfen	knüpfen	to tie	Heinen & Kremer 1986
	knuppen	stoßen	to push, to hit, to knock	Heinen & Kremer 1986
	knutschen	zerknittern	to crease, to wrinkle	Heinen & Kremer 1986
	Kokel	Purzelbaum	somersault	Heinen & Kremer 1986
	kollig	unwohl	unwell	Heinen & Kremer 1986
	Kompass	Zirkel	pair of compasses	Heinen & Kremer 1986
	kötschen	geräuschvoll kauen	to chew noisily	Heinen & Kremer 1986
	laff	fad(e)	tasteless, bland	Ada
	Makai	Quark	quark	Ada
	matschen	geräuschvoll essen	to eat noisily	Heinen & Kremer 1986
	in Ommes	unter Druck	under pressure	Heinen & Kremer 1986

	Pisem	Fussel	lint	Heinen & Kremer 1986
	quäsch	übellaunig	bad-tempered	Heinen & Kremer 1986
	rözeln	sich balgen	to scrap	Heinen & Kremer 1986
	sich schibblen	sich schütteln vor Lachen	to shake with laughter	Heinen & Kremer 1986
	Schmiss	Prügel	beating, thrashing	Heinen & Kremer 1986
	schnützen	naschen	to nibble, to snack	Ada
	schrömen	eilen	to hurry, to rush	Heinen & Kremer 1986
	Sölder	Dachboden	attic	Heinen & Kremer 1986
	Spies	Mörtel	mortar	Ada
	Stipp	Pfahl	pile, stake	Heinen & Kremer 1986
	stochen	heizen	to heat	Heinen & Kremer 1986
	tachteln/tacheln	ohrfeigen	to slap (on the face)	Heinen & Kremer 1986
	tränteln	schlendern bummeln	to stroll	Heinen & Kremer 1986
	verhausen	verlegen	to mislay	Heinen & Kremer 1986
	verlangern	sich sehnen	to long for	Heinen & Kremer 1986
	sich zerholen	sich abmühen	to try hard, to work hard	Heinen & Kremer 1986
	zoppen	eintauchen	to immerse, to dip	Heinen & Kremer 1986
	Zusatzbehör	Zubehör	accessories, equipment	VWB
<b>Sporadic variants (&lt;5%)</b>	anschaulich	genau	exact	VWB
	Bidon	Trinkflasche	sports bottle	Möller 2017
	Billet	Fahrkarte Fahrschein Ticket	(transport) ticket	VWB
	Bol	Schale	bowl	Möller 2017
	Bulle	Kugel	ball, sphere	Heinen & Kremer 1986
	Camion	LKW	lorry	Möller 2017
	Camionette	Lieferwagen	delivery van	Heinen & Kremer 1986
	domiziliert	wohnhaf	resident	VWB
	Dossier	Fall Rechtssache	legal case	VWB
	drücken	schieben	to push	Heinen & Kremer 1986
	Erstminister	Premierminister	prime minister	Heinen & Kremer 1986
	Feriengeld	Urlaubsgeld	holiday pay	VWB
	Frigo	Kühlschrank	fridge	Möller 2017
	holen	nehmen	to take	Möller 2017
	hospitalisieren	ins Krankenhaus einliefern	to send to hospital	VWB
	knostig	schlecht gelaunt mürrisch	grumpy	Heinen & Kremer 1986
	Knuppauto	Autoscooter	bumper car	AdA
	(Wasser-)Kran	Wasserhahn	water tap	AdA
	panikieren	in Panik geraten	to panic	Heinen & Kremer 1986
	Parking	Parkplatz Parkhaus	parking, car park	Heinen & Kremer 1986
	Penalty	Elfmeter Foulelfmeter	penalty	VWB
	Postpunkt	Postamt	post office	VWB
	relax	entspannt	relaxed	Heinen & Kremer 1986
	Schmand/Schmant	Sahne	cream	Heinen & Kremer 1986

	Stage	Praktikum	internship, traineeship	Heinen & Kremer 1986
	Stagiaire	Praktikant	trainee, intern	VWB
	Telefonbeantworter	Anrufbeantworter	answering machine	VWB
	Trottoir	Bürgersteig	pavement	Möller 2017
	überbrechen	zerbrechen	to break, to split	Heinen & Kremer 1986
	sich vergönnen	sich wohlfühlen	to feel well, comfortable	Heinen & Kremer 1986
	sich wänzeln	sich wälzen	to roll	Heinen & Kremer 1986
	zurückerkennen	wiedererkennen	to recognise	Heinen & Kremer 1986
<b>Rare variants (5–20%)</b>	Abfrage	Klausur Klassenarbeit Test	class test	Heinen & Kremer 1986
	Ausfahrt	Auswärtsspiel	away game	VWB
	Dalle	Betonträger Steinplatte	concrete beam stone slab	Heinen & Kremer 1986
	Farde	Ordner	binder, file	Möller 2017
	Garagist	Automechaniker Kfz-Mechaniker Kfz-Mechatroniker	car mechanic	VWB
	Gedö(h)ns	Getue Aufheben(s)	fuss	Heinen & Kremer 1986
	großjährig	volljährig	of age	Möller 2017
	Hospitalisation	Hospitalisierung	hospitalisation	VWB
	Klümppchen	Bonbon	sweet	AdA
	Leger	Blumengebinde Blumenstrauß (für den Grab)	bouquet of flowers for tomb	Heinen & Kremer 1986
	Mandatar	Abgeordneter	deputy	VWB
	Menu	Menü	set menu, set meal	VWB
	Menükarte/ Menükarte	Speisekarte	menu (card)	VWB
	Pliesterer	Verputzer	plasterer	Heinen & Kremer 1986
	Schick(e)	Bonbon	sweet	Heinen & Kremer 1986
	Schnützes	Näscherei	snack, sweets, nibbling	Heinen & Kremer 1986
	Schuhriemen	Schnürsenkel	shoelace	AdA
	Studienbörse	Stipendium	scholarship grant	Möller 2017
umklinken	umknicken	to twist	Heinen & Kremer 1986	
<b>Common variants (21–50%)</b>	Akte	Fall Rechtssache	legal case	Möller 2017
	Animation	Veranstaltung	event	VWB
	die Brücke machen	Brückentag	extra day off between bank holiday and weekend, bridging day	AdA
	doppeln	wiederholen	to repeat a school year	Heinen & Kremer 1986
	Harmonie	Musikverein Orchester	orchestra	Heinen & Kremer 1986
	Klassierung	Platzierung	position, place	VWB
	Kot	Studentenwohnung Studentenzimmer	student share- household	other

		Studentenbude WG Wohngemeinschaft		
	Pensionierter	Rentner Pensionär	retired person	VWB
	Promotion	Aufstieg	promotion	VWB
	Tram	Straßenbahn S-Bahn	tramway	AdA
	Unterhaltsarbeit	Wartung Wartungsarbeit(en)	maintenance work	VWB
	Zivilgesetzbuch	Bürgerliches Gesetzbuch	Civil Code	Möller 2017
	Zivilstand	Familienstand	marital status	VWB
<b>Majority variants (&gt;51%)</b>	Animator	Unterhalter Animateur	(holiday) entertainer	VWB
	Café	Kneipe Wirtschaft Lokal	pub, bar	Möller 2017
	Gemeindesekretär/ Generaldirektor	Stadtdirektor Gemeindedirektor	general director of municipal administration	VWB/ other
	Kamelle	Bonbon	sweet	AdA
	Kirmes	Volksfest Jahrmarkt Kirchweih	fair, funfair	other
	Klassenrat	Lehrerkonferenz Klassenkonferenz	school staff meeting	Möller 2017
	Parteikarte	Parteibuch	party membership book	VWB
	Parteipräsident	Parteivorsitzender	party leader	VWB
	Rahmenplan	Lehrplan	school programme, curriculum	Möller 2017
	Speicher	Dachboden	attic	AdA
Waldbeere	Heidelbeere Blaubeere	blueberry	AdA	
<b>Sach-spezifika</b>	Athenäum	/	type of secondary school in Belgium	Möller 2017
	Bürgermeister- kollegium	/	executive power at municipality level in Belgium	VWB
	Föderalstaat	/	federal state	Möller 2017
	Gemeinde- kollegium	/	executive power at municipality level in Belgium	other
	Schöffe	/	municipal deputy at the executive level in Belgium	VWB
	Schöffenkollegium	/	executive power at municipality level in Belgium	VWB
	Schulnetz	/	school network supporting a number of schools	Möller 2017
	Schulprojekt	/	guideline with pedagogical goals	Möller 2017

## Presupposition projection: let's test again!

Saeedeh Salimifar

The idiosyncratic behavior of presupposition triggers and their projection has prompted diverse experimental investigations. Some experiments examine a broader range of triggers, highlighting the variability in presupposition projection (e.g., Smith & Hall 2011; Tonhauser et al. 2018; Xue & Onea 2011), while others focus on clause-embedding predicates to differentiate factive from non-factive predicates based on their projection behavior (e.g., De Marneffe et al. 2019; Degen & Tonhauser 2022). However, certain triggers and predicates have been overlooked. To address this research gap, an experiment was conducted in this study to test the projection behavior of such triggers. The results indicate that variability exists in all triggers and call for further investigation into the contextual factors influencing projection behavior.

### 1. Introduction

Presupposition has been long disputed in semantics and pragmatics. For instance, Van Fraassen (1968) considers presupposition a semantic relation among sentences and describes it in terms of the truth conditions of a sentence. Levinson (1983), on the other hand, defines presupposition as a background assumption and, because of its dependence on contextual factors, a type of pragmatic inference. However, compared to other types of pragmatic inferences such as conversational implicature, he believes presupposition ‘to be based more closely on the actual linguistic structure of sentences’ (1983:167).<sup>1</sup> In a rather similar view, Chierchia & McConnell-Ginet (1990) add one more characteristic to Levinson’s notion of backgrounded information: they believe that for a presupposition to hold, it also needs to be taken for granted, meaning that its truth is essential for the felicity of an utterance.

While there are more definitions available for presupposition, I find Karttunen’s (1973) perspective on the matter more beneficial. He points out that although the notions of semantic presupposition and pragmatic presupposition are different in some ways, there is no actual conflict between them.<sup>2</sup> If we take this argument into consideration, it might then be better to shift our focus towards something, a feature perhaps, that is shared among all views on

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<sup>1</sup> Conversational implicatures, unlike conventional implicatures, are not dependent on the conventional meaning of what has been uttered; and instead, are reliant on conversational features.

<sup>2</sup> However, he does admit that it seems more difficult to come up with a coherent semantic notion of presupposition than a pragmatic one.

presupposition. One such characteristic is the ability of presupposition to project out of entailment-cancelling environments. These environments, also known as *Family of Sentences* (Chierchia & McConnell-Ginet 1990), include negation, polar questions, modals, and the antecedent of conditionals. Such environments cancel the entailment of a sentence but are neutral to its presupposition. For instance, utterances (1a) to (1e) all presuppose that Jan has an aunt and that her aunt is having a wedding.

- (1) a. Jan attended her aunt's wedding in a white dress.  
 b. Jan didn't attend her aunt's wedding in a white dress.  
 c. Did Jan attend her aunt's wedding in a white dress?  
 d. Jan might have attended her aunt's wedding in a white dress.  
 e. If Jan attended her aunt's wedding in a white dress, it is going to be a whole story.

In the examples (1a) to (1e), the possessive phrase *her aunt's wedding* seems to be responsible for the presuppositions *Jan has an aunt* and *her aunt is having a wedding*. Lexical items or structures of this type which lead to presuppositions are called *presupposition triggers*. Following this notion, linguists started speculating if these triggers would always show the same behaviour and result in presuppositions. In other words, is it always the case that the presuppositions triggered by presupposition triggers project out of sentences? Such questions led to the discussion of the projection problem which refers to the projection behaviour of presupposition triggers in complex sentences. For instance, while the semi-factive predicate *realize* presupposes the truth of its complement clause in a sentence like *she didn't realize that I have not told the truth*, it merely points to a possibility in *if I realize later that I have not told the truth, I will confess it to everyone* (Karttunen 1971).

Consequently, many studies focused on two questions: a) when does projection happen? and b) how can it be explained? Several experiments have been conducted to test the proposed hypotheses and theories as potential answers to these questions. It appears, however, that some triggers have been forgotten thus far. The number of existing presupposition triggers in the literature exceeds the number of triggers that have yet been tested. Before generalizing or disregarding any theory concerning the projection problem, it is only logical to take all the triggers into account and not overlook a number of triggers. This study extends the scope of experimentally tested triggers and examines the adequacy of existing presupposition trigger classifications in explaining the findings. The results demonstrate that projection variability exists in all triggers, even within the same group. Nonetheless, the current trigger classifications fall short in fully explaining the observed data and its variability.

The paper is organized as follows. Section 2 provides background information on the subject. Section 3 outlines the experimental design and procedure. Section 4 presents and discusses the collected results. Sections 5 and 6 analyse the impact of context on the experiment. Finally, in section 7, the final conclusions are drawn.

## 2. Background

### 2.1. The projection problem

Langendoen & Savin (1971) are among the first linguists to discuss the projection behaviour of presupposition triggers in complex sentences, what they refer to as *the projection problem*. While investigating the relation between the presupposition of a complex sentence and the

presupposition of its constituent clauses, they conclude that presuppositions of a subordinate clause serve as the presuppositions of the complex sentence. For instance, the verb *regret* in sentence (2), which belongs to a class of predicates called *factives* (Kiparsky & Kiparsky 1970), presupposes the truth of its complement clause, that Jan wore a white dress to her aunt's wedding. According to Langendoen & Savin's hypothesis, the presupposition of the complement clause serves as the presupposition of the complex sentence as well.

(2) Jan doesn't regret wearing a white dress to her aunt's wedding.

Karttunen (1973) disagrees with this *cumulative hypothesis* as a solution for the projection problem in complex sentences, and believes matters are more complicated than what has been proposed.<sup>3</sup> He uses examples like (3) to prove his point. In (3), clearly, we cannot assume that the presupposition of the consequent, *Jan has a husband*, is also the presupposition of the complex sentence, since there is no certainty that Jan is in fact married, and even if she is, that she is married to a man.

(3) If Jan is married, then her husband is a lucky guy.

Karttunen, instead, introduces three classes of predicates, *plugs*, *holes*, and *filters*, to account for the divergent behaviour of presupposition projection in complex sentences. Based on this classification, if a predicate blocks the presupposition of its complement clause and does not allow it to project, which is the case in verbs of saying, it is considered to be a *plug*. On the other hand, when a predicate allows the presupposition of its complement clause to project and serve as the presupposition of the sentence, what we are dealing with is a predicate that belongs to the class of *holes*. Factive predicates, aspectual verbs and implicatives are members of this group. The most challenging group is *filters* which includes conditionals, conjunctions and disjunctions.<sup>4</sup> In such cases, if the presupposition is triggered in the first clause, it serves as the presupposition of the full sentence. However, in cases where it is the second clause that holds the presupposition, the presupposition only projects if its content is not entailed by the first clause. For instance, in example (4), since the possessive phrase *her aunt's wedding* is in the antecedent clause, the presuppositions *Jan has an aunt* and *her aunt had a wedding* project and serve as the presuppositions of the conditional. In contrast, the presupposition *Jan has a white dress*, triggered by the possessive phrase *Jan's white dress* in the consequent becomes filtered because of its entailment by the antecedent.

(4) If Jan attended her aunt's wedding in her white dress, then I'm borrowing Jan's white dress.

Another account for the projection problem is proposed by Abusch (2002) as she categorises presupposition triggers into *soft* vs. *hard*. When the presupposition is weak and suspendable, the trigger is *soft*. Factive verbs like *discover*, aspectual verbs like *stop* and *continue*, achievement verbs like *win*, as well as questions and focus belong to this class. On the contrary, adverbs such as *too*, *also*, *even* and *again*, the negative polarity *either*, and *it-clefts* are considered hard triggers. Following her classification, while the achievement verb *win* in (5)

<sup>3</sup> The term *cumulative hypothesis* is coined by Morgan (1969).

<sup>4</sup> Karttunen, here, considers conditionals as predicates which take two sentential complements, namely, the antecedent and the consequent.

presupposes that Jan participated in the employee of the year competition, this presupposition is suspended in (6) as it is embedded in the antecedent of a conditional. Abusch (2002) ascribes this categorization to the difference between semantic and pragmatic presupposition. She believes soft triggers, contrary to the hard triggers, are pragmatically encoded. Consequently, presupposition suspension becomes a possibility for soft triggers as they are reliant on factors such as linguistic context.

(5) Jan won this year's employee of the year.

(6) If Jan wins this year's employee of the year, I will go to her aunt's wedding.

Simons et al. (2010), building on Chierchia & McConnell-Ginet (1990), take a different road and provide a pragmatic account for the projection problem. Chierchia & McConnell-Ginet (1990) point out that despite being able to separate presuppositions, a type of backgrounded content, from asserted content using the *family of sentences* test, we cannot simply assume all that is backgrounded is a presupposition. Following their argument, Simons et al. (2010) believe that projective content, including but not limited to presupposition, projects because it is not the main point of the utterance, i.e., it is not *at-issue*. At-issueness is defined relative to the notion of *Question Under Discussion (QUD)* (Roberts 1996). The QUD is any question that targets the common goal of the discourse. Therefore, any utterance that does not serve the QUD, is not at-issue. Similarly, since the entailment-cancelling operators target at-issue content, presuppositions project out of such operators whenever they are not at-issue. Their hypothesis leaves at-issueness as the reason for not projecting.

Given what has been said so far on the projection problem, it might be useful to imagine a continuum where at one end, characteristics of the presupposition triggers are taken into account, and at the other, pragmatic factors, particularly the information status of the utterances, are considered. All different approaches to the projection problem then belong to a point somewhere on this continuum. The next subsections will review different classifications of presupposition triggers and a number of experimental studies which were designed to test the viability of the aforementioned hypotheses.

## 2.2. Presupposition triggers

Lexical and structural items that lead to presuppositions are called *presupposition triggers*. One of the first studies to gather a list of presupposition triggers is done by Levinson (1983) where he names 13 lexical and structural items as presupposition triggers and ascribes the list to Karttunen. More than three decades later, Karttunen (2016) addresses this reference and offers a revised version of the list. He categorizes a number of the items, namely, the definite descriptions, iteratives, temporal clauses, cleft sentences, implicit clefts with stressed constituents, comparison and contrasts and questions, as 'the easy case' (2016:710) and thus presuppositional.

For the most controversial class of the triggers, the factives, things are more complicated: he believes that factives are divided into various sub-groups where each sub-group behaves differently. The first sub-group includes predicates with *that*-clause arguments, such as *S be odd that* (e.g., *It is odd that Jan wore a white dress to her aunt's wedding*), which according to him, behave the same as the easy cases and presuppose the truth of their complements. The

second sub-group contains the attitude verbs such as *know* where two people are involved, the speaker/writer and the attitude holder. He then follows that these verbs presuppose the truth of their complements as long as the thoughts of the attitude holder and the speaker/writer are aligned. Verbs of discovery, such as *find out*, form the third sub-group. Karttunen considers these predicates presuppositional only in the affirmative form of a sentence. The last sub-group includes verbs such as *acknowledge*, which, according to him, ‘do not commit the speaker to the truth of anything other than the protagonist having communicated something that the protagonist wished to present as a fact’ (2016:713). A summary of what Karttunen considers presupposition triggers can be found in *Table 1*.

Similar to the notion of presupposition, presupposition triggers have also been notably discussed. Although there is no fixed set of triggers that is agreed upon by all linguists, there are some triggers that have been frequently repeated in the literature. The next section will review some experimental studies that have focused on some of the most controversial triggers.

Triggers	Easy Cases	Projective in special circumstances
Definite descriptions	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Iteratives	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Temporal clauses	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Cleft sentences	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Implicit clefts with stressed constituent	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Comparison and contrasts	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Questions	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Predicates with <i>that</i> -clause arguments	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Attitude verbs	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Verbs of discovery	<input type="checkbox"/>	<input checked="" type="checkbox"/>

*Table 1.* Presupposition triggers according to Karttunen (2016)

### 2.3. Experimental studies on projection

Smith & Hall (2011) investigated both conventional implicatures and presupposition triggers in their experiment to put some common hypotheses regarding projective content into question. One such assumption is the possible difference in the projectivity of soft and hard triggers; more specifically, if hard triggers do in fact project more than soft triggers. In order to test this hypothesis, they included two soft triggers, the predicates *know* and *win*, and one hard trigger, *it*-cleft constructions, in their experiment. They presented their participants with a sentence containing the projective content in one of the three forms: a) a simple sentence, b) the entailment-cancelling environment of negation, and c) antecedent of conditionals. The participants were then asked *how surprised you were to learn that ...* followed by either the positive form of the projective content or the negative form. They, however, report variability in the projection behavior of the triggers, and surprisingly, the hard trigger, the *it*-cleft, is found to be less projective than the tested soft triggers.

In another experiment, Xue & Onea (2011) test four presupposition triggers regarding their projection behaviour and the potential relation between their projection and at-issueness. They

use two German soft triggers, equivalent to *to know* and *to find out* in English, and two hard triggers, equivalent to *too* and *again* in their experiments.<sup>5</sup> In the first experiment, where the projection behaviour of the triggers is under query, each trigger is embedded in the antecedent of a conditional and then each conditional is followed by a question asking ‘is it possible that ...’ with the complement clause rejecting the potential presupposition of the sentence. Their result indicates variability among the projection behaviour of the triggers, with soft triggers showing less projection compared to the hard triggers.

As they aim to test the potential relation between projection and at-issueness in their second experiment, they use the direct rejection test (Beaver et al. 2009) to investigate the at-issueness status of the sentences containing the triggers. This time, each of the above-mentioned triggers are embedded in a sentence followed by three possible rejections. The result of their second experiment supports the hypothesis proposed by Simons et al. (2010) that there is correlation between presupposition projection and at-issueness, meaning that the triggers that project more, *again* and *too* in their experiments, are less at-issue.

Romoli (2011) ran two picture-matching tasks to test the projection behaviour of conditionals of the form *if A then B<sub>p</sub>* where the presupposition *p* is embedded in the consequent. Conditionals of this type have two possible types of presuppositions: a) an independent presupposition *p*, b) a dependent presupposition of type *if A then p*. In their experiments, participants are presented with a conditional sentence, followed by either the confirmation or rejection of the antecedent, and four accompanying pictures. The pictures display possible scenarios: for instance, a picture could describe a situation where the antecedent is true and the independent presupposition *p* projects. Subsequently, participants are asked to pick the picture that best fits the conditional. Based on their result, they conclude that the dependent presupposition, *if A then p*, is generally preferred to the independent one.

In a series of experiments, Tonhauser et al. (2018) investigate particular projective content with regards to a) possible variability in their projection behaviour and b) potential correlation between their projectivity and at-issueness. They choose a more diverse set of projective content, compared to previous studies, including both presupposition triggers and conventional implicatures, namely, sentence-medial non-restrictive clauses and appositives, possessive noun phrases, *only*, and a number of predicates such as *be annoyed*, *discover*, *know*, *stop* and *be stupid to*. To test for projection variability, they embed the expressions in the entailment-cancelling environment of a polar question and follow that with another question asking how certain the speaker is about the potential projective content. The participants are presented with a slider with *No* at one end and *Yes* at the other to mark their responses on. They follow a similar approach to test the at-issueness status of their target expressions, with only one difference: here, the participants are asked if the speaker is asking about the projective content or not.<sup>6</sup>

Their findings also confirm the expected variability in the projection behaviour of the presupposition triggers and the existing correlation between at-issueness and projection. Specifically, the more a trigger projects, the less it is at issue. They note, however, that the observed variability, that some triggers project more than others, does not align with the binary classifications of triggers proposed in the literature. For instance, based on their result, the complement clause of the hard predicate *be annoyed* was not distinguishably more projective than the complement clause of the soft predicate *notice*.

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<sup>5</sup> The German words are *wissen*, *erfahren*, *auch*, and *wieder*, respectively.

<sup>6</sup> They ran several experiments, with somewhat different procedures, to test for the projection variability and at-issueness. For more information: <https://doi.org/10.1093/jos/ffy007>

De Marneffe et al. (2019) collect a corpus of 1200 naturally occurring sentences called the CommitmentBank to study the projection behaviour of clause-embedding predicates. All sentences in the corpus are embedded in an entailment-cancelling environment of negation, question, antecedent of a conditional and modals. To gather the speaker commitment to the truth of the complement clauses triggered by the predicates, annotators were asked how certain they are about the truth of the complement clauses. While their result demonstrates that the overall mean projectivity of factive predicates is higher than non-factives, some non-factive predicates, e.g., *accept*, are more projective than the so-called factive predicates, e.g., *know*. Thus, the classification of presupposition triggers into soft vs. hard does not explain their data in totality.

In another study, Degen & Tonhauser (2022) run 6 experiments to test the class of *factive* predicates. While some believe that factive predicates presuppose the truth of their complement clauses (e.g., Kiparsky & Kiparsky 1970), others assume that the entailment of the complement clause is necessary as well (e.g., Gazdar 1979). In an attempt to settle this argument, Degen & Tonhauser (2022) compare 20 clause-embedding predicates regarding their projection and entailment. Their predicates include the three classes of factives, such as *discover*, non-factives, such as *pretend* and *demonstrate*, and optionally factives such as *acknowledge*. Their result, however, suggests that a classification of predicates into factives and non-factives is not possible as the predicates show projection variability which does not fit into this binary classification.

It is evident that previous studies have mainly focused on a number of triggers, and it appears that predicates, in particular the so-called class of factives, have received the most attention. The present study contributes to filling this gap in the literature by conducting an experiment to test the projection behaviour of the ignored triggers. In addition, several triggers that have been tested before, are also repeated in this study to allow for a better comparison.

#### 2.4. The goal of this paper

Given that some presupposition triggers have not yet been tested, this experiment is designed to test the projection behaviour of those triggers that, to the best of my knowledge, have not received sufficient attention experimentally. The goal of this experiment then is three-fold:

- a) To see whether the commonly assumed presupposition triggers actually presuppose the truth of their complements and project out of an entailment-cancelling operator.
- b) To investigate the possible degrees of variability in their projection.
- c) To examine the ability of different categorizations of presupposition triggers in explaining the variability.

The set of the triggers chosen for this study is represented in (7). These triggers form a heterogeneous group and include a variety of both lexical and structural triggers. The incentive for this diverse selection is to be able to explore the behaviour of each trigger in comparison to members of other classes as well as members of their ascribed classes. Additionally, this mixed selection enables testing various categorizations of presupposition triggers. For instance, as it was intended to put Karttunen's (2016) classification to the test, most of the ascribed triggers in his classification are included in our set. It should be noted that some commonly assumed triggers, such as *S suffice that*, *S be relevant that*, and *S be significant that*, are added to

Karttunen's 'easy cases' of predicates, as they can be considered to share the same characteristics.<sup>7</sup> Counter-factual conditionals and adverbial triggers are tested in this experiment as well. It is also important to mention that a number of these triggers have not been tested before, namely, predicates with *that*-clause arguments, the attitude predicate *regret*, the coming-to-know predicate *observe*, temporal clauses, comparison and contrasts, questions, the adverbial trigger *anymore*, the adjective *another*, and the counter-factual conditionals. The remaining triggers, as previously stated, are repeated in this experiment to allow for a better comparison.

- (7) The list of triggers tested in this study:
- a. Predicates with *that*-clause arguments: *S be odd that, S be tragic that, S be relevant that, S be significant that, S count that, S matter that, S suffice that*
  - b. Attitude predicate: *regret*
  - c. Verbs of communication: *acknowledge, admit, confess*
  - d. Coming-to-know predicates: *discover, find out, notice, observe*
  - e. Iteratives: *again, too*
  - f. Temporal clause: *before ...*
  - g. *it*-cleft sentence
  - h. Comparison and contrast using *than*
  - i. Questions
  - j. Adverbs and adjectives: *anymore, only, another*
  - k. Counter-factual conditionals

The following sections focus on the experiment conducted in this study where the projection behaviour of 11 presupposition trigger types has been tested.

### 3. Experiment: presupposition projection

#### 3.1. Design

In this experiment, each of the listed triggers in (7) is embedded in an entailment-cancelling environment, and is followed by a projection diagnostic test. Since the selected triggers for this study are heterogenous and include various classes of presupposition triggers, it was necessary to choose a type of entailment-cancelling environment that would fit all the triggers and result in natural-sounding sentences. After testing different types of embeddings, it was determined that polar questions are better suited to this set of triggers.<sup>8</sup> Besides offering natural-sounding sentences, the use of polar questions facilitates a more precise comparison of results with previous studies, such as Tonhauser et al. (2018) and Degen & Tonhauser (2022), which employed the same entailment-cancelling environment.

There are several diagnostic tests available for projection that have been deployed in various experiments. However, following Tonhauser et al. (2018) and Degen & Tonhauser (2022), the experiment opted for the *certain that* diagnostic test. Based on this test, the polar question containing the trigger under test is followed by another question asking the participants how certain the speaker of the polar question is about what they have uttered. The participants are

<sup>7</sup> These predicates are considered factive by Kiparsky and Kiparsky (1970).

<sup>8</sup> An exception to the use of polar questions as the entailment-cancelling environment in this study is the subgroup of questions. As they are already interrogative, they were tested with no entailment-cancelling environment.

then given *Yes/No* forced choice options. This forced choice is also selected based on the observation made in Degen & Tonhauser (2022) where they alter the options of participants' responses in two of their experiments to check for the possible effect of each answer option. In one experiment, they use scalar certainty ratings and present participants with a slider marked *Yes* at one end and *No* at the other. The participants are then required to choose a point on the slider as their answers. In their second experiment, a forced *Yes/No* choice replaces the scalar certainty ratings. Nevertheless, they report that the second experiment replicates the result of the first experiment and no significant difference can be seen. As a result, it was decided to choose the forced *Yes/No* option for the current experiment as it permits simpler computations.

### 3.2. Material

The 11 trigger types mentioned in (7) were used to create 25 different test items where each item consists of a polar question containing one of the triggers, a *certain that* diagnostic question, and a *Yes/No* forced choice. The polar questions are all in the form of a conversation between two people, where both the speaker and the hearer are assigned random proper names. The context of each of the polar questions containing the triggers is also created artificially. The experiment contains 10 control items and 15 fillers as well which were added to ensure that participants are paying attention to the task, and to counterbalance the number of *Yeses* and *Noes* across the items, respectively. Neither the controls nor the fillers contained a presupposition trigger of any type. An example of each item type is illustrated in Table 2. In addition, 4 versions of the same experiment were generated where a) the order of all the items were randomized in each form and, b) each trigger of the type predicate was randomly assigned to one of the 10 available complement clauses.<sup>9</sup> In other words, every participant was randomly assigned to one of the four versions of our experiment, in which the order of the items (tests, controls and fillers), and the complement clauses of the predicate triggers were randomized.

Type	Item
Test	Patrick asks: Did Mark acknowledge that he used the company car? <i>Is Patrick certain that Mark used the company car?</i>
Control	Frank asks: Did Alex go to the new year's party? <i>Is Frank certain that Alex went to the new year's party?</i>
Filler	Brian says: If I were Arthur, I would buy the painting. <i>Is Brian certain that Arthur bought the painting?</i>

Table 2. An example of each type of the items from the experiment

### 3.3. Participants

100 adult native English speakers were recruited via an online research platform, named the Prolific platform.<sup>10</sup> The pre-screening option of the Prolific platform was used to ensure that only native English speakers were hired for the experiment. The participants were also asked

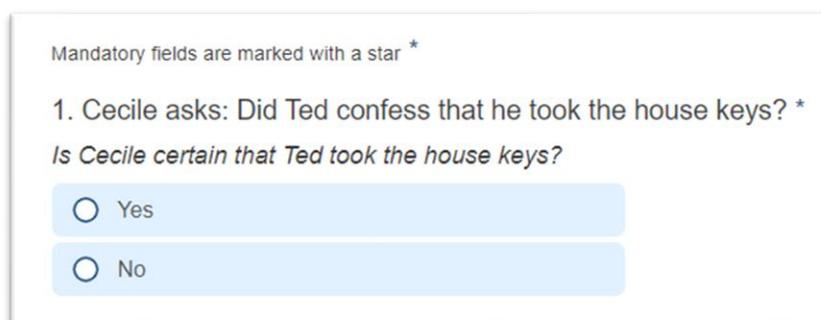
<sup>9</sup> To implement this experiment, 'nettskjema', a web-based survey tool, was used: <https://nettskjema.no/>

<sup>10</sup> <https://www.prolific.co/>

about their native language on the experiment but were assured that they will be paid regardless of their answer.

### 3.4. Procedure

Following Tonhauser et al. (2018) and Degen & Tonhauser (2022), participants were told to imagine that they are at a party, and as they enter the kitchen, they hear two people having a conversation, where one is either asking a question (in terms of the test items and controls) or uttering a sentence (in term of fillers). They were instructed to read the conversation and choose their answer. An example of a test item from the experiment can be seen in *Figure 1*.



Mandatory fields are marked with a star \*

1. Cecile asks: Did Ted confess that he took the house keys? \*

Is Cecile certain that Ted took the house keys?

Yes

No

*Figure 1.* An example of a test item from the experiment

### 3.4. Data exclusion

The data from 1 participant was excluded from the study since they answered wrong to more than two control items.

## 4. Results and discussion

Figure 2 demonstrates the mean projectivity of all the triggers tested in this experiment, ordered from the most projective to the least. As illustrated in the figure, predicates with *that*-clause arguments, with the exception of *suffice*, show the highest projection compared to both other predicates and the rest of the triggers. The attitude predicate *regret* also ranks among the most projective triggers. Moreover, the coming-to-know verbs are fairly spread across the figure and form a quite diverse class. While *notice* shows rather similar behaviour to the predicates with *that*-clause arguments and *observe* is moderately projective, *find out* and *discover* are among the least projective predicates and all the triggers in general. Another class of predicates that exhibit interesting behaviour are the verbs of communication with *acknowledge* showing the most projection compared to *admit* and also *confess*, which is the least projective trigger overall. Degen & Tonhauser (2021) report a similar order among these three verbs with regards to their projection as well.

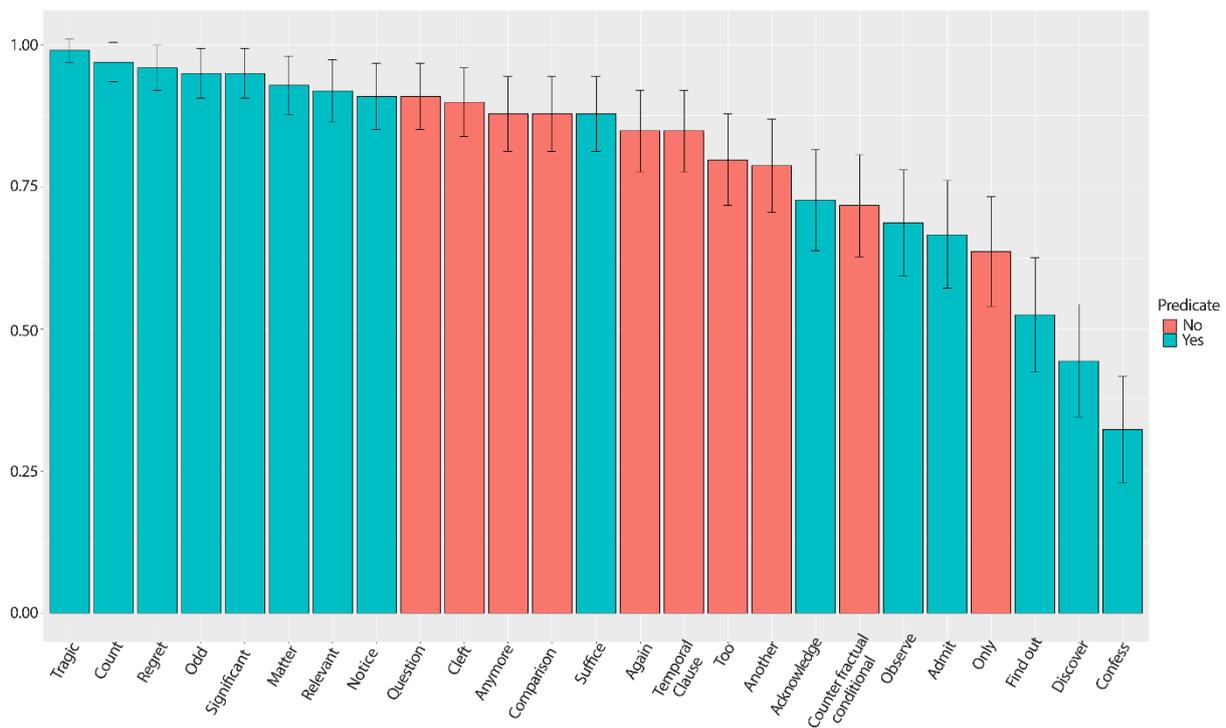


Figure 2. Projectivity means by trigger. Error bars indicate 95% confidence intervals.

Besides predicates, the rest of the triggers are mostly centred in the middle of the figure and exhibit somewhat similar behaviour regarding their projection. Among this group, questions show the most projection while *only* shows the least. Although Tonhauser et al. (2018) indicate that *only* is less projective than the so-called factive predicates such as *discover* and *find out*, we can observe the opposite in this experiment. Furthermore, the adverbial trigger *too* is less projective than *again*, which is supported by what Xue & Onea (2011) report in their experiment.<sup>11</sup> Contrary to what Smith & Hall (2011) note on clefts in their experiment, a different behaviour is encountered here as the *it*-cleft structure, disregarding the predicates, is the second most projective trigger after questions.

While previous studies confined their attention more to the commonly named class of factive predicates which supposedly project the truth of their complement clauses, the objective here was to test the projection behaviour of the triggers which have been overlooked. Figure 3 represents the findings of this study separated into two groups of predicates and non-predicates with the dashed line indicating the overall mean of projectivity among all the triggers. Let us assume for now that the triggers above the overall mean are projective and the rest non-projective. Based on this assumption, the adverbial trigger *too* and the adjective *another* are considered non-projective despite the fact that they are just slightly below the mean (AVE=0.80, *too* = 0.79, *another* = 0.78).

Further, *acknowledge* and *confess* will both be considered non-projective regardless of the difference in their projectivity (AVE: *acknowledge* = 0.72, *confess* = 0.32). These points raise an important question: how should the threshold of projectivity be determined? Given that every

<sup>11</sup> Albeit with different percentages: *too* = 87.25%, *again* = 99.02%

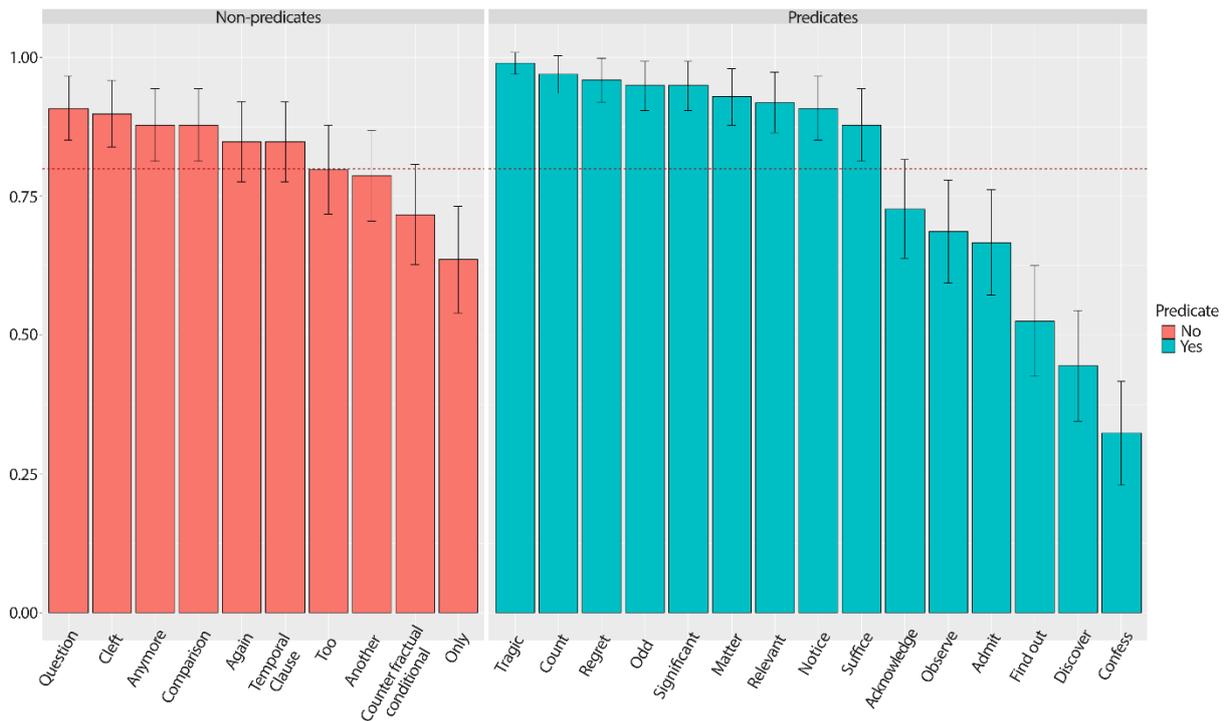


Figure 3. Projectivity means by trigger, divided into two classes of predicates and non-predicates. The dashed line indicates the overall mean of projectivity across all triggers and error bars include 95% confidence intervals.

arbitrary threshold would result in similar issues as the ones mentioned, one partial solution might be to just give up the division of presupposition triggers into projective vs. non-projective and accept that all triggers are projective but to different degrees. If we accept this assumption, another question arises: how can this observed variability be explained? As mentioned in section 2, many linguists attribute the variability in the projection behaviour of presupposition triggers to their nature, and propose different classifications of triggers to justify the existing variability.

One such classification belongs to the division of presupposition triggers into soft and hard. Looking at Figures 2 and 3, this classification does not seem to explain the data in totality. Questions, which according to Abusch (2010) belong to the category of soft triggers, show the most projection among non-predicate triggers and outrank hard triggers such as *again* and *too*. *It*-cleft, another reported hard trigger by Abusch (2002), shows less projection than predicates with *that*-clause arguments and factives such as *regret* and *notice* which she also considers soft triggers. To support these observations statistically, a generalized linear mixed effect model predicting projectivity based on the fixed effect of the trigger type (1 = hard trigger, 0 = soft trigger) was conducted.<sup>12</sup> The model included random by-trigger intercepts to capture the difference in projectivity among the triggers, and random slopes for trigger type to capture the fact that the effect of the trigger type might vary across triggers. The outcome of the model confirmed the observations as there is no significant effect of the trigger type, based on the

<sup>12</sup> Analyses were conducted using lme4 package (Bates et al. 2015) in R.

division to soft vs. hard, on the projectivity of the triggers ( $\beta = 0.6215$ ,  $SE = 0.6321$ ,  $z = 0.983$ ,  $p = 0.3225$ ).<sup>13</sup>

Another classification belongs to Karttunen (2016) as he categorized the triggers into easy and non-easy cases. In order to investigate his classification, a generalized linear mixed effect model predicting projectivity given the effect of trigger type was implemented. In this model, however, the trigger type was based on Karttunen's classification where 1 represents his easy cases and 0 non-easy cases. This model also included random by-trigger intercepts and random slopes for trigger types. This time, the result demonstrated significant influence of the trigger type on projectivity ( $\beta = 1.2460$ ,  $SE = 0.4663$ ,  $z = 2.672$ ,  $p < 0.001$ ). But what does this tell us? Does it mean that Karttunen's classification justifies the observed data?

While it is statistically evident that Karttunen's classification can be used to interpret the data on some levels, it is still not able to fully explain the data. Concerning predicates with *that*-clause arguments, the result of the experiment aligns with what he believes, as they show the most projection in comparison to other predicates, and the rest of the triggers as well. For verbs of discovery, he presumed that they are only projective in the affirmative form of a sentence. This statement, however, can be called into question since the triggers of this study were embedded in an entailment-cancelling environment, and we can nevertheless observe some projection, albeit to varying degree.<sup>14</sup> In spite of Karttunen discounting all verbs of communication as presupposition triggers, *acknowledge* and *admit* seem to be even more projective than verbs of discovery, which he considers projective at least on some occasions. Thus, it seems more appropriate to consider Karttunen's classification more of a simplified generalization rather than a wholesome hypothesis, a generalization that would account for the projectivity of presupposition triggers up to a degree, but fails to explain the variability in totality.

This experiment supports the reported observations by previous studies that there is variability in the projection behaviour of presupposition triggers. It is also evident from the experiment that variability in degrees of projectivity is not limited to only a number of triggers. All triggers, even the ones that are placed in the same group, hold this characteristic. Moreover, different predictions of projectivity based on classifications of triggers seem to be failing in predicting the observed behaviour. So far, the hypotheses that a) triggers are either projective or non-projective, and that b) triggers can be divided into different categories to explain the variability of their projection behaviour in totality, are eliminated. Consequently, one might ask how can the variability be explained then? In the next subsection, the role of context in projection variability and its influence will be investigated.

### 5. Variability and context

A number of triggers in this experiment, namely iteratives, *it*-clefts, *only*, verbs of discovery and verbs of communication, have been previously tested in other studies as well. Yet, in some cases, the result of this experiment varies with the reported result of such studies. For instance, while the experiments in Tonhauser et al. (2018) and Degen & Tonhauser (2022) have similar designs and procedures to the experiment conducted in this study, there are differences in the

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<sup>13</sup> It should be noted that since Abusch (2002, 2010) just, **explicitly**, ascribes a few of the triggers to the soft and hard classes, only the gathered data from the triggers that belong to her classification were included in the analysis. These triggers are: *too*, *again*, *it*-cleft, question, *notice*, *discover*, and *find out*.

<sup>14</sup> This is also supported by previous studies for *find out*, *discover* and *notice*.

final reported outcome. Considering that the main difference between the present experiment and the aforementioned studies is the context<sup>15</sup> of the presupposition triggers in the test sentences, it would be reasonable to assume that they are influencing the projectivity of the triggers.

Another point which can support the importance of context is the impact of certain words and structures on the projectivity of presuppositions in the experiment. For example, while analysing the data, it was observed that when certain words or structures, such as *already* or tag questions, are present in the sentence, participants seem to be more certain about the projectivity of the presuppositions. Interestingly, while the presence of *already* in *did they discover that Nina has already taken the course?* resulted in more *Yes* responses, it did not have the same effect in *did you find out that Nina has already taken the course?*. This might be due to the fact that participants in this study are presented with little background context. As a result, they may construct their own contexts that can differ in important ways. Given the lack of precise knowledge about the causes of variability in the projection behavior of presupposition triggers, testing the effect of context on projectivity would be immensely useful. However, it may not be feasible to put all the possible contextual factors into test. Therefore, taking a step forward and expanding experimental investigations into corpus studies is necessary.

#### 6. Corpus studies and context

This study too supports the idea that context plays an important role in the projection behaviour of triggers. This means that it would be extremely beneficial to follow up such experiments with a corpus study to investigate naturally occurring data and discover the actual contextual factors that affect the projection behaviour of triggers and cause this variability. Although such studies are less controlled, more examples will be available which can help us grasp a better understanding of the source of variability. Subsequently, we will be able to use the acquired knowledge to design more precise experiments.

#### 7. Conclusion

While supporting previous studies, this study presented experimental evidence indicating that variability in the projection behaviour of presupposition triggers is not limited to a selected number of triggers. It might be objected that the observed variability may be due to differences in scenarios since some triggers of the study were only tested once. However, it was argued that it is not possible to put all the influential factors, such as different contexts, into test as it is not precisely known what causes this variability. Furthermore, it was demonstrated that projection variability cannot be explained or predicted by some of the most common classifications of presupposition triggers. One way to overcome this shortcoming is to follow such experiments with a corpus study where more instances of each presupposition trigger can be studied. This would allow a shift in focus to context, which includes a broader range of factors, such as the information status of the presupposed part of the sentence, its surrounding words and expressions and the available background in the text.

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<sup>15</sup> Context in the sense of surrounding words, phrases, structures and even paragraphs.

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## Influential inflection

Testing the role of overt morphology in the distribution of Italian colour adjectives

Tommaso Mattiuzzi, Giacomo Presotto & Viktor Koehlich

This study investigates the behaviour of non-inflecting adjectives in Italian, which differ from regular adjectives in lacking gender and number agreement with the noun. We claim that, keeping the semantic interpretation constant, the ability to inflect determines whether an adjective can appear prenominal, with non-inflecting adjectives confined to the postnominal position. Supporting our claim with quantitative data from a 5-point Likert scale acceptability judgement task, we argue that this pattern escapes principled explanations in prominent theories of adjective ordering (cf. e.g. Cinque 2010) and highlights the role of Concord in licensing structural configurations (Carstens 2019; Norris 2014).

### 1. Introduction

This work provides a systematic investigation of the syntactic behaviour of non-inflecting adjectives in Italian. While adjectives generally agree in Gender and Number with the noun in Italian, there is a restricted set that cannot be inflected. As it turns out, this difference systematically goes together with a second one: non-inflecting adjectives can only appear after the noun even when their semantics is in principle compatible with a prenominal position. Thus, as already noticed by Zamparelli (1993), the adjective *blu* ‘blue’ never inflects and is unacceptable in prenominal position (1), whereas the regularly inflecting *rosso* ‘red.MSG’ is fine in both positions when put in a suitable context (2).<sup>1</sup>

- (1) Guardava sognante la (\***blu**) **distesa** (**blu**) del mare.  
watched.1SG dreaming the.F.SG **blue.∅** **expanse.F.SG** **blue.∅** of.the sea  
‘(S)he looked with dreamy eyes at the red/blue expanse of the sea.’
- (2) Guardava sognante la (**rossa**) **distesa** (**rossa**) del mare.  
watched.1SG dreaming the.F.SG **red.F.SG** **expanse.F.SG** **red.F.SG** of.the sea  
‘(S)he looked with dreamy eyes at the red/blue expanse of the sea.’

What makes the pattern interesting is that the literature on adjectival placement generally focuses on correlations between linear positions and (broadly speaking) semantic properties of adjectives (Cinque 2010; Scontras et al. 2017; Bouchard 1998; Larson 1998; Culbertson et al. 2020; Laenzlinger 2005). Crucially, the contrast between *blu* ‘blue’ and *rosso* ‘red.MSG’ cannot plausibly be connected to a difference in their semantic profile. Our claim is then that the pattern must be understood in terms of the only other difference that is left, namely the ability or inability of the adjectives to agree with the noun.

We systematically investigate the contrast with semantically comparable items like colour adjectives, supplementing Zamparelli’s (1993) initial exemplification with quantitative data. We report an experiment with Italian adult speakers involving an acceptability judgement task and show that the results support the introspective judgements, pointing to the conclusion that when the semantic interpretation is kept constant the ability to inflect by itself determines whether an adjective can appear prenominal.

On the theoretical side, we show that this observation does not find a principled explanation in Cinque’s (2010) seminal approach to the syntax of Italian, and more generally Romance, adjectives. We further argue that our data endorse a direct relationship between the structural architecture of the DP and Concord, whereby Concord features can be capitalised on by the syntactic derivation as a means to license specific structural configurations. Accordingly, evidence is there in favour of models that assign Concord to the syntactic derivation proper (cf. especially the arguments in Carstens 2019), rather than post-syntactic rules as in Norris’s (2014) approach.

The paper is structured as follows. Section 2 outlines general properties of adjectives in Italian and the fairly standard generalisations about the relationship between their linear position and semantic interpretation. In section 3 we provide a qualitative discussion of the behaviour of non-inflecting adjectives. In 3.2, we show that the pattern is independent of other cases of interactions between linear order and morphological richness in Romance known in the literature as ‘Lazy Concord’ (Rasom 2008; Bonet 2013; Bonet et al. 2015). We then review two earlier works discussing non-inflecting adjectives (Zamparelli 1993; Adamson 2019), and argue that the reduction of the pattern to scalarity proposed therein is empirically and conceptually problematic (sec. 3.3). Section 4 describes our experiment and discusses the results. In section 5 we lay out our proposed characterisation of the phenomenon and go over some of its immediate theoretical implications. Section 6 concludes.

## 2. Italian adjectives and their position(s)

It should be emphasised that the class of non-inflecting adjectives in Italian represents the exception rather than the norm. Their interest emerges once their grammatical behaviour is evaluated against the background of canonical properties of Italian adjectives.

In the general case, adjectives in Italian (and in the vast majority of Romance) show agreement in Gender and Number. This holds for both, adnominal uses, in which the adjective picks up the  $\phi$ -features of the noun it modifies (3), and predicative uses, where agreement is controlled by the subject of predication (4).

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<sup>1</sup>Unless noted otherwise, all examples in this section have been produced by the authors, who have native competence of Italian.

- (3) a. Ho comprato un **nuovo abito scuro**.  
 have.1SG bought a **new.M.SG suit.M.SG dark.M.SG**  
 ‘I bought a new dark suit.’
- b. Ho comprato una **nuova giacca scura**.  
 have.1SG bought two **new.F.SG blazer.F.SG dark.F.SG**  
 ‘I bought a new dark blazer.’
- c. Ho comprato due **nuovi abiti scuri**.  
 have.1SG bought two **new.M.PL suit.M.PL dark.M.PL**  
 ‘I bought two new dark suits.’
- d. Ho comprato due **nuove giacche scure**.  
 have.1SG bought two **new.F.PL blazer.F.PL dark.F.PL**  
 ‘I bought two new dark blazers.’
- (4) a. L’ **abito è scuro**.  
 the.M.SG **suit.M.SG is dark.M.SG**
- b. La **giacca è scura**.  
 the.F.SG **blazer.F.SG is dark.F.SG**

The other relevant property of Italian adjectives is that they can in principle occur both before and after the noun. In the general case, one and the same adjective can occur both prenominal and postnominal, with the two positions correlating with differences in its semantic interpretation. Specifically, it is standardly assumed that adjectives in Romance in the prenominal position only receive non-restrictive/individual-level/non-intersective readings, whereas they are also compatible with a restrictive/stage-level/intersective interpretation when following the noun (Cinque 2010 and following literature).

To illustrate the point with a common example, the adjective *invisibile* ‘invisible’ shows a contrast between individual-level and stage-level readings in pre- and postnominal position ((5) and (6), respectively). In (5), the property of being invisible is unambiguously attributed to the stars of Andromeda as an inherent (i.e. individual-level) property.

- (5) Le **invisibili stelle** di Andromeda sono moltissime.  
 the **invisible.PL star.PL** of Andromeda are many  
 ‘The invisible stars of Andromeda are very numerous.’  
 = *the stars of Andromeda, which are all invisible* (adapted from Cinque 2010:7)

On the other hand, when the adjective is postnominal, as in (6), two readings are possible. Namely, on top of the individual-level interpretation (6-a), the adjective can also receive a stage-level reading, whereby invisibility is attributed to the nominal referent(s) (or a subset thereof) as a temporary or accidental property (6-b).

- (6) Le **stelle invisibili** di Andromeda sono moltissime.  
 the **star.PL invisible.PL** of Andromeda are many  
 ‘The invisible stars of Andromeda are very numerous.’ (adapted from Cinque 2010:7)
- a. = *the stars of Andromeda, which are all invisible* OR
- b. = *the stars of Andromeda which are not visible at the moment*

This and similar contrasts are used by Cinque (2010) to connect the different semantic behaviour of pre- and postnominal adjectives to a structural dichotomy, opposing direct-modification to indirect-modification adjectives (cf. Sproat & Shih 1987; Svenonius 1994; Larson 1998; Alexiadou et al. 2008). In a nutshell, direct modification corresponds to non-restrictive/individual-level/non-intersective readings, whereas restrictive/stage-level/intersective interpretations of the adjective involve indirect modification. On the structural side, direct-modification adjectives are interpreted as directly combining with the nominal phrase as attributive modifiers, while indirect-modification adjectives are introduced in the structure as reduced relative clauses. Assuming an anti-symmetric approach to linearisation,<sup>2</sup> correlations between the pre- vs. postnominal position of adjectives and the semantic reading they can receive (in Italian/Romance and across languages) can then be reduced to how these two different structural positions are related to linear order.

In section 5, we return to this structural interpretation in greater detail. For the moment, we underline that from this perspective, the linear position of an adjective is a function of its semantics and its structural position. Thus, indirect-modification adjectives are always postnominal in Italian, and the corresponding restrictive/stage-level/intersective interpretations are only available to postnominal adjectives. On the other hand, direct-modification adjectives can be linearised both before and after the noun, with the consequence that a non-restrictive/individual-level/non-intersective reading is in principle available for adjectives both preceding and following the noun. Cinque's descriptive generalisation about Italian adjectives can then be summarised as in (7) below (cf. especially Cinque 2010:17).<sup>3</sup>

(7)	<b>direct-mod. Adj</b>	...	<b>Noun</b>	...	<b>direct-mod. Adj</b>	...	<b>indirect-mod. Adj</b>
	• individual-level				• individual-level		• stage-level
	• non-restrictive				• non-restrictive		• restrictive
	• non-intersective				• non-intersective		• intersective

### 3. The syntax of non-inflecting adjectives

#### 3.1. The basic contrast

In light of the above generalisations, what should be emphasised is that purely morphological properties of the adjective, whether or not it shows overt concord, are not expected to affect its linear placement. From this perspective, then, the behaviour of Italian non-inflecting adjectives is unexpected. To see why, let us compare two adjectives of the same semantic class, namely colour modifiers, such as *rosso* 'red' and *blu* 'blue'.

(8)	la	(rossa)	distesa	(rossa)	del	mare
	the	red.F.SG	expansion.F.SG	red.F.SG	of.the	sea
		'the red expansion of the sea'				

<sup>2</sup> Following Kayne's (1994) Linear Correspondence Axiom (LCA), structural relations of asymmetric c-command relations among structural categories dictate their linear order, so that any syntactic structure has only one possible corresponding order.

<sup>3</sup> The list of possible readings reported is by no means exhaustive. The crucial point, however, is that the generalisation states that there are two disjoint sets of possible semantic interpretations, and that these can be mapped onto separate structural positions.

- (9) la (**\*blu**) **distesa** (**blu**) del mare  
 the **\*blue.∅** **expanse.F.SG** **blue.∅** of.the sea  
 ‘the blue expanse of the sea’

In these sentences, a non-restrictive interpretation of the adjective is involved: the red/blue colour is attributed to the whole of the (visible portion) of the sea. Thus, direct modification is involved. In keeping with the generalisation sketched above, the adjective is expected to be possible both before and after the noun.<sup>4</sup> Indeed, this is what (8) shows for the regularly inflecting adjective *rossa* ‘red.F.SG’. On the other hand, intuitive judgements indicate that one of the two options is not available when the noun is modified by the non-inflecting adjective *blu* ‘blue.∅’: the latter is degraded in prenominal position, while being perfectly acceptable after the noun (9).

### 3.2. Other interactions of concord and linear order in Romance

The difference in linear placement between inflecting and non-inflecting adjectives is reminiscent of patterns of so-called ‘Lazy Concord’ attested in Romance varieties (Rasom 2008; Bonet 2013; Bonet et al. 2015; Nevins 2011), where adjectival (Concord) morphology shows an alternation between the prenominal and the postnominal position. In languages such as Fassan Ladin (10) or North Eastern Central varieties of Catalan (11), adjectives display defective concord morphology in prenominal position, with no overt realisation of Number agreement. On the other hand, the same adjectives regularly show full agreement when following the noun. In particular, this only happens with specific feature bundles. Thus, Ladin varieties show the alternation when adjectives modify plural feminine nouns, while the Catalan pattern involves plural masculine nouns. In both cases, adjectives in prenominal position have the form corresponding to the singular counterpart (feminine and masculine singular, respectively, cf. a. examples).

- (10) a. la **picola** **cèses**  
 the.F.SG small.F.SG house.F.PL  
 b. la **cèses** **picoles**  
 the.F.SG house.F.PL small.F.PL  
 ‘the small houses’

(Fassan Ladin; Rasom 2008:24)

- (11) a. molt poc bon professionals  
 very.∅ few.∅ good.∅ professional.M.PL  
 ‘very few good professionals’  
 b. molt poc professionals bons presents  
 very.∅ few.∅ professional.M.PL good.M.PL present.M.PL  
 ‘very few present good professionals’

(North Eastern Central Catalan; Bonet et al. 2015:10-11)

The literature cited discusses these patterns as a probe into the syntactic status of pre- and postnominal adjectives, focusing on the mechanism(s) responsible for Concord (Bonet et al.

<sup>4</sup> While the intended meaning is available in both positions, the two are not entirely equivalent. A prenominal use of colour adjectives like *rosso* ‘red’ is stylistically marked, and more natural in formal or literary registers. We return to the stylistic markedness of colour adjectives in prenominal position in section 4.

2015) and the structural make-up of the DP (especially in light of Cinque's approach to direct and indirect modification, cf. section 2; Rasom 2008; Nevins 2011). Leaving these issues aside, what needs to be underlined, is that such alternations are fundamentally different from the one observed for inflecting vs. non-inflecting adjectives in (1) and (2) above.

First, Lazy Concord applies to adjectives that are capable of showing regular inflection in themselves. One and the same adjective only displays Gender agreement in prenominal position, and agrees for both Gender and Number in postnominal position. A non-inflecting adjective like *blu* 'blue', instead, never shows any form of agreement, regardless of its syntactic position. Second, Lazy Concord involves all agreeing DP-internal categories preceding the noun, including determiners. On the other hand, the incompatibility between non-inflecting elements and the prenominal position discussed in this study only involves adjectives appearing before the noun. Other prenominal items such as (cardinal) numerals,<sup>5</sup> for instance, do not agree with the noun in Italian. Third, and most importantly, Lazy Concord suggests that the prenominal position might impose lighter constraints on Concord morphology in Romance with respect to the postnominal one. The incompatibility between non-inflecting adjectives and the prenominal position, instead, suggests exactly the opposite: the postnominal region tolerates the presence of elements that do not agree with the noun, while the prenominal one does not.

We return to these differences in section 5. For the moment, we only stress that the two patterns are fundamentally distinct, and that the behaviour of non-inflecting adjectives in Italian cannot possibly be reduced to an instance of Lazy Concord. More in general, any generalisation on Concord and DP-structures in Romance building on the Lazy Concord facts should also take into account this second, lesser known pattern.

### 3.3. Previous accounts: non-inflecting adjectives and scalarity

The difference in linear distribution between inflecting and non-inflecting adjectives in Italian is not routinely discussed in the literature on adjective placement, but has nonetheless been noticed before. Specifically, Zamparelli (1993:156-157) addresses the case of 'defective' (in present terms, 'non-inflecting') adjectives, among which colour adjectives as those discussed above. He reports the same contrast, whereby inflecting adjectives can occur both before and after the noun, while non-inflecting ones can only follow the noun. The only other mention of this pattern we are aware of is in Adamson (2019:121-131), who further expands on Zamparelli's description by reporting additional examples evaluated by Italian consultants.

Interestingly, however, both authors converge in not directly connecting the contrasts between inflecting and non-inflecting adjectives in prenominal position to the presence or absence of inflection on the adjective *per se*. In both cases, the difference in the possible linear placement is analysed in structural terms, and connected to how scalarity is represented in the extended adjectival projection. In this subsection, we put this characterisation of the phenomenon into question. We argue that the empirical arguments proposed to substantiate the claim that the pattern is ultimately connected to scalarity are not conclusive.

In Zamparelli (1993), the underlying assumption is that qualitative adjectives can occur as prenominal 'appositive' (in present terms, 'direct-modification') modifiers only if they are semantically scalar and have a Deg(ree)P in their extended projection. The reason is that in Zam-

<sup>5</sup> Cf. e.g. *i due specchi* 'the.MPL two.Ø mirror.MPL' / *le due macchine* 'the.FPL two.Ø car.FPL'. The only exception is the number one: *uno specchio* 'a.MSG mirror.MSG' / *una macchina* 'a.FSG car.FSG'.

parelli's system the appositive use is always derived by semantically-related movement: the Deg head introduces an amount variable, and the adjectival projection can move to a higher, prenominal position to escape 'binding' in the local domain of the noun. In a nutshell, since the interpretation of prenominal appositive adjectives hinges on this raising movement, appositives require the presence of Deg in the adjectival structure.

What is relevant here is that the reported impossibility of a non-inflecting adjective *blu* 'blue' is interpreted by stipulating that its structure lacks the relevant DegP projection, which is instead present in the extended projection of the regularly inflecting *rosso* 'red'. Note, however, that there is no intrinsic difference in the type of property the two types of colour adjectives attribute to the nominal referent. To the extent that 'red' is a scalar/gradable property, so is 'blue', as shown by the fact that they can both be combined with degree modifiers (12) and form comparatives (13).

- (12) a. Questo tipo di arancia ha un succo **molto rosso**.  
 this type of orange has a juice.M.SG **much red.M.SG**  
 'This type of oranges have a bright red juice.'
- b. Quest' isola ha un mare **molto blu**.  
 this island has a sea.M.SG **much blue.∅**  
 'This island has an intensely blue sea.'
- (13) a. Questi papaveri sono **più rossi**.  
 this.M.PL poppy.M.PL be.3PL **more red.M.PL**  
 'These poppies are redder.'
- b. Le città meno inquinate hanno un cielo **più blu**.  
 the cities less polluted have a sky.M.SG **more blue.∅**  
 'Less polluted cities have a bluer sky.'

The only independent piece of evidence discussed in Zamparelli (1993) for a different structural encoding of scalarity in the adjective pairs *rosso* 'red' and *blu* 'blue' concerns the availability of the superlative suffix *-issim-*. According to his judgment, regularly inflecting adjectives can combine with the suffix (*ross-issim-o* 'very red'), while this is not possible for non-inflecting adjectives (*\*blu-issim-o* 'very blue'). On the assumption that the availability of the suffixed form of the adjective diagnoses a Deg head in its structure, this is argued to confirm the proposed structural difference between inflecting and non-inflecting adjectives.

We contend that the facts are less straightforward, and overall do not support the analysis in terms of scalarity sketched above. First, our intuition of native speakers is that, although marked, the allegedly degraded superlative form of *blu* 'blue' is indeed acceptable in colloquial registers (14-b).

- (14) a. I petali di questo fiore sono **ross-issim-i**.  
 the.M.PL petal.M.PL of this flower are **red-EL-M.PL**  
 'This flower's petals are bright red.'
- b. L' acqua del golfo è % **blu-issim-a**.  
 the.F.SG water.F.SG of.the gulf is % **blue-EL-F.SG**  
 'The water is intensely blue in the gulf.'

Needless to say, systematic investigation is needed to get a firmer hold of the facts. For now, we simply point out that the difference is not clear-cut enough to represent conclusive evidence.

More importantly, the contrast does not seem to hold for all non-inflecting adjectives, as Zamparelli's argument would require. This is shown below for another pair of adjectives with comparable semantics, namely the regularly inflecting *pacchiano* 'gaudy, tacky' and the non-inflecting *kitsch*. As shown in (15), the two replicate the fundamental contrast shown above: the inflecting adjective can occur both before and after the noun, while the non-inflecting one can only be postnominal.

- (15) a. Indossava una **(pacchiana) imitazione (pacchiana)** di un famoso orologio.  
wore.3SG a.F.SG **gawdy.F.SG copy.F.SG gawdy.F.SG** of a famous watch  
'(S)he wore a gawdy knock-off of a famous watch.'
- b. Avevano una **(\*kitsch) imitazione kitsch** di una poltrona impero.  
had.3PL a.F.SG **\*kitsch.∅ copy.F.SG kitsch.∅** of a armchair empire  
'They had a kitsch imitation of an empire-style armchair.'

However, there is no clear contrast with respect to the availability of the superlative suffix, as the combination of the non-inflecting *kitsch* still sounds perfectly acceptable in a sentence like the corpus example in (16).

- (16) a. Per l' occasione compaiono quattro statue **pacchian-issim-e**.  
for the occasion appear.3PL four statue.F.PL **gawdy-EL-F.PL**  
'Four very gawdy statues appear for the occasion.'  
(itTenTen20 #11326786500)<sup>6</sup>
- b. A Gallup ceniamo in un hotel **kitsch-issim-o** ...  
at Gallup eat.1PL in a.M.SG hotel.M.SG **kitsch-EL-M.SG**  
'In Gallup we have dinner in a very kitsch hotel.'  
(itTenTen20 #9240149429)

This suggests that the possibly degraded status of certain adjectives with the superlative suffix is independent from inflectionlessness in itself, or any 'deep' structural property, and so Zamparelli's argument loses force. Crucially, since there are non-inflecting adjectives (like *kitsch*) that cannot occur in front of the noun and are nonetheless compatible with the *-issim-* suffix, the latter test cannot be reliably used to link the incompatibility of these adjectives in prenominal position to scalarity.

The idea that the behaviour of non-inflecting adjectives is connected to scalarity rather than to the lack of inflection *per se* has been more recently defended by Adamson (2019). To iterate, the claim is not that non-inflecting adjectives are not scalar, as this is demonstrably false (cf. (12) above). Rather, the stipulation is made that, despite being semantically gradable, non-inflecting adjectives lack a Deg component in their structure, and that this structural difference is ultimately responsible for the impossibility to use them in prenominal position. This then leads to the expectation that when a non-inflecting adjective is combined with another element contributing the missing Deg, this should enable the adjectival phrase to occur in prenominal position. Indeed, this is partially borne out. Based on judgments from Italian consultants, Adamson reports that when the adjective combines with certain Degree modifiers the prenominal position becomes available even in cases where the adjective does not agree with the noun.

<sup>6</sup> The itTenTen20 web corpus is accessible via Sketch Engine, cf. Jakubíček et al. (2013). Examples are identified by their token number.



### 3.4. Summary

To summarise, introspective judgements point to a systematic contrast in the syntax of Italian adjectives: regularly inflecting adjectives can appear both before and after the noun, while exceptional, non-inflecting ones can only follow the noun.

The contrast was first unearthed by Zamparelli (1993) and later discussed by Adamson (2019), but has otherwise remained rather peripheral in the literature on adjective ordering. In both analyses, the pattern is connected to how scalarity is represented in the structural make-up of the two types of adjectives. Assuming that adjectival phrases must contain a projection related to scalarity (*viz.* Deg) to appear before the noun, the incompatibility of an adjective with the prenominal position can be reduced to the lack of Deg in its structure. However, non-inflecting adjectives reviewed here (e.g. *blu* ‘blue’) are as gradable as their inflecting counterparts (e.g. *rosso* ‘red.MSG’), so the fact that the latter have the required Deg and the former lack it must be stipulated. In the above discussion, we reviewed two empirical arguments advanced in favour of this claim, showing that they build on unsystematic properties of the relevant adjectives and run into systematic exceptions. We conclude that the purported evidence in favour of the connection with scalarity is not decisive.

Our proposal is to hold on to a simpler characterisation of the alternation: regularly inflecting adjectives can occur both before and after the noun, while non-inflecting ones can only follow the noun. From this perspective, any further investigation of the contrast should then start by addressing the only other property systematically distinguishing between adjectives of the type *rosso* ‘red.MSG’ and those of the type *blu* ‘blue.∅’, namely the fact that the former overtly agree with the noun, while the latter do not. The fundamental question then is: what is the role of the presence or lack of agreement in dictating the linear placement of adjectives?

The empirical contribution of this work is to provide a first quantitative investigation of this question, looking for additional evidence for the contrasts between inflecting and non-inflecting adjectives. As seen, the literature on the phenomenon is rather sparse, and the data exclusively come from introspective judgements, despite the contrasts sometimes being rather subtle. Our study represents a step towards a more systematic investigation of the behaviour of non-inflecting adjectives.

## 4. Our study

As mentioned in the previous section, one of the goals of our study is to provide quantitative evidence in support of the observed contrasts between inflecting and non-inflecting adjectives. To this end, we ran an experiment with native speakers of Italian to appreciate whether and to what extent their judgements match our introspective intuitions. Before detailing our methods, however, we want to clarify why we opted to incorporate experimental data in the first place. A first reason is that some of the relevant contrasts presented in the literature on this topic do not seem to always build upon unassailable evidence. We have already discussed how the subtleties underlying examples such as (14) or (17) can hardly constitute material on which to mould a conclusive take on the matter. By collecting other native speakers’ opinion in a controlled paradigm, instead, we can avoid the risk of relying too much on potentially questionable examples. Related to that, a growing body of research has been showing that introspective judgements and experimental data do not necessarily correspond, notably even in cases of well-known ex-

amples that, prior to experimental evaluation, had been regarded as solid linguistic facts (Gibson & Fedorenko 2010). Although we are aware that a debate is open about the actual necessity to invariably resort to quantitative means to gauge linguistic well-formedness,<sup>9</sup> we still believe that this is worth it in our specific case. If anything, to ward off potential criticisms like the ones that caught our eye in previous work on the topic.

In what follows, we present our methodology.

#### 4.1. Materials and design

Stimuli were 12 sentences arranged in a 2x2 design with type of adjective (inflecting, non-inflecting) and linear order (prenominal, postnominal) as independent factors. All experimental items were introduced by a context sentence, as the one in (19) below.

(19) CONTEXT:

Le Dolomiti sono formate da un particolare tipo di pietra che le rende uniche al mondo.

‘Dolomites are made of a peculiar type of stone, which makes them unique.’

TARGET ITEM:

La roccia di queste montagne cattura **i riflessi rossi** del tramonto.

‘The stone of these mountains catches **the red glints** of sunset.’

This way, we made sure to provide a linguistic context that could accommodate a direct-modification reading of the adjective, which is compatible with both post- and prenominal position. As discussed in section 2, indeed, prenominal adjectives are only grammatical when interpreted as direct/individual-level modifiers. Not only do the context sentences serve the purpose of making such an interpretation available, but also introduce a register that is compatible with the very use of prenominal adjectives. These, again, can sound very odd and unnatural in everyday speech (cf. fn. 4). To achieve a suitable diastatic and diaphasic variety, we ensured context sentences conform to the standard Italian typical of, for instance, documentaries, written texts, or the cultural broadcasts on radio/television.<sup>10</sup> Sentences like that in (19) were integrated with 12 fillers and arranged in two lists, which were tested with two different groups of participants. Fillers were of two types: 6 perfectly grammatical sentences, and 6 ungrammatical sentences. The experiment was built with the PcIbex software (Zehr & Schwarz 2018) and consisted of a 5-point Likert scale acceptability-judgement-task.

#### 4.2. Participants and procedure

Participants were recruited via Prolific, an online platform that allows to reach its members based on a number of demographic filters. For our study, we only considered adult native speakers of Italian with no reported history of language-related disorders. In total, 48 participants with a mean age of 31 ( $SD = 12.31$ ) took part in the study. Each of them was paid 3 £ for participation. 13 participants were eventually excluded as they did not pay enough attention to the task

<sup>9</sup> See Phillips (2009); Sprouse & Almeida (2012); Featherston (2009) for a discussion.

<sup>10</sup> Note, however, that albeit inevitably rather learned, this register is positively accessible to the vast majority of Italian speakers.

or used the scale inaccurately. The filtering criterion was based on participants' ratings of filler sentences: if the difference between the mean ratings of grammatical fillers and ungrammatical fillers was not ample enough ( $\leq 1.5$ ), participants were ignored in the analysis.

The experiment would unfold as follows: first, a questionnaire would appear to gather some additional demographics, then participants would read the instructions of the task, where we spelled out that they use the whole scale and rate sentences based on whether they sounded "natural" or "unnatural" in a non-informal context. Specifically, they were asked to give a low rating (1/2) to unnatural sentences and a high rating (4/5) to natural sentences. After a practice session featuring two sentences, the actual test would start.

### 4.3. Results and statistical analysis

Postnominal inflecting adjectives (e.g. *riflessi rossi* 'glint.MPL red.MPL') received a mean rating of 4.47 ( $SD = 0.82$ ), postnominal non-inflecting adjectives (e.g. *abissi blu* 'abyss.MPL blue') received a mean rating of 4.42 ( $SD = 0.93$ ). In prenominal position, the mean ratings were, respectively, 4.19 ( $SD = 1.02$ ) for inflecting adjectives (e.g. *rossi riflessi* 'red.MPL glint.MPL'), and 3.30 ( $SD = 1.35$ ) for non-inflecting adjectives (e.g. *blu abissi* 'blue abyss.MPL'). See figure 1 for a graphic overview.

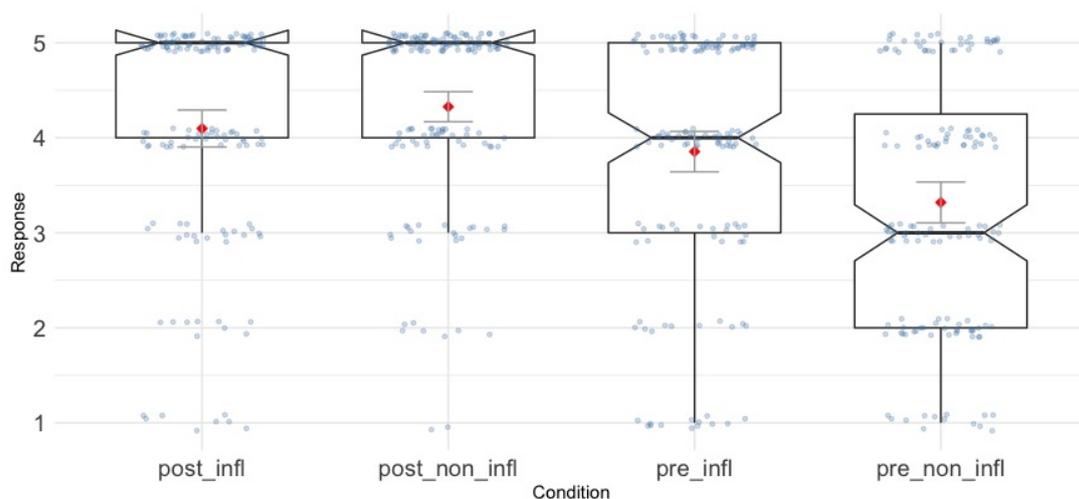


Figure 1. Boxplot representing participants' rating for each condition. The red diamonds show the means. The gray error bars represent the 95%-confidence interval of the means, and the notches the 95%-confidence interval of the medians. Whiskers are Tukey style.

We analysed the results with a linear mixed-effects model with sentence rating as outcome variable and the interaction between position of the adjective (pre- vs postnominal) and morphology of the adjective (inflecting vs non-inflecting) as predictor. Random intercepts were added for participants and items. The model was constructed in R (R Core Team 2015) using lme4 package (Bates et al. 2019) and lmerTest (Kuznetsova et al. 2019) to get p-values. The results reveal a significant lower order effect of Position ( $p < 0.05$ ), indicating that participants' mean ratings were lower when adjectives occurred in prenominal position than in postnominal position, and a strongly significant interaction of position and morphology ( $p < 0.001$ ). Table 1 and table 2 summarise the results of the full model.

Fixed Effects	Estimate	Std. Error	t value	p
(Intercept)	4.46591	0.13482	33.126	< 0.001 ***
Position (prenominal)	-0.27469	0.13390	-2.051	< 0.05 *
Morphology (non-infl)	-0.04522	0.16904	-0.267	0.7917
Position*Morphology	-0.84290	0.18937	-4.451	< 0.001 ***

*Table 1.* Parameters of the linear mixed-effects analysis concerning the Likert scores of inflecting and non-inflecting adjectives in post- and prenominal position (lmer (rating ~ position \* morphology + (1 | participant) + (1 | item) , data = data ))

Group	Name	Standard Deviation
Participant	(Intercept)	0.3689
Item	(Intercept)	0.1787

*Table 2.* Summary of Random Effects in the lmer model

#### 4.4. Discussion

The current study sought to understand the role of morphology in the linear order of adjectives in Italian. As extensively discussed in section 3, we contend that the order Adjective > Noun can only occur when overt concord is realised, a possibility that only arises with adjectives that are capable of displaying inflectional morphology. The findings of our experiment corroborate this generalisation, showing that non-inflecting colour adjectives in prenominal position bring about significantly lower ratings than all the other possible combinations (i.e. pre-/postnominal inflecting adjectives and postnominal non-inflecting adjectives). On the assumption that all colour adjectives are endowed with the same lexical semantic properties, we can reasonably maintain that the relevant property regulating adjective placement in the observed contexts is, once again, the possibility of an adjective to inflect or not.

An additional piece of data emerging from our results is that the prenominal position in general seems to be disfavoured, as prenominal adjectives received lower ratings regardless of their status of inflecting or non-inflecting elements. This does not surprise us. As we mentioned, the prenominal position in Italian is limited to contexts meeting fairly idiosyncratic pragmatic and semantic properties (cf. section 2 and fn. 4). Whilst we did make sure to provide adequate conditions to accommodate such contexts (via context sentences, cf. (19)), it is comprehensible that participants found prenominal adjectives altogether a bit more unnatural than their postnominal counterparts. Still, the effect of position is not quite as significant ( $p < .05$ ) as the interaction of position and morphology ( $p < .001$ ). That is, prenominal non-inflecting adjectives are rated much worse than prenominal inflecting adjectives, confirming that, despite being overall slightly marginal, the prenominal position in Italian is only available to inflecting adjectives.

One last consideration needs to be discussed about the distribution of participants' responses. As suggested by the jittered datapoints in figure 1, there is a non-negligible variation within the ratings of each condition. This is especially evident with prenominal non-inflecting adjectives, where individual ratings are quite spread out along the scale. We can think of two main reasons to interpret such a pattern. First, it is possible that some participants were somewhat unaccustomed to the higher register deployed in the stimuli. If so, they conceivably associated the

unnaturalness of prenominal non-inflecting adjectives to a formal use of Italian they are not familiar with, rather than to their actual ungrammatical status.<sup>11</sup> Second, the very structure of the task could have led to a bias towards higher ratings. It has been shown, in this regard, that even just the modality of presentation of a Likert scale can have an impact on participants' responses (Sprouse & Almeida 2017; Marty et al. 2020). We suspect that presenting the same stimuli in a forced-choice task paradigm could result in a more clear-cut difference between the crucial conditions. If the possibility is given to choose between a prenominal and postnominal non-inflecting adjective in the same sentence, we expect that hardly any participant select the former. Conversely, provided the adequate context is given, the two orders are likely to be virtually interchangeably chosen with inflecting adjectives. We leave these aspects open to future investigation.

### 5. Theoretical consequences

Having discussed our experimental results, let us highlight some issues that arise when our data are brought to bear on theoretical approaches to adjective placement and Concord. The fundamental observation is that Italian non-inflecting adjectives can never be prenominal, unlike their regularly inflecting counterparts. At a descriptive level, our claim is that this points to the role of Concord morphology as a factor that can affect the linear distribution of nominal modifiers (cf. 3.4 above).

In this section, we focus on two main points. First, our generalisation calls for an enrichment of current approaches to adjectival placement that focus on the relationship between the semantic interpretation of modifiers and their structural status. Specifically, we discuss Cinque's (2010; 2023) seminal proposal, showing that the behaviour of non-inflecting adjectives does not find a natural explanation in his system. Second, the impossibility of non-inflecting adjectives in a configuration otherwise available to semantically analogous modifiers points to the role of Concord as a source of structural licensing. The broader consequence we draw is that the pattern represents an empirical argument against post-syntactic theories of Concord (Norris 2014; Adamson 2019), and in favour of analyses where Concord arises in syntax and can interact with purely structural mechanisms, as argued by Carstens (2019).

Taken together, these structural and morpho-syntactic considerations shed new light on the structural make-up of the DP. We claim that they point to stricter, purely morphosyntactic conditions on adjective placement that should be addressed in future theoretical research. Last, we outline the research questions that arise from such a perspective.

#### 5.1. Issues with Cinque's (2010) system

In light of the discussion in section 3 and our experimental results, the contrast between inflecting and non-inflecting adjectives cannot be explained away in terms of semantic differences or a distinct categorial status of the (exceptional) inflectionless elements. Rather, the null hypothesis should be that the possibility or impossibility of agreement with the noun is what determines

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<sup>11</sup> A possible way to avoid this effect could be to test the same conditions without context sentences and making use of simpler, every-day Italian. Although this could potentially bring about lower ratings with grammatical prenominal inflecting adjectives.

the different distributions observed in minimal pairs such as *rosso* ‘red.MSG’ to *blu* ‘blue.Ø’, or *pacchiano* ‘gawdy.MSG’ to *kitsch* ‘kitsch.Ø’.<sup>12</sup> Now, our claim is that this interaction is not straightforwardly captured in a benchmark analysis of Romance DPs, namely Cinque’s (2010; 2023).

To see why, let us go back to Cinque’s (2010) generalisation on direct- and indirect-modification adjectives in Italian (cf. section 2 and the representation in (7)). The relevant point for our purposes is that the prenominal position in Italian is claimed to be only compatible with direct-modification adjectives, while the postnominal position is open to both, direct and indirect modification. As a consequence, direct-modification adjectives can, in principle, occur both before and after the noun. As discussed in Cinque (2010:71-72), though, this double possibility is not necessarily observed with all direct-modification adjectives. Classes like relational or ethnic adjectives, for instance, are only compatible with the postnominal position. Crucially, the class used in our experiment, namely colour adjectives, allows for both options. This allows us to exclude any semantic source for the differences in linear distribution observed for inflecting and non-inflecting adjectives. A colour adjective under a direct-modification reading is predicted to be able to surface both before and after the noun, and any difference in the availability of one of these options between adjectives of this same class cannot be attributed to any independently motivated semantic distinction.

Now, consider again the behaviour of a regularly inflecting adjective such as *rosso* ‘red.MSG’. In a context that favours a direct-modification reading, the adjective can occur both before and after the noun under one and the same interpretation, as shown in (20).

- (20) La roccia di queste montagne cattura i (rossi) riflessi (rossi)  
 the stone of these mountains captures the.M.PL red.M.PL reflex.M.PL red.M.PL  
 del tramonto.  
 of.the sunset  
 ‘The stone of these mountains catches the red glints of sunset.’

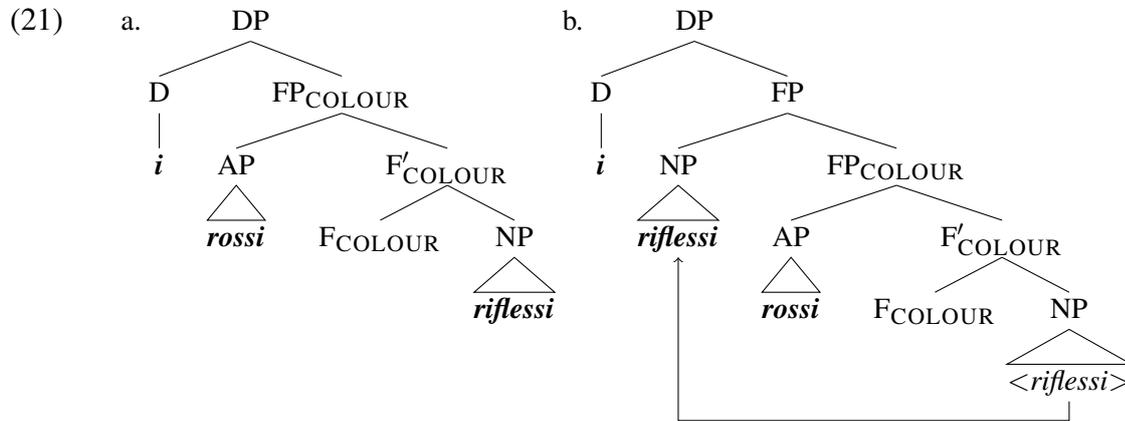
How is this modelled in terms of Cinque’s analysis? In a nutshell, the approach has two fundamental components. The first is an anti-symmetric<sup>13</sup> account of the linear position of modifiers, which is reduced to different types of roll-up movement of a constituent containing the nominal head (cf. Cinque 2005 and fn. 2). The second is that direct- and indirect-modification adjectives have a different structural status (cf. section 2). The latter are introduced higher in the nominal structure as reduced relative clauses. On the other hand, direct-modification adjectives are analysed as Specifiers of dedicated functional projections arranged in a hierarchy and dominating the lower nominal constituent (for simplicity, NP). In this system, the adjective *rossi* ‘red.MPL’ in (20) involves the projection F<sub>COLOUR</sub>.

The fundamental consequence is that direct-modification adjectives sit in the same structural position regardless of their surface position. What is ultimately responsible for the pre- or post-

<sup>12</sup> To be clear, we obviously do not deny the role of other factors in determining adjectival placement, like the semantic nature of the modificational relation involved, or the presence of adjectival complements. In other words, we are not claiming that the property of agreeing with the noun automatically allows any adjective to appear both pre- and postnominally. Rather, we state that the asymmetry between inflecting and non-inflecting adjectives only emerges once all other sources of ordering restrictions are factored out (cf. section 4).

<sup>13</sup> Cf. fn. 2. The fundamental claim is that the linear arrangement of lexical items can be read off the structural representation of the sentence/the DP, and that this allows capturing the restrictions on possible and impossible orders in terms of possible and impossible movement operations; cf. Cinque (2005) and much subsequent literature.

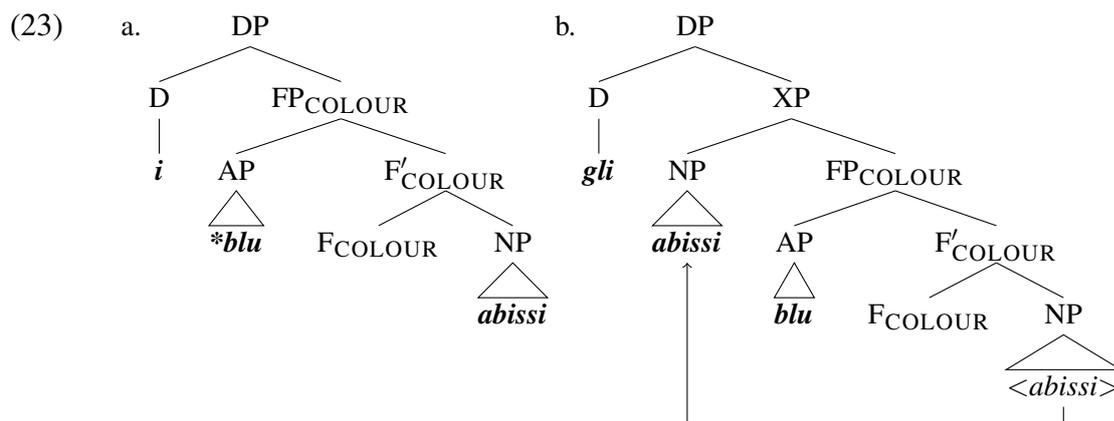
nominal position of the adjective is whether the nominal phrase rolls up across it or not. Thus, the prenominal structure is represented as below on the left.<sup>14</sup> On the other hand, *riflessi rossi* ‘glint.MPL red.MPL’ is obtained with a roll-up movement of (a constituent containing) the noun to a higher functional position, here simply labelled FP.



Consider now the behaviour of non-inflecting colour adjectives, as discussed throughout the paper and exemplified by (22) below.

- (22) Poche spedizioni hanno esplorato i (\***blu**) **abissi** (**blu**) dell'  
 few expeditions have.3PL explored the.M.PL \***blue**.∅ **abyss**.M.PL **blue**.∅ of.the  
 Oceano pacifico.  
 Ocean Pacific  
 ‘Few expeditions have explored the blue abysses of the Pacific Ocean.’

By present assumptions, the direct-modification adjective is again a Specifier of F<sub>COLOUR</sub>. In this case, however, the prenominal position is unacceptable. Under Cinque’s (2010) analysis, this must mean that of the two possible structures above, only the one on the right is available, while the left one is ruled-out for some reason, as shown in (23).



In sum, there is no independent semantic reason to assign a different structural position to *rossi* ‘red.MPL’ and *blu* ‘blue.∅’. At the same time, the pre- or postnominal position of the adjective

<sup>14</sup> The representations are simplified for the sake of clarity. We abstract away from the presence of other projections in the DP and from the possibility that head-final orders too involve (a different type of) movement, as discussed in Cinque (2017, 2023).

is only regulated by movement operations involving the noun. The issue, then, is the following: to capture the behaviour of a non-inflecting adjective like *blu*, one has to posit that the lack of inflection on the adjective somehow makes it necessary for the noun to move. Still, nothing in this system predicts such a restriction. There are, of course, technical means to implement such a derivation, but the restriction that they be employed with, say, *blu* ‘blue’ but not with *rosso* ‘red.MSG’ has no independent motivation. In the next paragraph we briefly go over the crucial aspects of such a derivation and, we hope, clarify why that is not the most desirable/compelling solution to the issue.

### 5.1.1. Pied piping features

In recent work, Cinque (2017; 2023) introduces the concept of pied piping features in order to account for seemingly idiosyncratic restrictions to certain movement operations. These features, according to the author, can be bestowed onto both modifiers and modiftees (i.e. the noun). This system can, for instance, capture why in Italian (and potentially Romance in general) the subclass of nationality (ethnic) adjectives must be postnominal.<sup>15</sup> Consider the following:

- (24) a. l’ invasione romana  
the invasion Roman  
b. \*la romana invasione  
the Roman invasion  
‘the Roman invasion’

(Italian; Cinque 2023:88)

In Cinque’s approach, this case is analysed by postulating that modifiers of the type *romana* ‘Roman’ have a [+ pied piping feature],<sup>16</sup> which causes the NP to obligatorily move around them in Italian. In principle, this can be also applied to the case of non-inflecting adjectives at issue. One would have to posit that the latter be endowed with the same [+ pied piping] feature, forcing the NP to move around them. However, we can see no apparent independent motivation for this analysis. That is, the fact that non-inflecting adjectives bear a [+ pied piping feature] and inflecting adjectives do not likely needs to be merely stipulated. Even assuming pied piping features exist, the question remains as to why such features are assigned and, crucially, to which modifiers. Take the case of *blu* ‘blue’. What essentially differentiates it from *rosso* ‘red’ is the fact that it does not inflect. This would suggest that morphological properties somehow correlate with the assignment of syntactic features. Yet, again, it is not clear why this correlation should hold. Besides, what is the relationship between *blu* ‘blue’ and *romana* ‘Roman’? Even if morphology were to cause a postnominal position for Italian adjectives, what is the reason why nationality (and relational) adjectives also obligatorily appear postnominally? Arguably, this would mean that the mechanisms regulating the absence/presence of pied piping features are sensitive to properties ranging from morphology to semantics, and that these properties are cherry-picked in a substantially unpredictable way. Of course, this would also raise the question as to when in the derivation such features are assigned. Are the relevant adjectives bestowed

<sup>15</sup> This extends, in fact, to all relational adjectives, \**chimico processo* vs. *processo chimico* ‘chemical process’, cf. Bortolotto (2016:59).

<sup>16</sup> Specifically, a pied piping feature of the *whose-picture* type, which ensures that they end up in postnominal position. Again, note that we abstract away from the irrelevant case in which these same two adjectives are used as indirect modifiers.

with pied piping features in the syntax? Or are they stored as such in the lexicon, before they enter the derivation?

Ultimately, whilst Cinque's derivational tools would technically provide a way to construe the asymmetry between inflecting and non-inflecting adjectives, we believe that such an account inevitably builds on a series of ad-hoc assumptions.

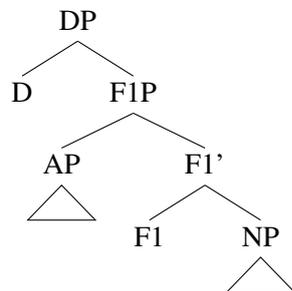
### 5.2. Configurations of Agreement/Concord

Perhaps a less stipulative alternative could be to argue that the link between the absence of inflection on the adjective and the movement options available to the nominal phrase does not have to do with the featural triggers of such movement, but with independent properties of the syntactic configurations that result from moving or not moving. In other words, instead of stipulating a certain distribution of functional features that prevents the degraded outcome from arising in the first place, one might interpret the contrast observed in prenominal position by reducing the impossibility of non-inflecting adjectives to some other independent factor that makes the corresponding structural configuration illicit.

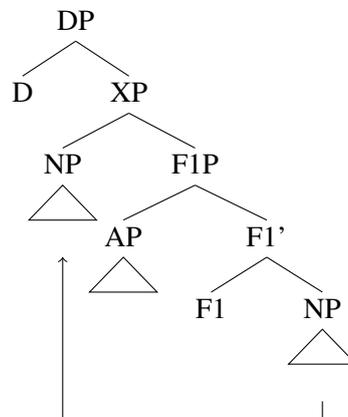
Our intuition is that such a factor is to be looked for in the mechanics of Agreement/Concord and their interaction with the structural make-up of the nominal phrase. Pre-theoretically, what needs to be captured is that the prenominal position of direct-modification adjectives comes with stricter conditions on the satisfaction of agreement, and that the impossibility of non-inflecting adjectives before the noun results from a violation of such conditions.

In keeping with this 'configurational' approach, we propose that the pattern can be made sense of if Concord has a licensing role in the syntactic derivation. Pared to the bone, the idea is that the sharing of features between adjective and noun is necessary to license the structural configuration underlying prenominal adjectives in Italian. As a consequence, direct-modification adjectives that cannot inflect cannot surface in this position, and are only compatible with the different configuration corresponding to the postnominal position. This is represented in (25), which shows that Concord is necessary in Italian in the configuration corresponding to a prenominal adjective (on the left), but optional in the one corresponding to the postnominal order (on the right).

(25) a. NECESSARY CONCORD



b. OPTIONAL CONCORD



Here we capitalise on Cinque's approach as outlined above, whereby the first is the base-generated structure, and the latter involves roll-up movement of the noun. Note, however, that

nothing hinges on this specific structural analysis. Our claim can rather be regarded as a higher-order generalisation: Concord features are required to license the structural configuration underlying prenominal adjectives in Italian, independently of its analysis. We return to this point below.

To clarify the import of our claim, let us highlight two general questions in the literature on Concord (cf. Norris 2017a,b) that are directly relevant to our discussion. The first is whether or not Concord is the result of the same mechanism responsible for agreement phenomena in the clause (chiefly, subject-verb agreement). What is superficially agreement with the noun could result from a regular application of Spec-Head agreement or Agree (cf. a.o. Carstens 2019; Toosarvandani & van Urk 2014; Bonet 2013; Bonet et al. 2015; Cinque 1994; Carstens 2000), or instead from a separate mechanism of Percolation or Feature projection/copying that spreads the nominal  $\phi$ -features across the DP-domain (Bayırlı 2017; Norris 2014). A second related question concerns the timing of Concord, i.e. whether it is part of the narrow-syntactic computation (as an Agree-based approach would entail), or pertains instead to the post-syntactic component (cf. especially Norris 2014; Adamson 2019).

Regarding the first issue, our claim is substantially neutral with respect to what exact mechanism yields Concord. We merely contend that, whatever drives the sharing of features between the noun and the adjective, Concord must be there in the case of a prenominal adjective, but it is not required as a licensing mechanism when adjectives follow the noun.<sup>17</sup>

Note that this is not a given. While our generalisation focuses on the structural differences between two specific configurations, one could alternatively argue that the pattern reflects restrictions imposed by the sheer mechanics of Agreement/Concord in themselves. In the next lines we elaborate on why we exclude this second option.

A crucial point is that the non-inflecting adjectives involved in the pattern (e.g. *blu* ‘blue’) never inflect, regardless of their position. As such, they are expected to be inert with respect to the mechanism responsible for agreement. Since it is an inherent property of these adjectives not to inflect, it is unclear why they should pose a problem for the feature-sharing mechanism, and why only when they are prenominal. Rather, it seems more correct to focus on the morphosyntactic requirements imposed by the configuration involving a prenominal adjective, which are violated when this position is occupied by a non-inflecting item.

From this perspective, it is interesting to compare our characterisation of the phenomenon with a generalisation proposed by Guasti & Rizzi (2002) (also cf. Guasti et al. 2012) in the domain of verbal agreement, which correlates the relative position of the subject and the verb and the presence or absence of  $\phi$ -agreement. In brief, they observe several cases in which languages that normally have subject agreement tolerate unmarked or default non-agreeing forms of the verb when the latter sits in a position from which it c-commands the subject (26-a).<sup>18</sup>

- (26) a. Trois filles **sont** arrivées.  
           three girls **be.3PL** arrived

<sup>17</sup> That is, Concord is still necessary for regularly inflecting adjectives in postnominal position, but lack of agreement with the noun (as in the case of non-inflecting adjectives) does not yield any violation (we thank an anonymous reviewer for their help in clarifying this point).

<sup>18</sup> This in turn could result from the verb moving higher, as in Aux-inversion, or the subject remaining in a low position, as in French and several Italo-Romance varieties, cf. e.g. (Guasti & Rizzi 2002:176 and ff.). The same contrast is attested across Romance with past participle agreement with the object, whereby the two only show agreement when the object precedes the participial form (Poletto 2006).

- b. Il **est** arrivé trois filles.  
EXPL **be.3SG** arrived three girls  
'Three girls arrived.'

(French; Guasti & Rizzi 2002:176)

Now, it might be tempting to analyse our pattern in terms of the same mechanism responsible for subject-verb agreement. One could then propose that what the two cases in the nominal and the verbal domain show is that such a mechanism enforces 'full' agreement in one configuration and tolerates partial/'defective' agreement in the other. If so, the prediction would be that the same relative configurations of agreement Controllers and Targets<sup>19</sup> produce the same patterns of full/necessary vs. reduced/optional agreement. However, this turns out to be incorrect, as the two patterns amount to the two opposite configurations. When the Target precedes/c-commands the Controller, subject-verb agreement is obligatory (27-a), and noun-adjective agreement is optional (27-b).

- (27) a. *trois filles sont* ... → Controller **Target** → Agreement is necessary  
b. *abissi blu* → Controller **Target** → Agreement is optional

When the Target follows the Controller, instead, the verb can fail to show agreement with the subject (28-a), and the noun must agree with the adjective (28-b).

- (28) a. **est** ... *trois filles* → **Target** Controller → Agreement is optional  
b. **\*blu** *abissi* → **Target** Controller → Agreement is necessary

Thus, one and the same precedence or c-command relation between Target and Controller yields opposite outcomes in the two cases.<sup>20</sup> This points again to the conclusion that the incompatibility of non-inflecting adjectives with the prenominal position is not directly tied to inherent properties of the mechanism underlying Concord. What enforces agreement in this position is rather an independent requirement of structural licensing that the presence of Concord features on the adjective can satisfy.

Note that this conclusion has an import on the second of the fundamental issues introduced above, namely whether Concord happens in syntax or is the result of a post-syntactic operation. If the claim that the behaviour of non-inflecting adjectives is ultimately reducible to the licensing role of agreement is on the right track, this entails a perspective in which the mechanism that yields Concord is capable of interacting with other components of narrow syntax. As also stressed by Adamson (2019), if the lack of inflection in itself makes prenominal non-inflectional adjectives incompatible with a specific structural configuration, it follows that this property is already visible to syntax.<sup>21</sup> To the extent that any attempt to reduce the pattern to factors not related to inflection proved inadequate, the phenomenon can be argued to represent evidence against post-syntactic approaches to Concord (cf. Norris 2014). In other words, our data support the claim that the presence of inflection on a prenominal adjective is required to license its

<sup>19</sup> We choose the terms 'Controllers' and 'Targets' instead of 'Goals' and 'Probes' to remain neutral with respect to a possible interpretation in terms of Agree.

<sup>20</sup> It is worth mentioning that a parallel to Guasti & Rizzi's (2002) generalisation in the nominal domain can be found in cases of Lazy Concord, where the opposition between full and defective agreement would seem to go in the correct direction (cf. 3.2).

<sup>21</sup> We abstract away from approaches based on 'templatic' requirement of the morpho-phonological component, which, based on current knowledge, would lack any independent motivation.

structural configuration, and that, accordingly, its absence leads to ungrammaticality. If this is the case, then, whether or not an adjective will show inflection must be already determined at the level of the structural representation.<sup>22</sup>

Our characterisation of the phenomenon has further consequences. First of all, what is it about a configuration with a prenominal adjective in Italian that makes it in need of licensing? And why is Concord morphology or the sharing of features in itself capable of providing such licensing? As is clear, many answers are possible. For instance, it could be that direct modification preceding the noun are not in their base position (*contra* Cinque 2010), and are rather derived via movement, plausibly related to their pragmatically ‘marked’ status (cf. 4.1 and fn. 4 above). From this perspective, the sharing of features between the nominal head (or its extended projection) and the adjective are required to license this more elaborate derivation. Note that this also points to a more general correlation between freedom of word order and morphological richness, which has been extensively studied both from a diachronic/typological perspective (Hawkins 2004; Leufkens 2015; Pijpops & Zehentner 2022 for an overview), and in terms of computational efficiency (Fedzechkina et al. 2017; Sinnemäki 2010; 2008; Tal & Arnon 2022 a.o.). An alternative approach could be to connect the licensing role of Concord to the labeling algorithm first discussed in Chomsky (2013; 2015), along the lines of the proposal discussed by Carstens (2019). In a nutshell, shared features between the nominal and the adjectival phrases represent a possible rescue for the potentially problematic {XP, YP} configuration,<sup>23</sup> alongside the option represented by rescue movements. From this perspective, one could hypothesise that the obligatory postnominal position of non-inflecting adjectives is tied to the lack of Concord as a possible licensing strategy: this would only leave movement of the np/NP as a rescuing mechanism,<sup>24</sup> capturing a roll-up derivation along the lines discussed in 5.1 above.

Each of these possible developments of the analysis brings up further issues which we leave for future research. An important and far-reaching question is to what extent the ‘problematic’ status of prenominal direct-modifiers observed in Italian can be generalised. While it is obviously not a universal characteristic of nominal phrases, the question is worth investigating for languages that a) have fairly rich Concord morphology and b) show a general preference for the postnominal position, as is the case in Romance. For the moment, a general conclusion to draw is that this and analogous restrictions on word order directly related to morphological properties of the categories involved can shed new light on the derivation and structural articulation of DPs, as well as how these interact with Concord.

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<sup>22</sup> Note that, as emphasised above, this is neutral with respect to the exact mechanism involved. As suggested by an anonymous reviewer, this is still compatible with an approach à la Arregi & Nevins (2012), whereby agreement results from a two-step process establishing a dependency in the syntax, and then copying the relevant features in a postsyntactic component. From this perspective, our claim is that such syntactic components cannot be done away with, and that the asymmetry between inflecting and non-inflecting adjectives in Italian must be already encoded at that level.

<sup>23</sup> As discussed in Chomsky (2013), the problem arises because the symmetry between the two phrases prevents the algorithm from identifying a unique labeler through Minimal Search; also cf. Moro (2000) for a different perspective on the problematic status of such symmetric configurations with respect to the linearisation algorithm.

<sup>24</sup> From this perspective, extraction of the adjectival phrase would eventually fail to yield a converging derivation, as it would restore the same problematic configuration in a higher position.

## 6. Conclusion

This study provided robust evidence for a new generalisation in the domain of adjectival ordering: adjectives that do not inflect in Italian must always follow the noun, even when their semantics is compatible with a prenominal position. While the behaviour of non-inflecting adjectives had been noticed before by Zamparelli (1993) and Adamson (2019), we argued against their proposal of reducing the phenomenon to scalarity. Our experimental results further support this approach, according to which – all else being equal – the ability or inability to inflect determines whether an adjective can appear prenominal.

This observation is problematic for approaches that focus on the semantic aspects of the syntactic distribution of adjectives (like in Cinque 2010), as they fail to capture the role of morphosyntactic factors in determining the possible orders. As a first step to shed light on this second aspect, we propose a structural generalisation: the configuration underlying prenominal adjectives in Italian requires licensing. Concord (*qua* feature-sharing between the noun and the adjective) provides such licensing, and is therefore obligatory in this structural context.

Two main points demand further investigation. First, our experimental results presented quite a high degree of individual variation in the ratings across conditions. Testing the relevant structures with different experimental paradigms can arguably allow a clearer assessment of the contrasts and the independent factors that might influence participants' judgements. Second, our characterisation of the phenomenon opens a new window on the structural status of prenominal adjectives in languages like Italian, in which postnominal modifiers are predominant. We leave the details of this enquiry for future work.

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This paper is the result of our collective work. For the sake of the attribution of individual credits: TM is responsible for sections 2 and 3, GP for section 4, TM, GP, and VK are jointly responsible for sections 1, 5, and 6. All authors revised and approved the manuscript.

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# Non-finite clauses and root modality: evidence from Russian

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This paper reports a case of belief/intent alternation in Russian attitude verb *dumat* ‘think/intend’ and connects Russian data with reported belief/intent alternation found with English verb *persuade*. On a more theoretical side, this paper suggests that contextual allosemy is an appropriate tool for analysing attitude verb alternations. The paper is thus a contribution to the typology of attitude verb alternations and a plea for considering contextual allosemy a viable option for works on attitude predicates. Finally, I suggest that generalizations such as the Implicational Complementation Hierarchy of Wurmbrand & Lohninger (2023) can be used in an explanatory way to rule out possible allosemy rules.

## 1. Introduction

This paper discusses a case of belief-/intent-report alternation with Russian attitude verb *dumat* ‘think/intend’, which is presented in examples in (1) below, which show that the verb *dumat* denotes a belief report when embedding a finite clause (1a) and an intent report when embedding a non-finite clause (1b). The paper discusses this alternation in light of other work on attitude verb alternations in the Neo-Davidsonian approach to attitude semantics, according to which it is the embedded clause that encodes the attitudinal semantics, while the matrix predicate is just a one-place predicate over states (see Kratzer 2006 and all the subsequent work on Neo-Davidsonian approaches to attitude reports).

- (1) Belief-/intent-report alternation with Russian verb *dumat*
- a. Belief report with a finite *čto*-clause  
*Vasja dumaet čto my idem pit’ pivo.*  
V. thinks that we go drink beer  
‘Vasja thinks that we are going to drink beer.’

- b. Intent report with a non-finite clause  
*Vasja dumaet vypit' piva.*  
 V. thinks drink.INF beer  
 'Vasja intends to drink beer.'

This paper's goals are as follows. First, I show that the *dumat'*+INF construction denotes intention, giving cross-linguistic support to the claim in Grano (2019) that beliefs and intents form a grammatically natural class in exclusion of desire (giving some level of support to the notion of rational attitude state, closed under conjunction and entailment, see Grano (2019) for elaboration). Thus, I argue that *dumat'* in Russian behaves in a similar fashion to English verbs like *persuade*, which alternate between formation of belief and formation of intent, as shown in (2), where the verb *persuade* denotes forming of a belief with a finite embedded clause (2a), and forming of an intent with a non-finite embedded clause (2b).

- (2) Belief/intent alternation with English verb *persuade*
- a. Mary persuaded John that it was raining.
  - b. Mary persuaded John to leave.

Unlike Grano and other contemporary work on attitude predicates (Kratzer 2006; Bogal-Allbritten 2016), however, I wish to suggest that the alternation does not arise in a compositional fashion. As Grano himself writes (Grano 2019:9), it is a hard challenge to give a flexible enough semantics for infinitives, which predicts their occurrence in intent reports, desire reports, and other constructions where non-finite clauses are preferred.

My answer to the challenge is to reject the strictly compositional *desideratum* in the first place. I argue that the most natural understanding of such alternation comes from such notions as coercion (Pustejovsky 1993), co-compositionality (Fodor & Lepore 1998), and contextual allosemy (Marantz 2013) — all of which are ways for two elements to influence each other's interpretation directly and not via the widespread theoretical move of putting almost all the semantic properties of the attitude report into the left periphery of the embedded clause, as it is often done in the literature following the Neo-Davidsonian approach to attitude predicates.

The paper is structured as follows. In section 2, I discuss the two relevant verbs, which undergo a belief/intent alternation (English *persuade* and Russian *dumat'*), and review Grano's own work on the topic and highlight the difficulties which face any linguist that wishes to analyse the discussed alternations compositionally while staying faithful to the observed morphosyntax. In light of these obstacles, section 3 presents an alternative analytical approach, building on contemporary research on 'contextual allosemy', pursued by Distributed Morphology theorists (Marantz 2013; Wood 2015, 2023; Myler 2016). In a way, similar to Wood (2023), I suggest that the contextual allosemy approach presents a reasonable middle alternative to homophony approaches (which fail to account for the observed ambiguity) and strictly compositional approaches (which often end up unfaithful to morphosyntactic facts) in providing a non-compositional way for two syntactic objects to influence each other's interpretation. Finally, I explore some ideas on how to provide analyses based on contextual allosemy with explanatory bite, which they lack by design (see Ramchand (2015) for a critical take on contextual allosemy based on this property), building on recent work on clausal complementation by Wurmbrand & Lohninger (2023).

## 2. Belief/intent-alternations in English and Russian

This section discusses two cases of belief/intent alternation, in English and in Russian. The discussion of English verb *persuade* is drawn from Grano (2019). The discussion of Russian is built upon my own informal elicitation of 5 Russian native speakers, aged 20-30.

2.1. Russian *dumat'*

Firstly, to rule out a homophony approach to the alternation, I provide indirect evidence from the suppletive nominalisation *mysl'* 'thought/intention' (or, alternatively, a semantically related nominal, the point still holds). The core observation is that *mysl'* undergoes the very same alternation as *dumat'*, making the homophony analysis much less attractive.

- (3) The noun *mysl'* shows the same alternation
- a. *U menja est' mysl' čto Vlad idiot.*  
PREP me is thought that Vlad idiot  
'I think that Vlad is an idiot.'
  - b. *U menja est' mysl' vypit' piva.*  
PREP me is thought drink.INF beer  
'I'm thinking about drinking some beer.'  
(='I intend to drink some beer')

The next goal is to pinpoint the semantic properties of the attitude denoted by the *dumat'*+INF construction. Building on Grano (2022), I use the following diagnostics to establish that the verb *dumat'* expresses an intent when combined with an infinitival clause. Firstly, as argued by Grano, intents differ from, say, desires in their realism — the embedded event should be possible in the real world (as conceived by the attitude holder). Thus, it is felicitous to express a desire to be immortal while such an intent is judged infelicitous or even insane, as shown in the pair of sentences in (4).

- (4) Desires and intents differ with respect to realism
- a. ?I intend to be immortal. (Grano 2022:25)
  - b. I want to be immortal.

As shown in the example (5), the Russian verb *dumat'*, when combined with an infinitival clause, behaves as an intent-report with respect to the property of realism. I should note that there seem to be some aspect-related restrictions on this construction (hence, I changed the embedded form *be immortal* to *become immortal*). The precise nature of these restrictions is unclear to me but I do not think that they are of relevance to the problems discussed in this paper.

- (5) ?*Ya dumaju stat' bessmertnym.*  
1SG think.1SG become immortal  
'I intend to become immortal'.

Grano's second diagnostic is the property of consistency. Intentions are consistent in the sense that if *p* is true in all worlds corresponding to the subject's intents (the subject intends *p*) and *q* is

true in all worlds corresponding to the subject's intents as well (the subject intends  $q$ ), then  $p \wedge q$  is true in all worlds corresponding to the subject's intents. Combined with the realism property, the property of consistency implies that intents are infelicitous with mutually incompatible actions. As shown in the example (6), expressing the intention to marry two people at the same time is infelicitous.

(6) ??I intend to marry Alice and I intend to marry Sue. (Grano 2022:25)

As shown in the example (7), the Russian verb *dumat'* when combined with an infinitival clause behaves as an intent-report with respect to the property of consistency.<sup>1</sup>

(7) ?*Ya dumaju ženit'sja na Maše i dumaju ženit'sja na Saše.*  
 1SG think.1SG marry on Masha and think.1SG marry on Sasha  
 'I intend to marry Masha and I intend to marry Sasha.'

Third property of intent reports, as argued by Grano, is monotonicity. If John intends  $p$  and  $p$  implies  $q$ , then John intends  $q$  as well. This property can be identified by infelicity of claiming that John doesn't intend  $p$  but intends  $p \wedge q$  (since  $p$  implies  $p \wedge q$  for all  $p$ 's and  $q$ 's). Crucially, not all attitudes are monotonic. Desires have been famously shown by Heim (1992) to not be monotonic, for example. The difference between intents and desires with respect to monotonicity is given in the pair of sentences in (8).

- (8) Desires and intents differ with respect to monotonicity
- a. #I don't intend to teach, but (since I have to) I intend to teach on Tuesdays and Thursdays.
  - b. I don't want to teach, but (since I have to) I want to teach on Tuesdays and Thursdays.

As shown in the example (9), the Russian verb *dumat'* when combined with an infinitival clause behaves as an intent-report with respect to the property of monotonicity.

(9) #*Ya ne dumaju prepodavat', no (raz nado) ya dumayu prepodavat' po sredam.*  
 1SG NEG think.1SG teach, but since necessary 1SG think teach on  
 Wednesdays  
 'I don't intend to teach, but (since I have to) I intend to teach on Wednesdays.'

To summarise, Grano's diagnostics show that Russian verb *dumat'* expresses an intention report. If one wants to give a general enough lexical semantics for *dumat'* (in the spirit of Bogal-Allbritten 2016), the infinitival clause needs to encode the necessary semantic components of the intention report. The consequences of such *desideratum* have already been explored by Grano (2019) based on the belief/intent alternation found with the English verb *persuade*. Grano's arguments are reviewed in the next subsection.

<sup>1</sup> The judgements here are rather intricate, mainly due to the fact that *dumat'*+INF constructions are interpreted as speaker-directed questions with another prosodic pattern (and optional presence of the interrogative particle =*li*).

## 2.2. English persuade

The basic pattern is shown in the example (10), repeated from the introduction. There are three main questions associated with such alternations: (i) are we dealing with underspecification or polysemy? (ii) why is the belief-forming reading found with finite embedded clause, while the intent-forming reading found with the non-finite embedded clause? (iii) why does the alternation target only beliefs and intents (and not, say, desires)?

- (10) Belief/intent alternation with English verb *persuade*
- a. Mary persuaded John to leave.  $\Rightarrow$  Mary formed an intent in John.
  - b. Mary persuaded John that it was raining.  $\Rightarrow$  Mary formed a belief in John.

The first question is answered by Grano by applying the zeugma test (Zwicky & Sadock 1975) to the alternation (exemplified in (11)), the idea of which is to force the same token to be interpreted as both belief and intent. The idea is that we are dealing with a single underspecified predicate since the verb *persuade* can embed a conjunction of a finite and non-finite embedded clause without the result sounding ‘funny’.

- (11) Zeugma test with *persuade*
- a. I persuaded John that the city is in danger and to evacuate immediately.
  - b. I persuaded John to evacuate immediately and that the safest place to be is by the sea.

A possible point of worry is that Russian *dumat'* does not behave like *persuade* with respect to the zeugma test, possibly suggesting a homophony analysis, against the conclusion we arrived at based on the behaviour of the nominal *mysl'*. Although I basically ignore this in what follows and leave the issue for further exploration, I urge the reader to keep this observation in mind.

- (12) Zeugma test with *dumat'*
- a. ?*Ya dumaju vypit' piva i čto v bare est' mesta.*  
I think drink.INF beer and that in bar are seats  
Int.: ‘I intend to drink beer and think that there are seats at the bar.’
  - b. ?*Ya dumaju čto v bare est' mesta i vypit' piva.*  
I think that in bar are seats and drink.INF beer  
Int.: ‘I intend to drink beer and think that there are seats at the bar.’

It should be noted, however, that the zeugma test is far from perfect and has been criticised in the literature, especially when the lack of zeugma is taken to indicate the lack of ambiguity (Viebahn 2018; Moldovan 2021). Crucially, Viebahn (2018) argues that the zeugma test only identifies homophony and not other types of ambiguity. For example, the so-called ‘logical’ polysemy (which is argued to be ambiguity, see Falkum & Vicente 2015) is in fact identified by the same token being compatible with the word’s different interpretations (e.g., in example 13, the token *the book* is interpreted both as a piece of fiction, to which the predicate *interesting* is applicable, and as a physical object, to which the predicate *heavy* is applicable).

(13) The book is really interesting but is too heavy for me to bring it to vacation.

For the purposes of exposition, however, we shall take Grano's argument as convincing. The second question (the distribution of readings across syntactic structures) is answered by Grano in a way similar to the recent literature on the Neo-Davidsonian approach to attitude reports (Kratzer 2006; Bogal-Allbritten 2016) — the difference lies in the types of modality encoded in finite and non-finite embedded clauses. He argues that the non-finite clauses encode a modal base of preference (goals, desires, intents, etc.), while the finite clauses encode a modal base of information (beliefs, etc.). This semantics ensures that belief readings map onto structures with finite embedded clauses and intent readings map onto structures with non-finite embedded clauses.

(14) Semantics of embedded clauses per Grano (2019)

- a.  $\llbracket \text{PRO to leave} \rrbracket = \lambda e. \forall w \in \text{PREF}(e): \exists e' [\text{leave}(e') \wedge \text{AG}(e') = \text{PRO in } w]$
- b.  $\llbracket \text{that it is raining} \rrbracket = \lambda e. \forall w \in \text{INFO}(e): \exists e': [\text{rain}(e') \text{ in } w]$

The third question is the most interesting one, in my opinion. Should the semantics of non-finite embedded clauses be as provided above, what restricts the verbs like *persuade* to intents specifically? A solution seems to require there to be a semantically natural class of attitudes, which includes intents and beliefs but excludes desires and similar attitudes. Grano argues that the relevant class is what he calls the class of rational attitudes, identified by the following properties: closure under entailment and closure under conjunction.

As shown in (15), beliefs and intents are closed under conjunction while desires are not. It is possible to have a desire to go to Rome, a desire to go to Paris, but not have a desire to go to both cities, while having such collection of beliefs and intents is incoherent.

(15) Closure under conjunction in beliefs, intents, but not desires

- a. John wants to go to Paris this summer, and he wants to go to Rome this summer, but he doesn't want to go to both Paris and Rome this summer.
- b. #John believes he'll go to Paris this summer, and he believes he'll go to Rome this summer, but he doesn't believe he'll go to both Paris and Rome this summer.
- c. #John intends to go to Paris this summer, and he intends to go to Rome this summer, but he doesn't intend to go to both Paris and Rome this summer.

As shown in (16), beliefs and intents are closed under entailment while desires are not. It is possible to not have a desire to teach next semester, but have a desire to teach on Tuesdays and Thursdays, while having such collection of beliefs and intents is incoherent.

(16) Closure under entailment in beliefs, intents, but not desires

- a. John doesn't want to teach next semester, but given that he has to, he wants to teach Tuesdays and Thursdays.
- b. #John doesn't believe he'll teach next semester, but given that he has to, he believes he'll teach Tuesdays and Thursdays.
- c. #John doesn't intend to teach next semester, but given that he has to, he intends to teach Tuesdays and Thursdays.

To make the reference to English justified, the same patterns are found with Russian verbs *xotet'* 'want', *dumat'* 'think', and *namerevat'sja* 'intend'. Examples in (17) show that closure under conjunction groups *dumat'* 'think' and *namerevat'sja* 'intend' together in exclusion of *xotet'* 'want'.

(17) Closure under conjunction in beliefs, intents, but not desires (Russian)

- a. *Vasja xočet poexat' v Pariž etim letom, a eščë on xočet poexat' v Rim etim letom, no on ne xočet poexat' i v Pariž, i v Rim etim letom.*  
 V. wants go.INF to Paris this summer and also he wants go.INF to Rome this summer, but he NEG wants go.INF and to Paris and to Rome this summer  
 'Vasja wants to go to Paris this summer, and he wants to go to Rome this summer, but he doesn't want to go to both Paris and Rome this summer.'
- b. #*Vasja думаet čto on poedet v Pariž etim letom, a eščë on думаet čto on poedet v Rim etim letom, no on ne думаet čto on poedet i v Pariž, i v Rim etim letom.*  
 V. thinks that he goes to Paris this summer and also he thinks that he goes to Rome this summer but he NEG thinks that he goes and to Paris and to Rome this summer  
 Int.: 'Vasja thinks he'll go to Paris this summer, and he thinks he'll go to Rome this summer, but he doesn't think he'll go to both Paris and Rome this summer.' (note that the example is # in English as well)
- c. #*Vasja namerevaetsja poexat' v Pariž etim letom, a eščë on namerevaetsja poexat' v Rim etim letom, no on ne namerevaetsja poexat' i v Pariž, i v Rim etim letom.*  
 V. intends go.INF to Paris this summer and also he intends go.INF to Rome this summer, but he NEG intends go.INF and to Paris and to Rome this summer  
 Int.: 'Vasja intends to go to Paris this summer, and he intends to go to Rome this summer, but he doesn't intend to go to both Paris and Rome this summer.' (note that the example is # in English as well)

Examples shown in (18) show that the closure under entailment works the same in Russian: *dumat'* 'believe' and *namerevat'sja* 'intend' are grouped together in exclusion of *xotet'* 'want'.

(18) Closure under entailment in beliefs, intents, but not desires (Russian)

- a. *Vasja voobščë ne xočet prepodavat' v etom godu, no, raz on dolžen, on xočet prepodavat' po vtornikam.*  
 V. at.all NEG wants teach.INF in this year but since he has.to he wants teach.INF on tuesdays  
 'Vasja doesn't want to teach next semester, but given that he has to, he wants to teach Tuesdays.'

- b. #*Vasja voobščé ne namerevaetsja prepodavat' v etom godu, no, raz on dolžen, on namerevaetsja prepodavat' po vtornikam.*  
 V. at.all NEG intends teach.INF in this year but since he  
 has.to he intends teach.INF on tuesdays  
 Int.: 'Vasja doesn't intend to teach next semester, but given that he has to, he intends to teach Tuesdays.' (note that the example is # in English as well)
- c. #*Vasja ne думаet, čto on budet prepodavat' v etom godu, no, ras on dolžen, on думаet, čto on budet prepodavat' po vtornikam.*  
 V. NEG thinks that he will teach in this year but since he  
 has.to he thinks that he will teach on tuesdays  
 Int.: 'Vasja doesn't think he'll teach next semester, but given that he has to, he think he'll teach Tuesdays.' (note that the example is # in English as well)

So far, so good. It would seem that all one needs is to encode the rational attitude restriction in the lexical semantics of alternating verbs like English *persuade* and Russian *dumat'*. The problem is, however, that the properties of closure under entailment and conjunction follow from the Hintikkian semantics for attitude predicates. Both closures are due to universal quantification over the modal base. The fact that desires show a non-Hintikkian behavior is not news, however, and has been analysed either as desires having non-Hintikkian semantics (Heim 1992) or having context-sensitive semantics that neutralises Hintikkian properties (von Stechow 1999).

However, according to the Neo-Davidsonian wave in the literature on attitude reports, the modal quantification part of attitudinal semantics should be encoded by the embedded clause. If the characteristic properties of the class of rational attitudes (closure under entailment and closure under conjunction) follow from specific configuration of quantification over possible worlds, an attitude report is a rational attitude reports due to semantics of its embedded clause and not the lexical semantics of the verb. This point raises two problems. First question: what kind of semantics should the embedded non-finite clause have in order to be compatible with both Hintikkian and non-Hintikkian behavior with respect to inferences? The second question: what kind of semantics should the lexical verb have in order to be restricted to attitude reports with Hintikkian behavior with respect to inferences (i.e., being restricted to rational attitudes)?

The first question, of course, could be answered by positing different silent operators in the syntax of embedded non-finite clauses in desire reports and in intention reports. It is, however, a clearly unsatisfactory solution in absence of detectable syntactic differences between embedded non-finite clauses in desire reports and in intention reports — I am not aware of such differences and have been unable to find any. In my opinion, the presented considerations show that the core logic of modern Neo-Davidsonian approaches to attitude reports seems inapplicable in solving the belief/intent alternations presented in this section. This conclusion, I believe, motivates my own search for alternatives to a strictly decompositional approach to attitude alternations. A specific proposal for a plausible alternative is articulated in the next section.

### 3. Another approach to attitude alternations

In this section, I wish to suggest that contextual allosemy, the idea of structurally-conditioned polysemy found in the Distributed Morphology literature (Marantz 2013), should not be left out of the picture when discussing analytical options for alternations such as the belief/intent

report alternation found with verbs like Russian *dumat'* and English *persuade*. This section is structured as follows. First, I introduce the notion of contextual allosemy and show why a version of it is unavoidable in the theory of grammar (largely following Preminger 2021). From that, it follows that if such a mechanism is available in the grammar, it makes perfect sense to have the mechanism do as much work as possible.

Then, I turn to the domain of attitude alternations and argue that while the contextual allosemy itself is a non-explanatory mechanism, it can be constrained by other generalizations in the domain of clausal embedding, taking the tenets of the synthesis model of clausal complementation as an example (Wurmbrand & Lohninger 2023). The main idea is that contextual allosemy open the door for a variety of explanations regarding syntax-semantics correspondences, not only the strictly compositional analyses common in the literature.

### 3.1. Contextual allosemy: why and how

Contextual allosemy is a subspecies of polysemy (a single syntactic object being associated with multiple lexical meanings), which is conditioned by the structural context of the polysemous syntactic object. It has been used in the literature to account for the ambiguity found in nominalisations (Wood 2023), proper names (Saab & Lo Guercio 2020), possessive sentences (Myler 2016), number morphology (Schwarzschild 2022), voice morphology (Wood 2015), and other phenomena.

The idea is simple. Similarly to Vocabulary Insertion (see review articles in Bonet & Harbour 2012 and Gouskova & Bobaljik 2020), which maps syntactic objects to their respective morphophonological realizations in a one-to-many fashion depending on the structural context, there is Sense Insertion, which maps syntactic objects to their respective semantic interpretations in a one-to-many fashion depending on their structural context (that is called contextual allosemy). For example, the [PL] feature in English exhibits contextual allomorphy: it is realised as *-z* in the general case but as *-en* when combined with the noun *ox*. These observations are encoded in the following rules of Vocabulary Insertion.

(19) Vocabulary Insertion rules for English plural (partial)

- a. [PL] ↔ /-en/ /  $\sqrt{\text{OX-}}$  ]\_\_
- b. [PL] ↔ /-z/

Similarly to [PL] feature getting two distinct morphophonological interpretations, some syntactic objects (mostly roots) are prone to having multiple distinct interpretations. A classic case is the English root  $\sqrt{\text{TERRIF-}}$  found in such words as *terrify* (a synonym of *scare*) and *terrific* (a synonym of *great*). Clearly, the two interpretations of the root are unrelated to each other, but the morphological relatedness requires to treat the *terrif-* as the exponent of the same object (especially if one assumes phonological individuations of roots, see Borer 2013). One can provide the following rules of Sense Insertion (the term comes from Schwarzschild 2022), according to which the default interpretation of the root  $\sqrt{\text{TERRIF-}}$  is related to meaning of *scary* somehow (I do not wish to make any substantive claim about the nature of lexical meanings), while the interpretation in the context of an adjectivizing head *a* is related to the meaning of *great*.

- (20) Sense Insertion rules for English  $\sqrt{\text{TERRIF-}}$
- a.  $\sqrt{\text{TERRIF-}} \leftrightarrow \text{GREAT} / \_\_ ] a]$
  - b.  $\sqrt{\text{TERRIF-}} \leftrightarrow \text{SCARY}$

Following Preminger (2021), I want to argue that some version of divergence from the one-to-one mapping architecture of syntax-semantics interface is unavoidable. The argument, of course, comes from idioms but, crucially, idioms that do not form a constituent (constituent idioms are much easier accommodated into a compositional framework). For example, the idiom presented in examples like *read the shit out of that book*. As shown in example (21), [the shit] and [out of] do not form a constituent in exclusion to the direct object, which could be mapped onto the meaning component of, say, intensity. The non-constituency is supported by the observation that the *the shit out of* idiom can undergo a certain kind of passivization in English, which would have been impossible, if the *the shit* constituent was a part of a larger *the shit out of* constituent, which were the sister of *that book*. The construction appears to be structurally parallel to sentences like (21c). The fact that the parts of the idiom do not form a constituent rules out an analysis, in which the meaning of intensity comes from a non-terminal syntactic object.

- (21) The idiomatic interpretation comes from a non-constituent *the shit out of*
- a. She read the shit out of that book.
  - b. The book had [the shit]<sub>1</sub> read *t*<sub>1</sub> [out of it].
  - c. She drank [some coffee] [out [of that cup]].

This single example makes it necessary to have a mechanism that allows the interpretation of an item to vary depending on the syntactic context. So, for example, the verb, when composed ‘next to’ *the shit out of*, is interpreted as an intensive action (see Preminger 2021 for precise technicalities). If such a mechanism is independently necessary in the grammar, I believe it makes perfect sense to use it as much as possible — especially if it simplifies the syntactic/semantic analysis. In the next subsection, I wish to sketch an approach to attitude verb alternations which makes use of the mechanism of contextual allosemy.

### 3.2. An allosemy approach to attitude verb alternations

#### 3.2.1. The proposal

The formal implementation for an allosemy approach to attitude alternations should be rather straightforward: we list possible meaning and the configurations they arise in, as in (22). The provided Sense Insertion rules aim to capture the fact that using the non-finite clause is a ‘marked’ option. I use ‘non-finite clause’ as a placeholder label in order not to commit to a particular analysis of non-finite clauses: all that matters is that Sense Insertion be sensitive to the finiteness distinction.

- (22) Sense Insertion rules for  $\sqrt{\text{DUMAT}}$
- a.  $\sqrt{\text{DUMAT}}$   $\leftrightarrow \lambda e.\text{intention}(e) / \_\_ \text{non-finite clause}$
  - b.  $\sqrt{\text{DUMAT}}$   $\leftrightarrow \lambda e.\text{belief}(e)$

Circumstantial evidence for the belief interpretation being the unmarked one comes from the ability of the nominal *mysl'* to refer to the attitude (or the corresponding attitudinal object, see Moltmann 2020). The nominal *mysl'*, when not embedding a clause, can refer to a previous belief report but not to a previous intent report, suggesting that structural proximity to a non-finite clause is necessary for an intent interpretation of  $\sqrt{\text{DUMAT}}$ .<sup>2</sup>

(23) The belief interpretation is the default

- a. Belief interpretation is available for bare nominal *mysl'*  
*Vasja думаєт что Петя убийца. Ego mysl' ne daët mne pokoja. Možet,*  
 V. thinks that P. killer his thought NEG give me rest maybe  
*Vasja prav?*  
 V. right  
 'Vasja thinks that Petja is the killer. His thought bothers me. Maybe, Vasja is right?'
- b. Intention interpretation is available for bare nominal *mysl'*  
*Vasja думаєт ženit'sja na moej sestre.\*Ego mysl' ne daët mne pokoja.*  
 V. thinks marry.INF on my sister. His thought NEG give me rest  
 'Vasja intends to marry my sister. His intent bothers me.'

The question lies in the explanatory value of such an approach — it is immediately clear that the mappings from syntactic terminals to lexical meanings are not constrained by anything except some notion of locality on the syntactic context influencing the lexical interpretation (see Marantz 2013). The issue is, then, what rules out a hypothetical variant of Russian (call it Naissur), which has the same sort of alternation, but the distribution of interpretations is mirrored: Naissur *dumat'* is interpreted as intention with finite clauses instead of non-finite clauses. As it stands, there is no principled reason for such a language not to exist. Although it is non-obvious that one would wish to rule out such a language, I still take the putative impossibility of such a language something to account for. I do so primarily to argue against a common objection raised to allosemy-based analyses.

(24) SI rules for  $\sqrt{\text{DUMAT}}$  in Naissur

- a.  $\sqrt{\text{DUMAT}}$   $\leftrightarrow \lambda e.\text{intention}(e) / \_\_\text{finite clause}$   
 b.  $\sqrt{\text{DUMAT}}$   $\leftrightarrow \lambda e.\text{belief}(e)$

I should emphasize that the highlighted problem is relevant to any approach that encodes the alternation in the lexicon in any way and does not derive the distribution of interpretations across syntactic structures compositionally. Some authors (e.g. Ramchand 2015) make the argument that non-compositional theories thus lack any explanatory value and should be disregarded. However, I wish to build on recent work on structural properties of complementation to argue that the range of possible allosemy schemata can be constrained by more general linguistic properties, which, however, cannot be accounted for by a strictly compositional approach.

<sup>2</sup> I should note that the presented data seems to make a case for blocking at LF. Although it is not directly relevant to the plot of the paper, such phenomena can be construed as arguments for parallel treatment of LF and PF. I thank Mal Shah, Veronika Gvozdovaitė, and an anonymous reviewer for discussion of this point.

## 3.2.2. Synthesis model of clausal embedding

As stated earlier, I suggest that other generalizations may be at work in ruling out such allosemy schemata. To make the argument more substantive, I recap Implicational Complementation Hierarchy (ICH) of the synthesis model of clausal complementation laid out by Wurmbrand & Lohninger (2023) and apply the ideas to the domain of attitude alternations. The core notion behind ICH is the split of the embedded clauses into three types, based on their semantic properties: propositions, situations, and events (see Ramchand & Svenonius 2014). Clauses interpreted as propositions are temporally independent and have no subject restrictions, clauses interpreted as situations are somewhat constrained temporally (in having future orientation) and have some subject restrictions, and clauses interpreted as events are fully dependent on the matrix tense and matrix subject (Wurmbrand & Lohninger 2023:30).

MOST INDEPENDENT	LEAST INDEPENDENT
LEAST TRANSPARENT	MOST TRANSPARENT
LEAST INTEGRATED	MOST INTEGRATED

Proposition >> Situation >> Event

Table 1. The implicational complementation hierarchy

The main finding motivating the ICH is the observation that various inter-clausal syntactic phenomena respect the hierarchy in their distribution: basically, no inter-clausal phenomenon (like indexical shift, long passives, long distance agreement, etc.) will be found in clauses denoting propositions or events but not in clauses denoting situations. More narrowly, the proposition class of clauses is often found displaying properties associated with structural independence (opacity for non-local dependencies, overtiness of the subject, and so on), while the event class of clauses is often found displaying properties associated with structural integration of two clauses (transparency for non-local dependencies, covertness of the subject, and so on).

Wurmbrand & Lohninger (2023) use complementation in Buryat as an example. Buryat has three types of embedded clauses: full CPs, nominalisations, and eventive converbs, exemplified in (25). The examples shown here link CPs with proposition-type clauses, nominalisations with situation-type clauses and eventive converbs with event-type clauses.

## (25) Three types of embedded clauses in Buryat

## a. Eventive converbs in Buryat

*bagšə honin ju:mə xö:rə-žə ürd-jə*  
 teacher interesting thing tell-CONV manage-PST  
 ‘The teacher managed to tell an interesting story.’ (Bondarenko 2018:44–45)

## b. Nominalisations in Buryat

*lenə lizə-də üšö n3gə konfətə 3di-x-ijə-n’ zübšö-gö*  
 Lena Liza-DAT more one sweet eat-FUT-ACC-3 allow-PST  
 ‘Lena allowed Liza to eat one more sweet.’ (Wurmbrand & Lohninger 2023:26)

## c. CP-size clauses in Buryat

*sajənə bi t3rgə 3mdəl-3-b g3žə m3d-3*  
 Sajana 1SG.NOM cart break-PST-1SG COMP know-PST  
 ‘Sajana found out that I broke the cart.’ (Bondarenko 2018:44–45)

The so-called ‘ICH signature’ is seen once one looks at the distribution of overt nominative subjects and long passives across the three types of embedded clauses. Overt nominative subjects are a property of ‘independent’ clauses and is, accordingly, found only with CP-size complements. Examples in (26) show that overt nominative subjects are impossible with eventive converbs and nominalisations, while the example (25c) found above already shows that overt nominative subjects are licit in CP-size embedded clauses of Buryat.

(26) Overt nominative subjects in Buryat are impossible with eventive converbs and nominalisations

a. Eventive converbs in Buryat

\**bagšə badmə honin ju:mə xö:rə-žə ürd-jə*  
 teacher Badma.NOM interesting thing tell-CONV manage-PST  
 ‘The teacher managed to do so that Badma/someone told an interesting story.’

(Bondarenko 2018:44–45)

b. Nominalisations in Buryat

*bi \*sajənə / sajən-in / sajən-ijə du: du:lə-žə bε:-x-ijə šagən-a-b*  
 1SG Sajana.NOM / S-GEN / S-ACC song sing-CONV be-FUT-ACC hear-PST1-1SG  
 ‘I heard that/how Sajana sang a song.’ (Wurmbrand & Lohninger 2023:27)

Long passive, on the other hand, is a property of ‘integrated’ clauses and is, accordingly, found only with eventive converbs, as shown in examples in (27). When taken together, these phenomena present the ICH signature: nominalisations are ‘in the middle’ with respect to integration, while CP-size clauses are less integrated and eventive converbs are most integrated.

(27) Long passive in Buryat are:

a. Licit with eventive converbs

*b3šəg tumən-3r b3šə-žə 3xilə-gd-3*  
 letter.NOM Tumen-INSTR write-CONV begin-PASS-PST  
 Lit. ‘The letter was begun to write by Tumen.’

‘Tumen began to write the letter.’

(Wurmbrand & Lohninger 2023:29)

b. Illicit with nominalisations

\**bi sajən-ar badm-in xarə-h-ijə(-n’) m3də-gd-3-b*  
 1SG S-INSTR B-GEN see.PFCT-ACC(-3SG) know-PASS-PST-1SG

Lit. ‘I was known by Sajana that Badma saw (me).’

Intended: ‘Sajana found out that Badma saw me.’

(Wurmbrand & Lohninger 2023:29)

c. Illicit with CP-size clauses

\**bi sajən-ar badmə xar-a g3žə m3də-gd-3-b*  
 1SG S-INSTR Badma.NOM see.PST COMP know-PASS-PST-1SG

Lit. ‘I was known by Sajana that Badma had seen (me).’

Intended: ‘Sajana found out that Badma had seen me.’

(Wurmbrand & Lohninger 2023:29)

So far, so good. The crucial point, however, is that CP-size clauses are freely available with situation-type complements as well, which shows that a clean one-to-one syntax-semantics mapping cannot be established. Wurmbrand and Lohninger, however, do not conclude that the

syntax-semantics correspondences constitute an unlawful domain where everything goes. Instead, they establish a ‘minimal structure requirement’ for semantic classes of embedded clauses. In the spirit of Ramchand & Svenonius (2014) (and other works, such as Grohmann 2003), they argue that events require the vP domain (the thematic domain, the domain of event description), situations require the TP domain (the TAM domain, the domain of temporal anchoring), propositions require the CP domain (the operator domain, the domain of discourse properties). Importantly, the ‘minimal structure requirements’ seem to follow from general semantic considerations about containment of the three semantic types posed by Wurmbrand and Lohninger. To quote their work, ‘Situations are elaborations of Events, Propositions are elaborations of Situations. More specifically, Situations are created by combining time/world parameters with an existentially closed Event, and Propositions combine speaker-oriented/discourse-linking parameters with an existentially closed Situation. The ranking and implicational nature of the ICH can then be seen as a reflex of the resulting semantic complexity scale.’

Despite the clear semantic underpinnings, one should not forget that the core idea behind the ‘minimal structure requirement’ is that semantics ‘tolerates’ bigger structures (such as CP-size clauses with situations in Buryat). The resulting system is dubbed by Wurmbrand and Lohninger as the ‘synthesis’ model: the syntax is not determined by semantics and, as a result, the interaction between the verb (which determines the semantic class of the embedded clause) and the syntax of the embedded clause (which determines the syntactic class of the embedded clause) is more idiosyncratic than allowed by strictly compositional proposals in the domain of clausal embedding.

### 3.2.3. *Synthesis model of attitude alternations*

What I wish to propose is to extend the guiding ideas of the synthesis model to the domain of attitude alternations and strengthen the explanatory bite of the synthesis model. As put forth in the previous sections, my technical solution to the belief/intent alternation was to use the idea of contextual allosemy put forth in the Distributed Morphology literature. The Sense Insertion rules (in parallel to Vocabulary Insertion rules) for the Russian verb *dumat*’ are repeated below.

- (28) Sense Insertion rules for  $\sqrt{\text{DUMAT}}$
- a.  $\sqrt{\text{DUMAT}}$   $\leftrightarrow \lambda e.\text{intention}(e) / \_\_\text{non-finite clause}$
  - b.  $\sqrt{\text{DUMAT}}$   $\leftrightarrow \lambda e.\text{belief}(e)$

My main claim here is that the range of possible Sense Insertion rules is constrained by more general semantic considerations, such as the ‘minimal structure requirement’ proposed by Wurmbrand & Lohninger (2023). Although the distribution of the interpretations of Russian  $\sqrt{\text{DUMAT}}$  does not naturally fall out from semantic composition, it is still constrained by semantic considerations, which underlie the minimal structure requirement: there is ‘not enough’ structure in the non-finite clause for putative Sense Insertion rules in (29) to be possible, which meets the explanatory concern laid out earlier.

- (29) Mirror Sense Insertion rules for  $\sqrt{\text{DUMAT}}$
- a.  $\sqrt{\text{DUMAT}}$   $\leftrightarrow \lambda e.\text{belief}(e) / \_\_\text{non-finite clause}$
  - b.  $\sqrt{\text{DUMAT}}$   $\leftrightarrow \lambda e.\text{intention}(e)$

The case study of  $\sqrt{\text{DUMAT}}$  presented in this work has put forth a novel way to approach the intricate syntax-semantics interactions in the domain of clausal embedding where the syntactic properties of the embedded clause influence the semantic interpretation of the lexical verb of the main clause. I believe that the constrained contextual allosemy analysis presented in this paper is an adequate third way between homophony analyses and strictly compositional analyses and does not suffer from the problems of either extreme. Encoding the alternation in the Encyclopaedia (the list of lexical syntax-semantics correspondences) allows to circumvent the evidence against an approach with homophonous lexical items. Having the alternation encoded as idiosyncratic and not deriving the alternation via compositional means allows to circumvent the overgeneration problem faced by an approach employing a silent left periphery operator and the inability to give constrained semantics to non-finite embedded clauses faced by a compositional approach without silent operators in the embedded clause.

Finally, I should note that the reasoning in the style of Wurmbrand & Lohninger (2023) is not the only way in which the presented system can be constrained. As an anonymous reviewer notes, I have not really given an account for the fact that intentions and beliefs seemingly form a natural class (see ‘rational attitudes’ of Grano 2019). I suggest that such considerations be given a diachronic spin: the common semantic properties of intentions and beliefs underlie the emergence of alternations such as the one discussed in this paper, but they are not necessarily given an important role in the synchronic analysis. To take stock, I suggest that the impoverished explanatory power of mechanisms like contextual allosemy opens the pathway to other explanations, which can lie outside the domain of semantic composition and rules of synchronic grammar.

#### 4. Conclusions

This paper has discussed a belief/intent report alternation found with Russian verb *dumat*. I have connected the data to other work on similar alternations (Grano 2019) and have thus extended the existing typology of belief/intent alternations across languages. On a more theoretical side, I have suggested that the alternation under discussion (and, possibly, other attitude alternations as well) can be understood via contextual allosemy without running into the problems faced by a strictly compositional account of attitude alternations. The somewhat arbitrary nature of contextual allosemy (argued to be its main flaw, see Ramchand 2015) has been argued to be constrained by more general syntactic-semantic considerations, such as the Implicational Complementation Hierarchy of Wurmbrand & Lohninger (2023).

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### Abbreviations

1,2,3	first, second, and third person	NEG	negation
ACC	accusative case	NOM	nominative case
COMP	complementiser	SG	singular
CONV	converb	PASS	passive voice
FUT	future tense	PFCT	perfect
GEN	genitive case	PREP	preposition
INF	infinitive	PST	past tense
INSTR	instrumental case		

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# There is no small clause in Russian phrasal comparatives

Alexandra Shikunova

This paper focuses on Russian comparatives, particularly those commonly referred to as phrasal and argued to contain a smaller amount of elided structure than the clausal comparatives. I investigate the restrictions on the syntactic position of the standard of comparison (SoC) in Russian phrasal comparatives and show that the existing analyses of this type of comparatives (Pancheva 2006; Philippova 2017) are not satisfactory. The proposed alternative is the direct analysis, which denies the phrasal comparative any clausal source. This claim is supported by patterns of behaviour such as the uniform case marking of the SoC and its mandatory nominal status, which the Russian phrasal comparative shares with other comparative constructions that have been argued to be genuinely phrasal (Bhatt & Takahashi 2007, 2011; Vaikšnoraitė 2021; Potsdam 2017), as well as by the interaction between scrambling and the SoC's available position, which is handled well by the direct analysis.

## 1. Introduction

Comparative constructions vary considerably between languages as well as within languages. One significant parameter of variation is the amount of structure that comes with the standard of comparison (SoC), which is often reduced to how much is elided. Comparative structures can thus be roughly divided into two groups: *phrasal* comparatives that have no elided material (1a), and the *clausal* ones, where a full elided clause (1b) or a small clause (1c) is present. An analysis that claims that a comparative is phrasal can also be referred to as a direct analysis.

(1) Mary is taller than John.

a. **Direct analysis**

LF and PF: Mary is taller [<sub>PP</sub> than [<sub>DP</sub> John]]

b. **Reduced full clause analysis**LF: Mary is taller [<sub>PP</sub> than [<sub>CP</sub> wh<sub>1</sub> John is d<sub>1</sub>-tall]]PF: Mary is taller [<sub>PP</sub> than [<sub>CP</sub> Ø John is-<sub>d<sub>1</sub></sub>-tall]]c. **Reduced small clause analysis**LF: Mary is taller than [<sub>SC</sub> wh<sub>1</sub> John d<sub>1</sub>-tall]PF: Mary is taller than [<sub>SC</sub> John wh<sub>T</sub>-<sub>d<sub>1</sub></sub>-tall]

Although it is clear what the prototypical clausal and phrasal comparatives are like — one contains an elided clause and the other does not — there are edge cases. For instance, some seemingly phrasal comparatives have been argued to actually have a clausal source, e.g. the phrasal temporal adverbial constructions (TACs) in English, which involve the connectives *before* and *after* (Overfelt 2021). Also, some clausal comparatives have received a phrasal analysis, like the Japanese comparatives, which, as argued by Sudo (2015), contain relative clauses with null nominal heads and are therefore phrasal, because the standard of comparison is actually a noun rather than a clause.

The Slavic languages in particular have been an interesting case study, when it comes to phrasal and clausal comparatives. In this paper, I focus on Russian comparative constructions, of which there exist two types: one featuring the wh-word *čem* ‘what-ins’ and a fully recoverable elided clause (2) and the other with the SoC in the genitive case (3).<sup>1</sup> For the sake of simplicity and with no theoretical claim in mind yet, I will refer to them as clausal and phrasal respectively.

## (2) ‘Clausal’

Ja vyše, čem (byl) Anton.

I taller wh (was) Anton.nom

‘I am taller than Anton (was).’

## (3) ‘Phrasal’

Ja vyše Antona.

I taller Anton.gen

‘I am taller than Anton.’

I am going to focus on the phrasal comparative, whose phrasal status has been questioned in existing work but will be defended in this paper. After presenting the relevant data in Section 2, I discuss the existing analyses of Russian comparatives in Section 3: I show Pancheva’s (2006) and Philippova’s (2017) proposals to be too restrictive. Next, I develop an alternative in Section 4 — a direct analysis, where the phrasal comparative is truly phrasal. The arguments follow in Section 5, concluding with Section 6.

## 2. Description of the phrasal comparative in Russian

The phrasal comparative is in many ways opposed to the clausal one, which has an unambiguously clausal source: the subordinate clause is fully recoverable and the remnant SoC bears the case that it would be assigned in this clause (4–5).

<sup>1</sup> More variants of these constructions exist than presented in examples (2–3), some of which have been mentioned by Matushansky (2002), Pancheva (2006) or Philippova (2017). This paper is dedicated to the two most common ones mentioned above.

- (4) Ja risuju krasivee, čem Alisa (risuet).  
I draw beautiful.cmpr wh Alisa draws  
'I draw more beautifully than Alisa (draws).'
- (5) Ja ljublju piccu bol'se, čem (ja ljublju) pastu.  
I like pizza.acc more wh I like pasta.acc  
'I like pizza more than (I like) pasta.'

The SoC bears the nominative case in example (4) and is thus compared to the matrix subject: the correlate *ja* 'I' is someone who draws, and so is *Alisa* — the SoC. In example (5), however, the SoC is in the accusative and interpreted as a direct object: both *piccu* 'pizza.acc' and *pastu* 'pasta.acc' are something that the speaker likes to some degree.

There are not many restrictions on the categorial status of the SoC in clausal comparatives. For instance, the SoC can be an adverb, which is illustrated by example (6), where the SoC is *včera* 'yesterday' and the state of the subject today is compared to her state yesterday. There is no need to recover anything else — the adverb is a legitimate remnant SoC.

- (6) Segodnja Nina čuvstvuet sebja lučše, čem včera.  
today Nina feels herself better wh yesterday  
'Today Nina is feeling better than yesterday.'

In the phrasal comparative, however, the SoC is always nominal. It can be a noun as well as an adjective such as, for instance, *želtogo* 'yellow.gen' in example (7). The head noun of the SoC — *plat'e* 'dress' — can be elided.

- (7) Krasnoe plat'e mne nraivitsja bol'se želtogo  
red dress I.dat pleases more yellow.gen  
'I like the red dress more than the yellow one.'

The SoC in the phrasal comparative cannot be an adverb — see how example (8) contrasts with example (6). The adverb *včera* 'yesterday' cannot be the genitive SoC of the phrasal comparative, which is expected, since adverbs cannot bear case. Also, as indicated in example (8), the necessary meaning analogous to that of example (6) can be conveyed if the adverb is adjectivised and able to bear the genitive case.

- (8) Segodnja Nina čuvstvuet sebja lučše \*včera / <sup>OK</sup>včerašnego.  
today Nina feels herself better yesterday yesterday.adj.gen  
'Nina is feeling better today than yesterday.'

Several other differences have been noted by Philippova (2017) and argued to point to the fact that the SoC and its correlate are clausemates in the phrasal comparative, but not in the clausal one. The first diagnostic is binding a reflexive in the SoC by the matrix subject, which can only happen in the phrasal comparative (9–10).

The possessive reflexive *svoego* 'self's.gen', whose binding domain is the finite clause (see Rappaport (1986) on the properties of Russian reflexives), is preferred in the SoC over the pronominal *eë* 'her' (9), which means that the comparative PP does not constitute a separate binding domain and therefore its complement is unlikely to be a clause.

- (9) Maša ljubit sebja bol'she {<sup>OK</sup>svoego; \*eë} otca.  
 Masha loves self.acc more self's.gen her father.gen  
 'Masha<sub>j</sub> loves herself more than her<sub>j</sub> father.'
- (Philippova 2017:5)

Example (10), in contrast to example (9) featuring a clausal comparative, exhibits the reverse pattern: the reflexive cannot be bound, and the pronominal possessor is preferred. This is consistent with the assumption that the clausal comparative includes a reduced finite clause, whose boundary is opaque for reflexive binding.

- (10) Maša ljubit sebja bol'she čem {\*svoj; <sup>OK</sup>eë} otec.  
 Masha.nom loves self.acc more wh self's.nom her father.nom  
 'Masha<sub>j</sub> loves herself more than her<sub>j</sub> father (does).'
- (Philippova 2017:5)

Next, Philippova (2017) cites wh-extraction out of the SoC (11) and licensing of negative concord items (NCIs; 12), which supposedly does not happen across a finite clause boundary (e.g. Giannakidou 2000).

Example (11a) demonstrates that a wh-word can be moved out of the SoC position of the phrasal comparative: *kogo* 'who.gen' is felicitously wh-extracted. Note that the extraction is possible in the adjectival comparative, where the predicate is *vyše* 'taller' and in the adverbial comparative, where *vyše* is an adverb that has the meaning 'higher' and modifies the verbal predicate *prygnul* 'jumped'. In the clausal comparative, however, wh-movement of the SoC is not possible with either the adjectival or the adverbial comparative (11b). The unacceptability of such movement, as Philippova (2017) suggests, is due to the SoC being a remnant of a fully recoverable finite clause, which she assumes to be an island for wh-extraction in Russian.

- (11) a. Kogo ty vyše (prygnul)?  
 Who.gen you.nom higher jumped  
 'Who are you taller; did you jump higher than?'  
 b. \*Kto ty (prygnul) vyše čem?  
 Who.nom you.nom (jumped) taller wh  
 Expected: 'Who are you taller; did you jump higher than?' (Philippova 2017:4)

A parallel contrast can be observed with NCIs, which can be licensed by the matrix negation in the SoC position in the phrasal comparative (12a) but not in the clausal comparative: *nikto* 'nobody' is acceptable as the SoC in example (12a) and unacceptable in example (12b).

- (12) a. Maša \*(ne) vyše nikogo.  
 Masha.nom neg taller nobody.gen  
 'Masha isn't taller than anyone.'  
 b. \*Maša ne vyše, čem nikto.  
 Masha.nom neg taller wh nobody.nom  
 Expected: 'Masha isn't taller than anyone.'
- (Philippova 2017:4)

I take these tests to be less reliable than reflexive binding, since wh-extraction has been shown to be able to cross finite clause boundaries in Russian (Bailyn 2020). NCIs too can be scrambled

from their base-generation site in the embedded clause to be licensed by matrix negation (Rudnev 2022).

A curious property of the phrasal comparative is that not every position is readily available for the SoC.<sup>2</sup> One position is always accessible: the nominative subject (13).

- (13) Ja (prygaju) vyše Ani.  
I jump higher Anya.gen  
'I jump higher than Anya.'

In a sentence with a transitive (14) or a ditransitive predicate (15), an ambiguity may arise, where both the subject and an object, direct or indirect, can be the correlate. Since the case on the SoC is always genitive, its structural position cannot be inferred from its morphological case, as is possible in the clausal comparative, where the original case is preserved. Therefore, the sentence in example (14) can receive two readings: the subject reading, where the SoC is construed to be the subject of the elided clause, and the object reading, where it is the direct object.<sup>3</sup>

- (14) Ja ljublju tebjā bol'she Nikity.  
I love you.acc more Nikita.gen  
Subject reading: 'I love you more than Nikita does.'  
Object reading: 'I love you more than I love Nikita.'
- (15) Mama poručaet mne brata čašče babuški.  
mum entrusts I.dat brother.acc often.cmpr grandma.gen  
'Mum entrusts my brother to me more often...'  
Subject reading: '...than grandma does.'  
Object reading: '...than she entrusts grandma to me.'  
Dative reading: '...than she entrusts him to grandma.'

Non-dative oblique participants, as well as complements of prepositions, are judged the least acceptable as correlates. Examples (16–17) only have the subject reading.

- (16) Anja stala aktrisoj ran'she studentki.  
Anya became actress.ins earlier student.ins  
Subject reading: 'Anya became an actress earlier than a student did.'  
Instrumental reading, unavailable: 'Anya became an actress earlier than she became a student.'
- (17) Djadja Petja rugaetsja na kota gromče Barbosa.  
uncle Petya swears on cat.acc louder Barbos.gen  
Subject reading: 'Uncle Petya scolds the cat louder than Barbos does.'  
PP reading, unavailable: 'Uncle Petya scolds the cat louder than he scolds Barbos.'

<sup>2</sup> The source of the data in the rest of this section is an informal survey of 13 native speakers of Russian, which involved multiple choice questions aimed at gathering possible interpretations of suggested sentences, as well as acceptability judgement questions, where the judgement was on a scale from 1 (most acceptable) to 5 (least acceptable).

<sup>3</sup> I will refer to the reading where the correlate occupies a certain position X or is marked by a certain case X as the *X reading*, for instance, a subject reading is the interpretation where the correlate is in the subject position.

The speakers I have asked have varying tolerance for non-subject readings, but the following generalisation, also noted by Philippova (2017), holds: non-subject readings are decidedly easier to obtain if the correlate is topicalised (18) or focalised (19–20).

- (18) *Maše načal'nik platit bol'she Antona.*  
 Masha.dat boss pays more Anton.gen  
 Subject reading, unavailable: 'The boss pays Masha more than Anton does.'  
 Dative reading, preferred: 'The boss pays Masha more than he pays Anton.'

The dative reading of example (18) is obtained by topicalising the dative correlate *Maše* 'Masha.dat'. If the dative correlate is topicalised, the subject reading is not available and the dative reading is preferred. Focus improves the acceptability of instrumental readings in the same way: the instrumental correlate *model'ju* 'model.ins' can only be interpreted as a correlate if it is in a focus position. Example (19) demonstrates how focus with the particle *tol'ko* 'only' feeds an instrumental reading.

- (19) *Bol'she medsestry Eva xočet stat' tol'ko model'ju.*  
 More nurse.gen Eva wants become only model.ins  
 'It is only a model that Eva wants to become more than a nurse.'  
 Subject reading, unavailable: 'Eva wants to become a model more than a nurse does.'  
 Instrumental reading, preferred: 'Eva wants to become a model more than she wants to become a nurse.'

Finally, focus can even make PP correlates possible. In example (20), the focused PP *u menja* 'by I.gen' is interpreted as the correlate, while the subject reading is unavailable.

- (20) *Lučše Leny ocenki tol'ko u menja.*  
 better Lena.gen grades only by I.gen  
 Subject reading, unavailable: 'Only my grades are better than Lena is.'  
 PP reading, preferred: 'Only my grades are better than Lena's.'

The characteristic properties of the phrasal comparative can be summarised as follows: (i) the SoC always bears genitive case and is strictly nominal, (ii) apart from the subject reading, other readings are unacceptable to variable degrees, (iii) the acceptability of non-subject readings is improved by topicalisation or focalisation of the correlate. I proceed to examine two existing analyses of Russian comparatives and how they fare in regard to the phrasal comparative.

### *3. Existing approaches*

#### *3.1. A semantics-oriented analysis*

Pancheva (2006), which covers the phrasal-clausal distinction in a number of Slavic languages (Polish, Bulgarian, BCMS), presents a clausal analysis for the phrasal comparative in Russian. The gist of her proposal is that both phrasal and clausal comparatives are underlyingly clausal, but the structures are nevertheless divergent. Pancheva contends that the clausal comparative contains a full clause, part of which is deleted by ellipsis (21a), whereas the phrasal comparative features a small clause made up of the SoC and an anaphoric predicate (21b).

- (21) a. Clausal comparative  
 than [<sub>CP</sub> wh<sub>1</sub> John is d<sub>1</sub>-tall ] → LF: than [<sub>CP</sub> d<sub>1</sub> John is ~~d<sub>1</sub>-tall~~]
- b. Phrasal comparative  
 than [<sub>SC</sub> John Δ] →  
 LF: [<sub>IP</sub> [<sub>IP</sub> Mary is d<sub>1</sub>-tall] [<sub>DegP</sub> -er<sub>1</sub> [<sub>PP</sub> than [<sub>SC</sub> John ~~d<sub>1</sub>-tall~~]]]]  
 (adapted from Pancheva 2006)

In the clausal comparative, the complement of the comparative preposition, which is null in Russian but non-null in Polish, for example, is a CP — a finite embedded clause. This clause contains a degree variable, which is bound by an operator occupying Spec, CP, similarly to a wh-word. The comparative preposition, according to Pancheva (2006), is ‘a partitive preposition in the domain of degrees’, so it receives an argument of the degree type. The parallel between partitive prepositions and the comparative *than*-preposition is important here: while the clausal comparative is analogous to the *referential partitive*, where the preposition scopes over a definite description (*a glass of [the water]*), the phrasal comparative is like the *predicative partitive*, or a pseudo-partitive (*a glass of [water]*).

The degree is definite and determined by the elided clause in the clausal comparative. The referential partitive preposition ( $\lambda d_1 \lambda d_2 [d_2 \text{ is part of } d_1]$ ) receives a definite degree and returns a predicate of degrees. The phrasal comparative, however, is similar to a pseudo-partitive in that the comparative preposition can receive a set of degrees as input: see the contrast in examples (23–24), where a measure phrase can be the SoC in a phrasal comparative but not in a clausal one. The lambda-abstraction of the degree proceeds out of the main clause, and this degree is subsequently passed as an argument to the Deg head, as well as the value of the PP headed by *than* (see example (22) for the lexical entry of the Deg head). Recall that *than* returns a predicate of degrees, that is, a set of degrees, which is a suitable argument for the predicative partitive comparative preposition. Under this analysis, both measure phrases and individuals are felicitous SoCs in the phrasal comparative.

- (22) P, Q are degree predicates (sets of degrees)  
 a.  $-\text{er}(P)(Q) \leftrightarrow \exists d [Q(d) \wedge \neg P(d)]$   
 b.  $-\text{er} [\lambda d. \text{Bill is } d\text{-tall}] [\lambda d. \text{John is } d\text{-tall}]$  (Bhatt & Takahashi 2011:584)
- (23) Anja vyše Antona / dvux metrov.  
 Anya taller Anton.gen two.gen metres.gen  
 ‘Anya is taller than Anton/two metres.’
- (24) Anja vyše, čem Anton /# dva metra.  
 Anya taller wh Anton two metres  
 ‘Anya is taller than Anton is/#two metres are.’

How the value of the *than*-PP is determined here is of particular interest: the *than*-preposition complement is a small clause containing the SoC and a phonologically null anaphoric predicate marked by Δ in example (21b). This predicate is supposed to pick up reference from the matrix clause at LF — it expects a predicate that would accept the SoC as an argument and would produce a predicate of degrees. The matrix predicate answers this requirement and is therefore

copied into the small clause at LF in the process of *LF-copying* (Chung et al. 1995). This mechanism is the vulnerable place of this analysis, which makes several wrong predictions and which I will now focus on.

As mentioned during the exposition of the data, phrasal adverbial comparatives can give rise to ambiguities, as, for instance, in example (14), repeated below, which has two readings: a subject reading, where the SoC (Nikita) is the lover, and an object reading, where it is the loved one.

- (25) Ja ljublju tebjja bol'she Nikity.  
 I love you.acc more Nikita.gen  
 'I love you more than Nikita loves you.'  
 'I love you more than I love Nikita.'

The explanation within Pancheva's model is as follows: a part of the matrix clause is LF-copied to the embedded small clause in order to derive the necessary reading (26). What structure the embedded clause would have thus depends on which participant is moved out of the VP before the VP is copied.

- (26) *Ja ljublju Ivana bol'she Borisa.* 'I love Ivan more than Boris'  
 a. [<sub>IP</sub> I [<sub>VP</sub> love Ivan d<sub>1</sub>-much]] -er<sub>1</sub> [Boris [<sub>VP</sub> love Ivan d<sub>1</sub>-much]]  
 b. [<sub>IP</sub> Ivan<sub>2</sub> [<sub>IP</sub> I love t<sub>2</sub> d<sub>1</sub>-much]] -er<sub>1</sub> [Boris [<sub>IP</sub> I love t<sub>2</sub> d<sub>1</sub>-much]]  
 (adapted from Pancheva 2006)

The subject reading is derived when the matrix subject leaves VP to occupy the subject position. The object reading results from A-bar movement: *Ivan* undergoes topicalisation, so that the IP *I love t d<sub>1</sub>-much* could be copied to the embedded clause and Boris could 'saturate the internal argument of *love*'.

This analysis predicts that in the absence of A-bar movement of the correlate, the only available reading should be the subject one. If the correlate *is* moved, however, this very participant should dictate the preferred reading. This is empirically accurate, except for the case where the correlate is inside a prepositional phrase, see example (20), repeated below in example (27), which is problematic, since movement of complements of prepositions is impossible in Russian.

- (27) Lučše Leny ocenki tol'ko u menja.  
 better Lena.gen grades only by I.gen  
 Subject reading, unavailable: 'Only my grades are better than Lena.'  
 PP reading, preferred: 'Only my grades are better than Lena's.'

Another hidden drawback of the analysis via LF-copying after topicalisation comes from the premise that topicalisation can (and must, in the case of Russian phrasal comparatives) be visible at LF: the predicate with a gap to be saturated by the SoC is created via A-bar movement of the correlate. This movement is supposedly unrecoverable: the lower copy of the correlate has to be absent at LF, so that the LF-copied predicate had a missing argument, which would be saturated by the SoC. The absence of the lower copy of the correlate excludes, for example, reflexive binding in the topicalised correlate, which is, nevertheless, completely acceptable (28).

- (28) *Svoej<sub>i</sub> sekretarše načal'nik<sub>i</sub> platit bol'she Anna.*  
 self's.gen secretary.dat boss pays more Anna.gen  
 'The boss<sub>i</sub> pays Anna more than he<sub>i</sub> pays his<sub>i</sub> secretary.'

If the movement were irrecoverable, Principle A of binding theory would not be satisfied at LF: the expression containing a possessive reflexive *svoej* 'self's.dat' in the subject position has no c-commanding antecedent in its binding domain, that is, the finite clause. The supposed LF structure of example (28) is shown in example (29): the lower copy of the scrambled correlate is not visible, but it needs to be visible, so that the reflexive could be bound by the subject. The correlate has to be c-commanded by the subject and moved out of its domain of c-command. However, if it is assumed that reflexive binding occurs as soon as it becomes possible in the course of the derivation (see Belletti & Rizzi (1988); Bailyn (2003, 1988) on the derivational approach to binding), the problem is eliminated: the reflexive is bound while the correlate is still c-commanded by the subject and only then it is moved (see the revised structure in 30).

- (29) The reflexive-containing DP is not c-commanded by the antecedent  
 [<sub>IP</sub> self's<sub>i</sub> secretary<sub>2</sub> [<sub>IP</sub> boss<sub>i</sub> pays t<sub>2</sub> d<sub>1</sub>-much]] -er<sub>1</sub> [Anna [<sub>IP</sub> secretary pays t<sub>2</sub> d<sub>1</sub>-much]]
- (30) Binding occurs before movement of the reflexive-containing DP  
 [<sub>IP</sub> self's<sub>i</sub> secretary [<sub>IP</sub> boss<sub>i</sub> pays self's<sub>i</sub>-secretary d<sub>1</sub>-much]] -er<sub>1</sub> [Anna [<sub>IP</sub> secretary pays t<sub>2</sub> d<sub>1</sub>-much]]

Another problematic example — (31) — has two readings, as expected: a subject reading and an object reading. The reflexive *sebja* 'self.acc', as well as *svoej* 'self's.gen' are bound by the subject — *Petja* 'Petya' — before LF-copying. Therefore, the subject reading, where *sebja* 'self.acc' is bound by the SoC — *svoej tješči* 'self's.gen mother-in-law.gen' — is not derivable, since it would require the re-binding of the possessive reflexive after LF-copying. Recall that we cannot abandon the derivational approach to binding, because otherwise Principle A would be violated in oblique readings.

- (31) *Petja<sub>i</sub> ljubit sebja bol'she svoej<sub>i</sub> tješči.*  
 Petya loves self.acc more self's.gen mother-in-law.gen  
 Subject reading: 'Petya<sub>i</sub> loves himself more than his<sub>i</sub> mother-in-law loves herself.'  
 Object reading: 'Petya<sub>i</sub> loves himself more than he<sub>i</sub> loves his<sub>i</sub> mother-in-law.'

The fact that the subject reading of example (31) exists may be due to vehicle change — a phenomenon of copied names being interpreted as pronouns, which makes it possible to circumvent principles of Binding Theory (Fiengo & May 1994) and is applicable to the LF-copying analysis of the phrasal comparative. It may well be that the reflexive-containing nominal is substituted by a pronoun during LF-copying any time that Principle A is violated, but if there is a simpler alternative that does not require vehicle change, it is to be preferred. I will return to how Pancheva's (2006) approach compares to the alternative view that I propose in the following sections.

Finally, it needs to be addressed that, contrary to Pancheva (2006), measure phrases as SoCs in clausal comparatives can be semantically felicitous if the correlate is taken to be a measure as well (Pavel Rudnev, p.c.). Example (24) is greatly improved by the addition of *rostom* 'height.ins' (32).

- (32) a. Anja vyše rostrom, čem Anton.  
 Anya taller height.ins wh Anton  
 ‘Anya is taller than Anton is’
- b.<sup>OK</sup> Anja vyše rostrom, čem dva metra.  
 Anya taller height.ins wh two metres  
 ‘Anya is taller than two metres.’

As soon as *dva metra* ‘two metres’ is not interpreted as the subject of the elided clause, that is, an individual, the infelicity is lifted. Pancheva’s generalisation about phrasal comparatives being able to take measure phrases as SoCs as opposed to the clausal ones can be reformulated in a way that is favourable to the direct analysis, to which I return in Section 5.1.

On the whole, the LF-copying analysis of the phrasal comparative is relatively empirically accurate, but its commitment to semantic compositionality both with measure phrases and individuals as SoCs leads it to lose coverage of other data points such as the reflexive binding facts and the availability of PP correlates.

### 3.2. The morphological alternative: too restrictive

A radically different analysis of the phrasal comparative by Philippova (2017) relies on case marking of the correlate and is more restrictive than the analysis by Pancheva (2006) reviewed above. It turns out to be too restrictive.

In Dependent Case Theory (DCT), case can be assigned in certain structural configurations within the domain of case assignment, as well as by functional or lexical heads (Marantz 2000). Cases are therefore divided into two groups: structural, i.e. determined by the syntactic position, and non-structural, which are assigned by specific heads. The restriction on the SoC in Russian phrasal comparatives is, according to Philippova (2017), affected by this distinction.

Philippova (2017) claims that there are two processes at work, as summarised in example (33) below.

- (33) Overwrite and Match (equivalent to Attraction and Matching in Assmann et al. 2014).
- a. Overwrite instructs the morphology to realize the last assigned case.
- b. Match resolves the conflict via insertion of a syncretic morpheme.  
 Both can freely apply to all case value combinations, but the former will yield an ungrammatical result if the case to be overwritten is inherent/lexical.  
 (Philippova 2017:9)

Essentially, the genitive case received by the SoC is inherent and has to overwrite whatever case is received by the SoC in the elided clause. If its prior case is inherent or lexical, Overwrite fails, and the only way to prevent the crash of the derivation is Match. Match saves the day if the overwritten case is syncretic with the new one, in our case, the genitive. Match is called upon in order to account for the supposedly improved acceptability of the oblique reading in examples like example (34), where the instrumental reading is available in spite of the inherent nature of the case.<sup>4</sup> In the case paradigm of the surname *Ivanova*, both the instrumental, which is assigned

<sup>4</sup> In Philippova’s notation, which I adopt for other examples in this paper as well, the equals sign denotes

by the predicate *goržus* ‘I am proud (of someone)’, and the genitive assigned by the null comparative preposition have the same surface form *Ivanovoj*. Match therefore can substitute the genitive *Ivanovoj* for the instrumental *Ivanovoj*, because the two cases are syncretic, so example (34) will be acceptable. With the masculine *Ivanov*, where no such syncretism is observed, Match does not apply and the sentence in (34) is unacceptable.

- (34) Ja goržus’ Petrovym bol’še {Ivanova; Ivanovoj}.
- I.nom proud Petrov.ins more Ivanov.gen=acc Ivanova.gen=ins
- ‘I am proud of Petrov more than Ivanov/Ivanova.’
- ‘I am proud of Petrov more than {√Ivanov; √Ivanova} is.’ nom-reading
- ‘I am proud of Petrov more than of {\*Ivanov; √Ivanova}.’ ins-reading

This analysis crucially relies on predefined sets of structural and non-structural cases, which are not universally agreed upon, for instance, the dative case is controversial in this respect (Pereltsvaig 2007). A bigger problem is the unnecessarily close link between the morphological form of some cases and their syntactic nature.

A counterexample to Philippova’s (2017) analysis comes from depictives, which in Russian can copy their host’s case as well as bear an oblique case: instrumental or dative. Assuming, following Bailyn (2001), that the case assigned to depictives is the same as what the arguments of verbs receive, the same effects of Overwrite and Match must be observable with either of them. Philippova (2017) agrees with Pancheva (2006) in that the SoC is A-bar moved out of a small clause. Russian depictives can be subject to wh-movement in Russian (35), which is a kind of A-bar movement, so since depictives can be A-bar moved, they should be acceptable as SoCs in comparatives.

- (35) Context: the sentence is a rhetorical question uttered as a comment on Dasha’s drunken appearance the other night.
- Kakaja / kakoj Daša včera prišla domoj?
- how.nom how.gen=ins Dasha yesterday came home
- ‘In what state did Dasha come home yesterday?’

Depictives, nevertheless, are not acceptable as SoCs. Note that both the nominative case, which should be overwritable as a structural case, and the instrumental, which is syncretic with the genitive in the feminine adjectival paradigm, are infelicitous (36). The former must be licensed by Overwrite and the latter by Match, but neither of them is.

- (36) \*Daša prixodit domoj p’janaja / p’janoj čašče trezvoj
- Dasha comes home drunk.nom drunk.ins=gen more often drunk.ins=gen
- Expected: ‘Dasha comes home drunk more often than sober.’

Phrasal comparatives admit adjectival SoCs, as I have mentioned earlier in Section 2, so it is not the categorial status of the SoC that makes example (36) unacceptable.

The analysis that employs the structural versus inherent/lexical contrast is therefore too reliant on the cases themselves and less on what exactly affects their assignment. Structural cases can be borne by non-arguments, so there is, once again, not enough restriction.

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syncretism rather than a clitic boundary.

It is acknowledged by Philippova (2017) herself that the analysis is too restrictive at the same time, since there exist acceptable examples that Overwrite and Match rule out. All of them exhibit the familiar pattern of scrambled SoCs that are either in non-structural cases (37–39) or PPs (39).

- (37) Bol'she nix udalos' zarabotat' tol'ko PIFam.  
 More they.gen managed.nom to earn only open-end funds.dat  
 'Only open-end funds managed to earn more than them [bond funds].'  
 (Philippova 2017:12)
- (38) Bol'she nego krasnuju kartočku pokazyvali tol'ko Juriju Kovtunu.  
 More he.gen red.acc card.acc showed.pl only Yury.dat Kovtun.dat  
 'Only Yury Kovtun was shown the red card more often than him.'  
 (Philippova 2017:12)
- (39) Bol'she nego iz igrokov sbornoj tol'ko u... Malkina.  
 More he.gen from players.gen team.gen only by Malkin.gen  
 'Of all national team players, only Malkin has [scored] more [goals] than him.'  
 (Philippova 2017:12)

These problematic examples can be dealt with, if an account of how focus or topicalisation salvages oblique readings is provided. The morphological solution, however, is not capable of this by definition, because it depends on case morphology: a non-structural case cannot be overwritten, no matter the position of its bearer.

#### 4. Proposal

In this section, I develop a new analysis of Russian phrasal comparatives that would overcome the challenges faced by the previous approaches. In my understanding of the syntax of Russian comparatives in general and the constitution of the elided part in particular, I rely on what has been noted by Pancheva (2006) and Philippova (2017).

Next, one of the essential observations about the phrasal comparatives is that the SoC appears to be clause-mates with its correlate, as opposed to the clausal comparatives, where they appear to be in different clauses. This can be demonstrated by means of such diagnostics as local reflexive binding, which is only possible within a single clause. Negative concord and *wh*-extraction have also been cited by Philippova (2017) as diagnostics that demonstrate the absence of a clause boundary separating the SoC from the rest of the clause, although they are less trustworthy for Russian than reflexive binding. Nevertheless, a desirable analysis of the phrasal comparative must place the SoC in the matrix clause to capture the same-clause effects.

At the same time, the phrasal comparative probably has a clausal source, as evidenced by the ambiguity in example (25). I claim that the phrasal comparative is genuinely phrasal in that a noun rather than a small clause is the complement of the comparative preposition. This rids one of the necessity to postulate an ECM-preposition that assigns the genitive across the small clause boundary — case assignment proceeds exactly like in regular PPs.<sup>5</sup> Also, the SoC and

<sup>5</sup> There are reasons to believe that Russian comparatives contain a silent preposition (Philippova 2018). Russian

the correlate belonging to the same clause is accounted for this way. All in all, I propose a direct analysis for Russian phrasal comparatives.

I assume that the phrasal comparative is a DegP, in accordance with Graščenkov & Ljutikova (2017), because it can bear no agreement markers and cannot be used attributively — its external syntax is similar to that of an adverb. In adverbial comparatives, the DegP is an adjunct of the verbal projection that it modifies. The Deg's complement is the adjective/adverb and its specifier is a PP headed by a null preposition and denoting an individual — the SoC. The derivation proceeds the same way as in Hindi-Urdu, as described by Bhatt & Takahashi (2011), and also similarly to what Pancheva (2006) suggests, only without the LF-copying: the Deg needs the SoC and its correlate as arguments, as well as a predicate of individuals and degrees. The lexical entry for this three-place comparative head, which appears in phrasal comparatives, is given in example (40).

(40)  $-\text{er}(x)(P)(y) \leftrightarrow \exists d[\text{P}(y, d) \text{ and } \neg \text{P}(x, d)]$  (Bhatt & Takahashi 2011:585)

Semantically, the Deg head, also referred to as the Deg operator from now on, is a three-place predicate, whose first argument is the SoC, the second — a predicate of individuals and degrees and the third — the correlate. The predicate of degrees is the result of the lambda-abstraction of the correlate and the DegP, which leave behind an individual and a degree variable respectively. This predicate returns a set of degrees, to which an individual is up to in some respect, and the Deg operator decides whether there exists a degree to which the correlate is up to but the SoC is not, thus performing a comparison between two individuals. A predicate of individuals and degrees is necessary for such a comparison, so the direct analysis is associated with a three-place predicate, whereas for a reduced clause analysis, a two-place predicate comparing two degrees is sufficient.

I will now demonstrate the derivation of the subject reading of example (41). First, a DegP is built and adjoined to the VP (Figure 1). Then the subject is raised, creating a predicate of individuals at LF, and the DegP moves, leaving a degree variable (Figure 2). The resulting structure is interpretable, since the Deg head has received the SoC, the raised correlate and the predicate of degrees and individuals (both the Deg and the correlate have left traces in there).

(41) Ja (prygaju) vyše Ani.  
 I jump higher Anya.gen  
 'I jump higher than Anya.'

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is similar to English in this respect, because the SoC in the phrasal comparative is the complement of a *than*-like preposition.

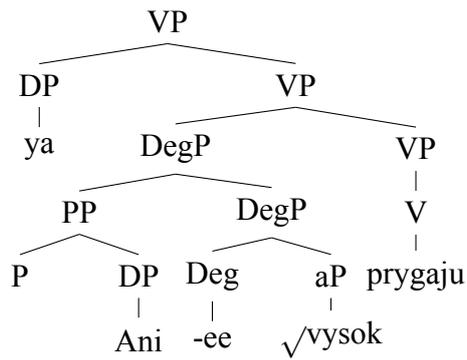


Figure 1. Building the verb phrase containing a DegP

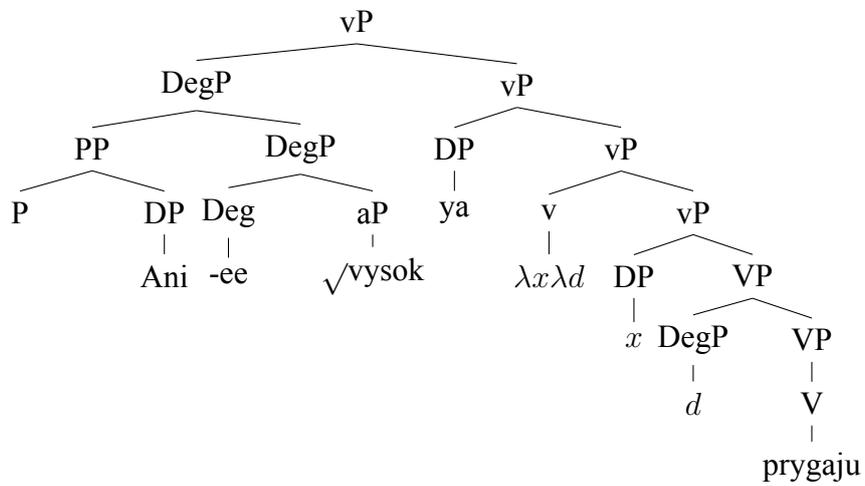


Figure 2. Moving DegP and the correlate to form a predicate of degrees and individuals.

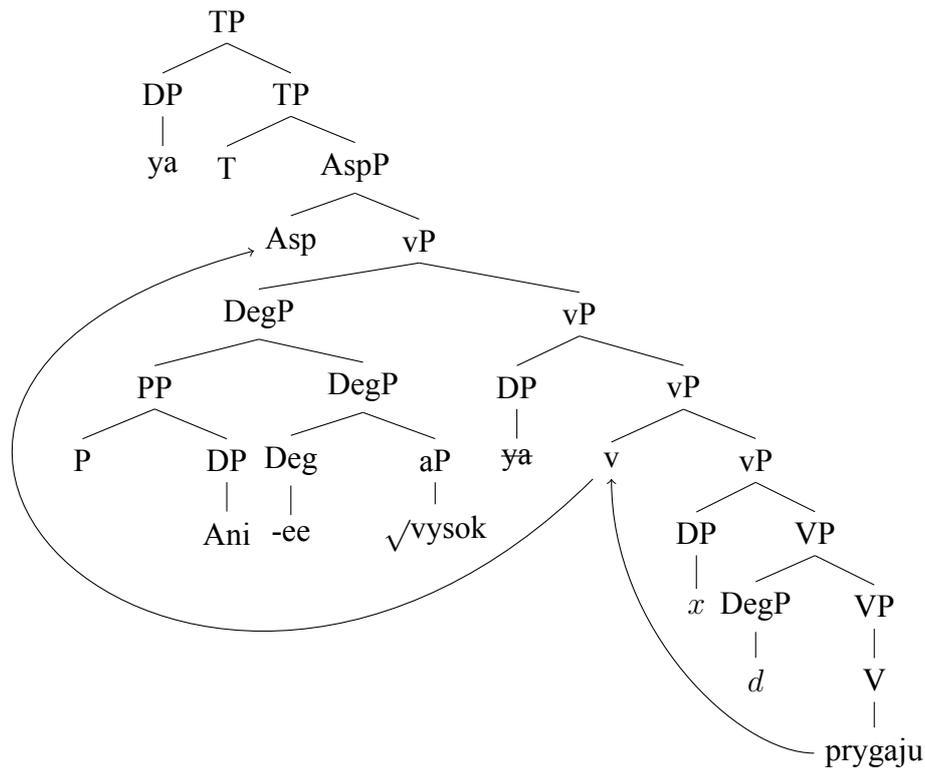


Figure 3. Deriving surface SVO word order.

The final step is to derive the surface word order. Here I follow Bailyn (1995), Griбанова (2013) in assuming that the verb head moves to a position just below T in Russian. The subject occupies Spec, TP, thus the correct word order is obtained, where the DegP is in the position that adverbs usually appear in (see Figure 3). The order of the SoC and the comparative adverb is the reverse of what Figures 1–3 show, but this may be dealt with in several ways: Graščenkov & Ljutikova (2017) assume that there exists a *small deg* head on a par with the regular Deg, to which the comparative head moves, thus appearing to the left of the SoC; it might also be that DegP's specifier projects to its right, which has been proposed for certain heads (see Bruening 2010 on ApplP). I must leave the comparison of these two mechanisms to future work.

Oblique readings are derived in a similar fashion, the only difference being that the movement of the correlate is to a focus/topic position. The last steps of the derivation of example (42) are illustrated in Figure 4.

- (42) Maše ja pomogaju bol'she Ani.  
 Masha.dat I help more Anya.gen  
 'I help Masha more than I help Anya.'

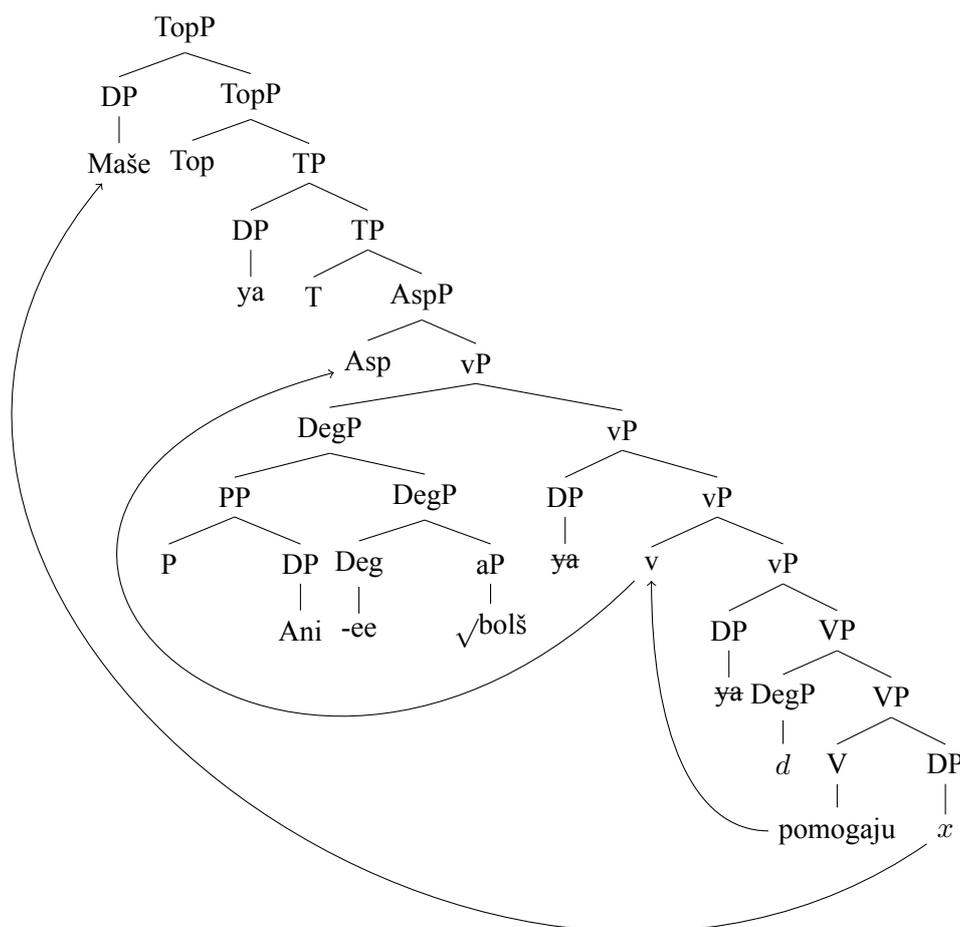


Figure 4. Deriving the oblique reading via topicalisation of the correlate.

In what follows I provide empirical support for the fact that a direct analysis is suitable for Russian phrasal comparatives, building on existing work, where Direct analyses are proposed for Hindi-Urdu (Bhatt & Takahashi 2007, 2011), Lithuanian (Vaikšnoraitė 2021) and Malagasy (Potsdam 2017). Also, I demonstrate that the improved acceptability of oblique readings with an A-bar moved correlate is explicable under the direct analysis, assuming that phrasal comparatives are among those syntactic environments where scrambling can impact semantic interpretation.

### 5. Supporting evidence

#### 5.1. Case marking and categorial status of the SoC

The SoC in the phrasal comparative in Russian is strictly nominal and genitive. This fact immediately suggests a direct analysis, since little evidence of any clausal source is observed, as far as the SoC is concerned. The case marking is invariant, so any case received by the SoC in an elided clause should be overwritten. An analysis along these lines by Philippova (2017) has been considered and criticised in Section 3.2. Considering that every case can be overwritten

in the right scrambling configuration, any observed restrictions on overwritable cases may be circumvented, so the analysis turns out to be too restrictive. If no case other than the genitive from the comparative preposition is assigned to the SoC, the issue is dissolved.

The nominal status of the SoC is explained by any analysis that admits the existence of a comparative preposition in Russian, which is true of both analyses that I have reviewed, so the direct analysis has the same predictive power in this regard.

Where it is superior again, however, is the phonological non-recoverability of any elided material from the alleged clausal source (P. Rudnev, p.c.). While Pancheva (2006) postulates a null anaphoric predicate, Philippova (2017) supposes the existence of an elided small clause, of which no part can be pronounced. It is very rare in ellipsis that the deleted structure is completely unrecoverable (Ross 1988; Sag 1976; Merchant 2001)

The supposed unacceptability of measure phrases as SoCs in clausal comparatives, which is one of the key motivations behind Pancheva's analysis, when viewed from a different angle, supports the direct analysis as well. The phrasal comparative admits both measure phrase and individual SoCs. The clausal comparative accepts individuals and, occasionally, measure phrases, if it is explicitly specified that the correlate represents a measure as well. The clausal comparative, then, is dependent on the matrix clause's content for the interpretation of the SoC, whereas in the phrasal one, the role of the SoC is *underdetermined*, since it can only be construed as an argument of the Deg operator and not in any kind of clause. This conjecture is evidenced by the existence of an ambiguity between measure and individual in phrasal comparatives, where, for example, a person can represent themselves or their height (43).

- (43) Nikita mozet podnjat' bol'she Ani.  
 Nikita can lift more Anya.gen  
 'Nikita can lift more than Anya can.' Anya as an individual  
 'Nikita can lift more than Anya weighs.' Anya as a measure of weight

Pancheva allows a direct analysis for measure phrase comparatives because of their 'inherent semantics' of degrees: degrees do not need LF-copying to be interpreted by the predicative partitive *than*-preposition. However, the fact that SoCs in phrasal comparatives can be ambiguous between degrees and individuals, prompts one to consider a direct analysis for individual SoCs as well.

### 5.2. How A-bar movement feeds oblique readings

There are three examples that Philippova (2017) concedes are not generated by her analysis. The first one features a dative correlate NP (44).

- (44) Bol'she nix udalos' zarabotat' tol'ko PIFam.  
 More they.gen managed.nom to earn only open-end funds.dat  
 'Only open-end funds managed to earn more than them [bond funds].'  
 (Philippova 2017:12)

The principal detail is that example (44) is biclausal: the verb *udat'sja* 'to be successful' in the impersonal form has a dative argument and subcategorises a non-finite clause. Whether *udat'sja*

is a raising or a control verb, is of little importance here: what matters is that the correlate is not necessarily its dative argument. If we assume that the correlate is the null category (PRO or the copy of the matrix dative argument), which is the subject of the embedded non-finite clause, the example ceases to be problematic, since the subject is an acceptable position for the SoC.

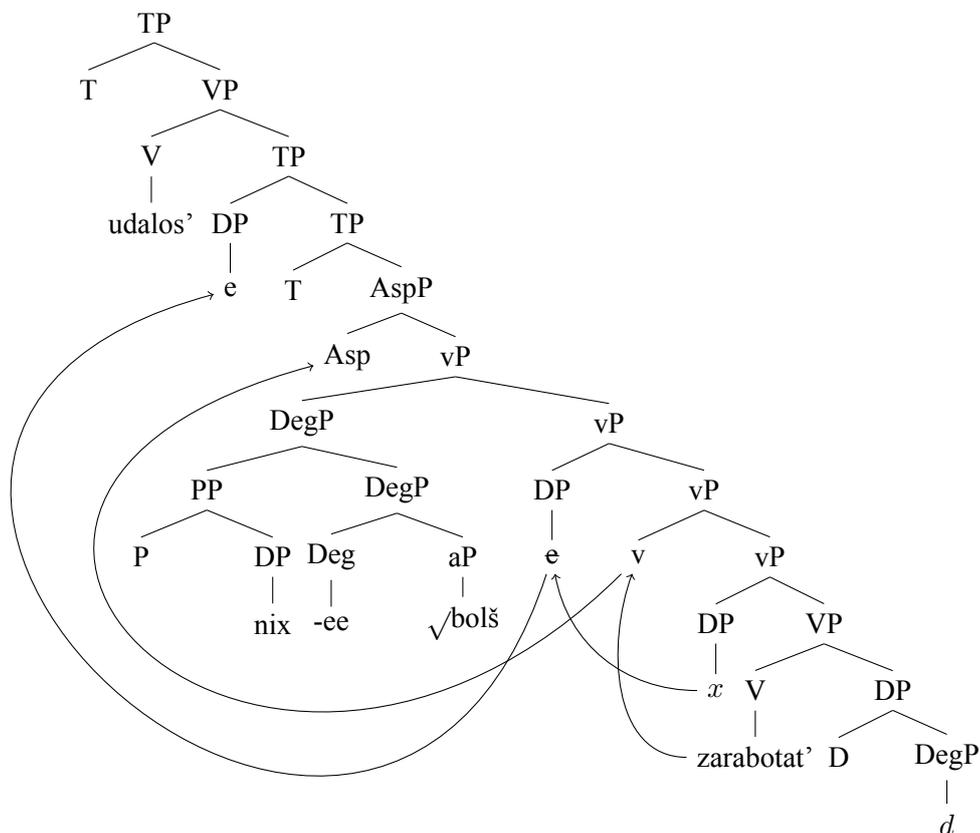


Figure 5. An embedded subject as the correlate.

The structure of example (44) is presented in Figure 5 above. Example (44) does not necessarily have a dative reading: this reading can just as well be a subject reading, where the correlate is the empty category in the embedded subject position.

The next type of sentences not explained by Philippova (2017) features a PP correlate (45) or a dative one (46).

- (45) Bol'she nego iz igrokov sbornoj tol'ko u... Malkina.  
 More he.gen from players.gen team.gen only by Malkin.gen  
 'Of all national team players, only Malkin has [scored] more [goals] than him.'  
 (Philippova 2017:12)
- (46) Bol'she nego krasnuju kartočku pokazyvali tol'ko Juriju Kovtunu.  
 More he.gen red.acc card.acc showed.pl only Yury.dat Kovtun.dat  
 'Only Yury Kovtun was shown the red card more often than him.'  
 (Philippova 2017:12)

These examples illustrate the generalisation that I have made earlier in Section 2 about scrambling feeding oblique readings. Let us see how it can be handled in a direct analysis. Recall that in order to supply the three-place comparative operator with a predicate argument, the correlate moves out. In the derivation of the subject reading, this is the A-movement of the subject. I suggest that in order to derive the oblique reading, one has to scramble the correlate (see Figure 4). Note that for a PP correlate, there is no need to move the preposition's complement, which is prohibited in Russian. It is sufficient that the PP can be scrambled and that its semantic type is that of an individual, so that it could saturate the first argument of the Deg operator. Since the construction 'u N-gen' marks possessors, it can well be assumed to be equivalent to a DP in terms of semantic representation, like, for instance, by-phrases in passives in some analyses (Bruening 2013; Angelopoulos et al. 2020).

The mechanism that allows scrambling to license oblique readings has some ramifications for the syntax-semantics interface, which I will now proceed to clarify.

### 5.3. How scrambling affects interpretation

It follows from the direct analysis of the phrasal comparative that scrambling is semantically visible and affects interpretation. Moreover, A-bar movement of the oblique correlate is necessary for it to be interpreted as such. This is a plausible conclusion, since scrambling has been observed to be semantically interpretable elsewhere, for instance, it can resolve scope ambiguities in Russian (Antonyuk 2015). Quantifier scope varies because of the availability of quantifier raising, which happens at LF, but if the scope relations *can* be disambiguated by overt movement in Russian, they *are*. This is known as Ionin's Scope Principle (Ionin 2001: 47), which is a version of Pesetsky's (1989) Earliness Principle.

(47) Ionin's scope principle: The availability of overt movement restricts covert movement. (Ionin 2001)

The phrasal comparative, then, is another case where overt movement (scrambling) affects semantic interpretation. Scrambling bleeds quantifier raising and feeds oblique readings of phrasal comparatives. Thus, the examples that Philippova (2017) cites as problematic, where scrambled oblique correlates are acceptable, can be handled successfully.

### 5.4. Reflexive binding in the phrasal comparative

While discussing possible objections to Pancheva's (2006) LF-copying analysis, I have mentioned that the fact that scrambling affects interpretation is in conflict with the data on reflexive binding: while the scrambled correlate needs to have its higher copy interpreted and the lower one deleted for the purpose of providing the Deg operator with a predicate of degrees and individuals, there also needs to be a lower copy of the correlate that is c-commanded by the subject, so that the reflexive could be bound. The direct analysis, which I have been defending, suffers from the exact same problem, which can be solved the exact same way: by assuming a derivational approach to binding, where principles of Binding theory apply as their conditions are met during the derivation (Belletti & Rizzi 1988; Bailyn 2003, 1988). It only needs to be

demonstrated how the subject reading of example (31), repeated in example (48), is derived.

- (48) Petja<sub>i</sub> ljubit sebja bol'she svoej<sub>i</sub> tēščī.  
 Petya loves self.acc more self's.gen mother-in-law.gen  
 Subject reading (sloppy, available): 'Petya<sub>i</sub> loves himself more than his<sub>i</sub> mother-in-law loves herself.'  
 Subject reading (strict, unavailable): 'Petya<sub>i</sub> loves himself more than his<sub>i</sub> mother-in-law loves Petya.'  
 Object reading: 'Petya<sub>i</sub> loves himself more than he<sub>i</sub> loves his<sub>i</sub> mother-in-law.'

Figure 6 represents the moment in the derivation where Principle A is satisfied and where *sebja* 'self.acc' is bound. After the subject *Petja* and the DegP are moved, the reflexive inside predicate of individuals and degrees is interpreted as a bound variable and does not refer to *Petja*. Therefore, *sebja* 'self.acc' can be 'rebound' by the SoC at LF when the SoC is passed to the Deg operator. The fact that the reflexive cannot be interpreted as referring to the subject is supported by the absence of strict reading of example (48).

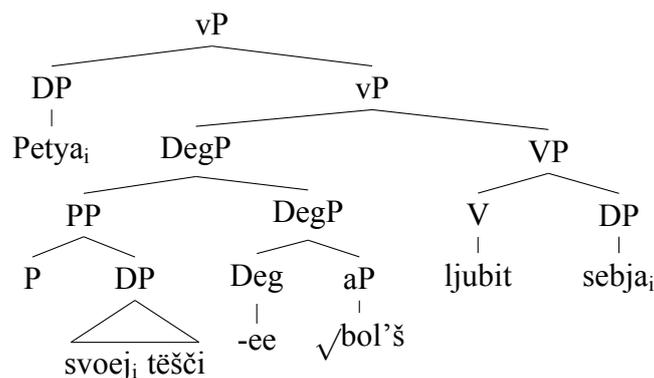


Figure 6. Principle A applies.

Figure 7 shows the final stage of the derivation of the subject reading, where the predicate of degrees and individuals is formed and the Deg operator receives all three of its arguments.

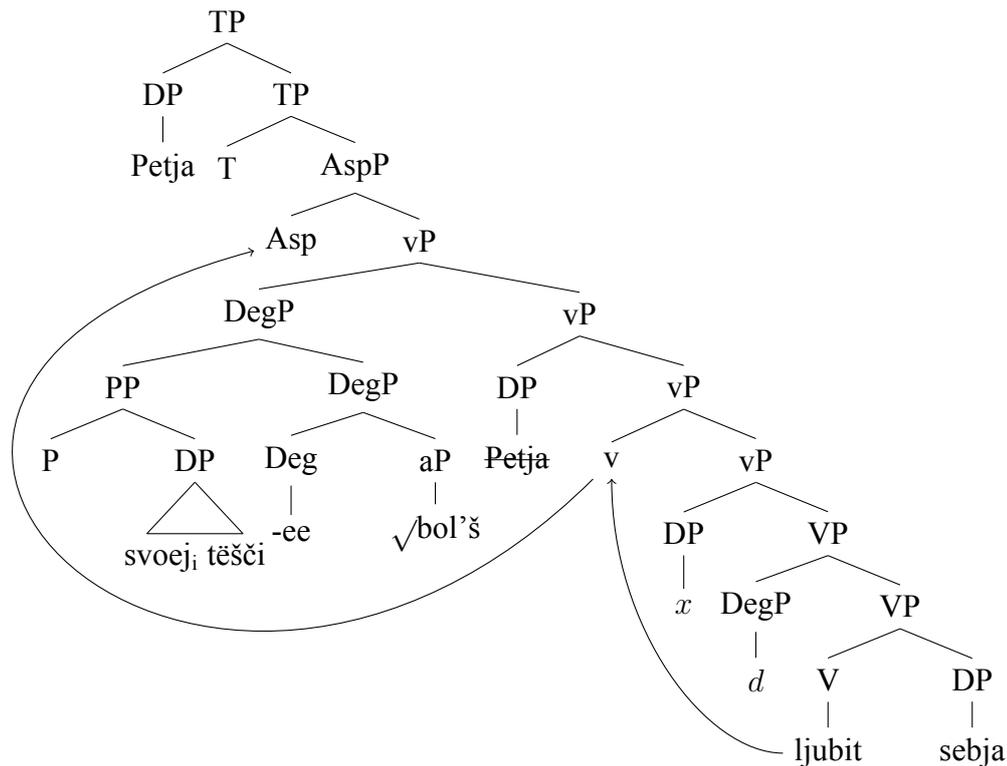


Figure 7. Final stage of the derivation of example (48).

The same logic, however, can be applied to the LF-copying analysis: if the LF-copied vP contains the reflexive as a bound variable, it can be re-bound in the exact same way (see example (49) for how example (48) would then look like at LF). The reflexive *svoej* ‘self’s.gen’ is bound by the matrix subject, interpreted as a bound variable at LF and bound again by the SoC after LF-copying.

(49) [Petya<sub>i</sub> [ $\lambda x : x$  loves  $x$ ]] -er [his<sub>i</sub> mother-in-law [ $\lambda x : x$  loves  $x$ ]]

The LF-copying analysis requires the existence of two different types of phonologically null structure — a null anaphoric predicate that picks up reference from the main clause predicate and ‘regular’ elided structure. The former is supposed by Pancheva (2006) to occur in phrasal comparatives and the latter in clausal comparatives. If both types of comparatives have some hidden structure, it must be of different kinds, since the two types diverge in terms of the availability of strict and sloppy readings: a phrasal comparative can only have a sloppy reading (48), whereas a clausal one can have either (50).<sup>6</sup>

(50) Petja<sub>i</sub> ljubit svoju<sub>i</sub> sobaku bol'se, čem Anja.  
 Petya loves self's.acc dog.acc more wh Anya  
 Sloppy reading: ‘Petya loves his dog more than Anya loves her dog.’  
 Strict reading: ‘Petya loves himself more than Anya loves his dog.’

<sup>6</sup> It is common for sentences which have some elided structure with anaphors to have two readings: a sloppy reading, where the overt anaphor and the elided are bound by different participants, and a strict reading, where both refer to the same entity (Ross 1967; Sag 1976).

The availability of both strict and sloppy readings is typical for VP-ellipsis (VPE; Ross 1967, Sag 1976). Strict readings can be derived via LF-copying, albeit with vehicle change (Oku 1988). It therefore has to be stipulated, why the strict reading in example (48) is not available, that is, why vehicle change does not apply in this case. The direct alternative, however, is much simpler in assuming that the phrasal comparative in Russian lacks silent structure altogether. The reasoning is as follows: if there are two reflexives in the structure — one in the pronounced part and one in the elided part — we expect two readings to be available: strict and sloppy. When one of the readings is prohibited, there must be some factor that rules it out. Superficially, the presence of a second non-LF-copied reflexive in the structure correlates with the availability of the strict reading in Russian comparatives. Whether this correlation actually implies causation is a question for future research.

### *6. Conclusion*

I have demonstrated that the existing accounts of the phrasal comparatives in Russian do not make fully correct predictions about the available positions of the SoC. The LF-copying analysis of Pancheva (2006) has been argued to be overly committed to semantic compositionality to the detriment of its empirical coverage of syntactically relevant facts about reflexive binding in the SoC and the availability of PP correlates. Philippova's (2017) suggestion to draw the line between acceptable and unacceptable SoCs along the structural versus non-structural case distinction has been shown to rely too heavily on surface morphological case forms rather than the syntactic positions marked by them. My proposal aims to correct the over- and underprediction of the previous approaches by defending a direct analysis for the phrasal comparative in Russian. The direct analysis straightforwardly captures the same-clause effects exhibited by the SoC, its uniform case marking and nominal status. The fact that oblique and even PP correlates are acceptable in scrambling configurations receives an explanation too, assuming that scrambling can affect semantic interpretation in phrasal comparatives.

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### Abbreviations

acc	accusative	ins	instrumental case
adj	adjective	neg	negation
cmpr	comparative	nom	nominative
dat	dative case	pl	plural number
gen	genitive case	wh	wh-word

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[https://thddbptnsndshs.github.io/academic\\_site/](https://thddbptnsndshs.github.io/academic_site/)

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**‘(...) Die größte, dümmste Zerstörung einer europäischen Sprache’:  
An analysis of the Twitter discourse regarding gender sensitive language**

Niklas Alexander Pohl

Recently, gender sensitive alternatives towards the use of masculine generics have become an issue of public discourse in Germany. Past research on the topic has shown how the topic is weaponised by political actors on the far right. This study contributes to this understanding by examining the discourse surrounding gender sensitive language on Twitter. A total of 10,000 tweets were extracted and analysed through keyness analysis. The results indicate that opinions on Twitter, as well as the language used within the tweets, reflect how the topic is being weaponised by the far-right.

### *1. Introduction*

Discussions surrounding the state and development of the German language have become a reoccurring subject of the medial landscape as well as the public interest in Germany since the country’s reunification (Spitzmüller 2007). In recent years, these discussions have centred on the use of gender sensitive language. Generally, gender sensitive language<sup>1</sup> has become enough of a topic that its usage was being discussed within the German parliament, the public broadcasting network in Germany, several universities, as well as the Council for German Orthography.<sup>2</sup> Variants of conventionally used grammatical norms are not a new phenomenon, however, as the notion of gender sensitive language resulted from the efforts of linguistic scholars in the late 20<sup>th</sup> century (Push 1984). These scholars wanted to provide alternatives to a socially widely accepted usage-based phenomenon that originated in the 20<sup>th</sup> century as well, the so-called *generisches Maskulinum* ‘masculine generics’. As a language that marks grammatical gender, certain masculine nouns in German, such as those denoting professions, are generically used to refer to people regardless of their gender identity. One example of this is the usage of the masculine noun for teacher (der) *Lehrer* which can be used to refer to female teachers, but not vice versa in regard to the feminine noun for teacher (die) *Lehrerin*. The

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<sup>1</sup> In this paper, the term gender sensitive language is meant as a stand-in for the connotations of the German term ‘*Geschlechtergerechte Sprache*’. It was chosen due to the use and spread of the word within English-speaking contexts, as well as the general lack of an academic equivalent due to the relative dearth of academic discourse on this topic so far.

<sup>2</sup> See: Tagesschau. (2021, June 9). *Streit über geschlechtergerechte Sprache* [Video]. Tagesschau, <https://www.tagesschau.de/multimedia/video/video-875563.html>.

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newest variant of gender sensitive language that has garnered public interest aims to circumvent this by combining both words through an asterisk or a colon. That is, the male noun is often used as a stem to which the grammatically female gender marking *-in* suffix is then attached. For example, the word for teacher would be *Lehrer:in* and refers to people regardless of gender identity (Diewald 2018). Despite the importance of this topic, which is indicated by the vivid discussions surrounding it, there is a relative dearth of academic discourse and studies on the phenomenon within the various linguistic disciplines. In order to add to this discourse, this paper aims to answer the following questions:

1. *How is the discourse on gender sensitive language in the German language on the social media platform Twitter?*

2. *How do the metaphors used within this context relate to the history of German language purism?*

To answer these questions, studies on masculine generics in German, analyses of the political discourse on gender sensitive language, as well as metaphoric discourse within German media in relation to purism will be presented and used as a guiding framework for the interpretation of data extracted from Twitter. Thereby, this paper aims to provide insights into the discourse and usage of traditional metaphors within the context of gender sensitive language on Twitter.

## 2. Background

### 2.1. The German masculine generics

In order to explain the phenomenon of gender sensitive language in German, this section addresses the problems that arise from the presence of grammatical genders within the German language. As Okamura (2012) summarises, German is a language with three grammatical genders, namely masculine (corresponding article: *der*), feminine (corresponding article: *die*), and neuter (corresponding article: *das*). Whereas there are certain grammatically masculine, feminine, and neuter nouns that can designate people or animals regardless of their gender, there are some cases, where this may be considered problematic. Generally speaking, there is a favourable assignment of the masculine form in certain morphological derivations, as well as specific biased aspects of the lexicon, such as the nouns used for professions. Nübling (2017) points out that there are only a few reliable rules for the attribution of these grammatical genders. While there are morphological principles, they are not as reliable as the semantical principle of relating the perceived sex to the grammatical gender. Lobin (2021) demonstrates that certain social values are attached to some lexicon entries and derivations with two examples: A man that is displaying too many *feminine* characteristics is sometimes derogatorily called *die Memme* ‘the sissy’. This indicates a turn from the grammatically masculine word *der Mann* ‘the man’ towards a grammatically feminine word. Similarly, the same process happens for women when they are perceived to be deviating from gendered norms, as they could be derogatorily called *der Vamp* ‘the femme fatal’ instead of *die Frau* ‘the woman’. This example shows a turn from a grammatically female coded referent to a grammatically male coded referent. As Nübling (2017) explains, the grammatical genders in German are principally never entirely independent from language external factors such as biological sex and social gender. This is especially true for words that are used to denominate people. Nübling further points towards a quantitative asymmetry between the attribution of

these forms in regard to gender. Specifically, referents that have a female gender identity or more often *mismatched* with grammatically masculine and neuter forms than referents that have a masculine gender identity are *mismatched* with grammatically feminine and neuter forms. As such, referents with a female gender identity are linguistically more frequently depersonalised and desexualised than referents that have a male gender identity based on commonly used metaphors and diminutives.

The linguistic criticism for the generic masculine word grammar had its starting point in the 1970s. Most notably, Luise F. Pusch (1984), who is often disregarded in the modern discourse about gender sensitive language, criticised the manner in which the values that are associated with the masculine generics relativises the identity of women. Pusch claims that the focus on grammatically masculine terminology of German already excludes women from many aspects of the public discourse based on the cultural associations this language causes because it denotes women as secondary. From Pusch's perspective, the use of masculine generics in everyday contexts reinforces this culturally construed secondary role of women within the public discourses. Thereby, the German language, and especially phenomena such as masculine generics, fundamentally shape the way women are perceived, identified, and identify themselves. Within interactions, being perceived is a fundamental aspect and a necessity for one's reinforcement of one's sense of identity, as well as forming a sense of identity in relation to society in the first place. As such, Pusch considers misidentifications of any kind as damaging and disrespectful, as they often occur at the expense of minority and minoritised groups. Specifically, in regard to the masculine generics in German, Pusch argues that women are not included within the general discourse as human subjects unless they are unambivalently mentioned. According to Pusch, it is simply not enough to include women in the meaning of masculine referents if it is not explicitly clear from the semantic sentence structure.

Boroditsky (2009) explains that languages that treat different genders grammatically differently have an impact on the perception of the speakers. For example, objects that are inscribed with a certain grammatical gender also cause more associations with that gender. This also applies to abstract concepts, such as death and time. To Boroditsky, this indicates how seemingly arbitrary notions of gender profoundly affect the manner in which people unconsciously perceive and think about the world. Since Pusch's call for a prescriptive change in the German language system, several studies have investigated the effect of masculine generics in German from a psycholinguistic perspective. These studies indicate that Pusch's convictions regarding the lack of representation women experience through masculine generics generally hold true, suggesting that the influence Boroditsky found in objects and concepts might also directly apply to the perception of people (e.g., Klein 2004; Braun et al. 2005; Gyga et al. 2008; Linner & Irmen 2005).

To summarise, this section has shown that the existence of grammatical genders in the German language has consequences regarding the perception of the world, as well as a lack of inclusivity for women and other minorities due to the associations that masculine generics cause. With these findings in mind, it is of interest to look at the different alternatives to the masculine generics that were proposed in efforts to circumvent these problems.

## 2.2. Alternatives to the masculine generics

Diewald (2018) summarises that there are two contemporary alternatives. The first is the simple addition of the grammatically feminine counterpart to a word. As such, instead of simply using *Die Kunden* 'the customers' one would use *Die Kunden und Kundinnen*. While

this method is the most commonly used form of more inclusive language, it is not the only one of relevance. For the purpose of simplicity, this paper only takes orthographically deviating variants of gender sensitive language into consideration, such as the example from the introduction (*Lehrer:in*). Other words or strategies that could be part of inclusive language usage, such as the use of gender neutral terms that try to gender marking differences in the language like the use of the term *Person* ‘person’ or the use of other variants on gender sensitive language that explicitly mark gender, such as the addition of the grammatically feminine counterpart, are not considered here, as they are often not the focus of discussions on gender sensitive language that include the orthographically deviating variants. This decision was further informed by the context provided in the next section. As explained in the introduction, the newer versions of gender sensitive language combine the masculine form as a stem and then add the feminine suffix, as in *Politiker:in* ‘politician’. While this combination of the grammatical forms is mostly done by using an asterisk (the so-called ‘*Genderstern*’ e.g., *Politiker\*in*), there are other variants that substitute the asterisk with an underscore (the so-called ‘*Gender-Gap*’, e.g., *Politiker\_in*), or a colon. However, this second variant of trying to achieve inclusivity within words is heavily contested. The Council for German Orthography (Rat für deutsche Rechtschreibung), the international body regulating Standard High German orthography, does not advise the inclusion of any of these variants since they do not always comply with grammatical norms (Rat für deutsche Rechtschreibung 2021).<sup>3</sup> For example, certain nouns cannot be declined in this manner. The word for a colleague, *der Kollege/die Kollogin*, does not allow for this combination of masculine and feminine suffixes, as the result *Kolleg:in* would be grammatically incorrect. Additionally, not every institution, company, organisation, or individual that uses language more gender inclusive does so with the same ideological reasoning. Some of them simply intend to include men and women equally, such as magazines, news outlets, and brands (Lobin 2021). Others, like many universities, use gender sensitive language with the purpose of including intersex and non-binary trans people as well. As such, these organisations actively encourage the usage of the variants that combine the grammatical genders instead of only relying on referring to both men and women. Some examples of prominent universities doing this are the University of Hamburg<sup>4</sup> the Humboldt University of Berlin<sup>5</sup>, and the University of Cologne<sup>6</sup>.

This puts gender sensitive alternatives in an interesting position, where it lacks the official endorsement from the state and organisations that have a certain amount of power on the regulation of German orthography. It does, however, have the endorsement from some individuals, or certain institutions, such as universities. Especially the need to adhere to the gender sensitive alternatives within the context of tertiary education in many public universities in Germany shows that gender sensitive language is, depending on the context, an example of prescriptivism. According to Curzan (2014), four different strands of prescriptivism can be employed on the personal or institutional level. Stylistic prescriptivism encompasses all rules

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<sup>3</sup> See: Rat für deutsche Rechtschreibung (2021, March 06). Die Entwicklung und Bewertung des Themas ‘Geschlechtergerechte Schreibung’ in der Beobachtung des Schreibgebrauchs 2018-2020 vom Rat für deutsche Rechtschreibung gebilligt am 26.03.2021 [Press release.]. <https://www.rechtschreibrat.com/geschlechtergerechte-schreibung-empfehlungen-vom-26-03-2021/>.

<sup>4</sup> See: Universität Hamburg (2020). Geschlechtergerechte Sprache an der Universität Hamburg. Retrieved 20<sup>th</sup> December 2022, from <https://www.uni-hamburg.de/en/gleichstellung/gender/geschlechtergerechte-sprache.html>.

<sup>5</sup> See: Humboldt Universität Berlin (2019). Sprache ist vielfältig – Leitfaden der HU für geschlechtergerechte Sprache. Retrieved 20<sup>th</sup> December 2022, from [https://gb.uni-koeln.de/gendersensible\\_sprache/index\\_ger.html](https://gb.uni-koeln.de/gendersensible_sprache/index_ger.html).

<sup>6</sup> See: Universität zu Köln (2021). ÜberzeuGENDERe Sprache. Leitfaden für eine geschlechtersensible Sprache (7<sup>th</sup> edition). Retrieved 20<sup>th</sup> December 2022, from [https://gb.uni-koeln.de/gendersensible\\_sprache/index\\_ger.html](https://gb.uni-koeln.de/gendersensible_sprache/index_ger.html).

and judgments that help to differentiate between finer points of style within the standard language. Restorative prescriptivism describes all the rules and judgments that are meant to purify the language by returning to and restoring older usage forms. For this paper, however, the other two strands, standardising prescriptivism and politically responsive prescriptivism, are the most relevant. Standardising prescriptivism refers to the mechanisms that maintain a language's standard. In the context of gender sensitive language, this would refer to the continued usage of the main generics and the inclusion of the grammatically feminine forms to not violate any orthographic and grammatic norms. Politically responsive prescriptivism categorises all those mechanisms that aim to promote inclusivity and non-discriminatory language use. Arguably, the addition of the grammatically feminine suffix in the gender sensitive is a deviation from the conventional usage norm of masculine generics. Thereby, it could also be argued that the attempts to oppose it are similar to efforts of standardising prescriptivism. The usage of gender sensitive language can be considered as a politically responsive prescriptivism, especially in light of the recognition of trans and intersex people. These aspects are interesting in consideration of the meaning of language reforms in Germany.

As Johnson (2012) summarises, the 1996 reform of German orthography demonstrated that the standardisation of the German language is deeply rooted within state-sanctioned unification and disciplinary purposes. Despite the public criticism it received for supposedly being elitist in nature, the original intention was to make German orthography more inclusive by making spelling and punctuation more systematic to ensure easier language acquisition for younger people and those who are less proficient with the written language. This incited vehement public protests from citizen initiatives, newspaper agencies, and publishing companies. In their essence, the disputes revolved around the question of to which degree the orthographic changes impacted the basic democratic freedom of the German citizens. As the changes would require a reconfiguration of their mental lexicon, critics saw the changes as a violation of their human dignity and freedom of personality, which are fundamental rights according to the German constitution. As such, the questions that should be answered in consideration of those reforms must be whether the reforms are necessary, whether they achieve the intended result, and whether the reforms have done so in an appropriate manner. While gender sensitive variants are not state sanctioned, these criteria would allow for an assessment of the current state of gender sensitive language and could illuminate which aspects of it would have to be adapted for it to fulfil them.

The orthographically distinct variants of gender sensitive language are in an interesting position where they are not officially endorsed by the international body regulating the German standard or any legislation but are still used within certain influential institutions, such as universities. As a form of politically responsive prescriptivism that attempts to make the language more inclusive, gender sensitive language falls into the same category as, for example, the orthography reform in 1996. Unlike the language reform from 1966, however, it is not entirely clear to which degree gender sensitive language fulfils the criteria that would justify its implementation. As such, the next section is going to discuss the criticism that is used in relation to gender sensitive language, as well as the historical origins this criticism is based on.

### *2.3. Overview of criticism of gender sensitive language*

In order to establish the basis of the criticism of gender sensitive language, it is important to investigate the efforts of linguistic purism that occurred during National Socialism in Germany. In the context of language purism, the *Allgemeiner Deutscher Sprachverein* (ADSV) 'General

German Language Association' is of particular interest. As Stukenbrock (2005) explains, The ADSV, which was founded in the late 19<sup>th</sup> century, primarily wanted to increase the correlation between the German language and the German identity by ridding it of foreign influences. Among the many attempts of the ADSV to establish linguistic domination during the 20<sup>th</sup> century, 'Germanisation' refers to the process of replacing foreign words from the language and replacing them with newly coined words and reintroducing archaic Germanic words. For example, they tried to replace established words such as *Mikroskop* with *Feinsehrohr* 'fine-seeing tube' (Doerr 2002). Efforts such as these were deeply rooted within the notion of cultural identity which the Nazis wanted to establish for the German people. Specifically, Lobin (2021) describes that these efforts were based on the belief that the purification of the German language is an essential aspect of the Nazi's racial ideology. They portrayed their racial Aryan heritage to be intrinsically linked with their language. In other words, maintaining the purity of their language was an important aspect of maintaining the purity of their 'race'. According to Lobin (2021), this underlying ideology is also expressed through metaphoric language usage in comments about the language. As such, Lobin refers to two broader fields of metaphorical language that also originated in the 19<sup>th</sup> century. The first contains biological-pathologizing metaphors. Specifically, these metaphors portrayed the German language as a living entity, such as a plant or a creature that can wither and die through sicknesses. The second broad field of metaphors relates to militarism, that is, languages are seen as weapons made for a war of culture. Under the reign of the national socialists, these metaphors were intensified, metaphors of sickness turned to those of plague and blood, and instead of a cultural war, the turn was towards wars of annihilation to be brought down on other languages. These metaphor types are relevant to the discussion of gender sensitive language due to their reoccurrence within the criticism it receives from prominent political actors.

While the *Allgemeiner Deutscher Sprachverein* was disbanded after the end of the National Socialist regime in 1945, the importance of maintaining the linguistic norms for the cultural identity of the politically far right is still prevalent. Specifically, the emergence of new variants of gender sensitive language has sparked a renewed interest of some political actors to instrumentalise the language. According to Lobin (2021), two main political actors are important in regard to the discussion surrounding gender sensitive language, the *Verein Deutsche Sprache* (VDS) 'the German Language Association' and the far-right German political party *Alternative für Deutschland* (AfD) 'Alternative for Germany'. Both of these political actors' engagement to prevent any form of gender sensitive language had its beginnings around 2017 and has only grown since then. The VDS is an association that has very little to do with linguistic research but one that, nonetheless, has a not to be underestimated socio-political influence, according to Lobin (2021). In its statute, the VDS explains its goals and how it intends to achieve them. Fundamentally, the VDS wants to maintain and elevate the German language as an independent language of culture. It intends to achieve this by resisting the influence of the English language on German, as well as the supposed displacement of German from modern lifestyles. Thereby, the association wants to maintain German as a fully-fledged scientific language, as well as a language to be used within international organisations. The association wants to realise its agenda through the press work, as well as an appeal to institutions, organisations, and people within the public eye to reflect on the importance of the German language.<sup>7</sup> As Gloning and Young (2004) point out, the VDS also proposed

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<sup>7</sup> See: Verein Deutsche Sprache (VDS) (2008). Satzung. Retrieved 20<sup>th</sup> December 2022, from <https://vds-ev.de/verein/satzung/>

alternatives to foreign loan words in the same manner that their predecessor did, such as the usage of *Fernbanken* instead of *DirektBanking*.

On the basis of their stature and their stance towards certain loan words, the association has clear ambitions to enforce a specific pure German language use that is free from any occurring developments, such as language contact, to elevate it. Due to this language purism ideology, it is not surprising that they have positioned themselves vehemently against the use of gender sensitive language. This adherence to a similar language ideology is also reflected within the metaphor usage. As a response to the emergence of gender sensitive language, the VDS establish a division within the association to reinforce the German standard language, which they deem to be the point of departure for all variants of German that they deem appropriate.<sup>8</sup> Of specific interest in regard to gender sensitive language, however, interviews and articles by prominent members of the association, such as its founder Walter Krämer, a German economic and statistics professor. As Lobin (2021) summarises, these letters, articles, and interviews contain misrepresentations and wrong information about gender sensitive language. Further, they also contain metaphors that echo the same thematic makeup of biological-pathologizing language and militarism that was historically demonstrated by the national socialists. Specifically, gender sensitive language is portrayed as a sort of pest, as cancerous growth, and as a mutilation of the German language. The people causing this are seen as terrorists who want to destroy the language and those who spread terror with their language use. Stukenbrock (2005) explains that there is a direct relation to the plant metaphoric that originated in the previous centuries. The differences that were introduced by the national socialists transferred the metaphoric from the language towards the speaker of the language. This also enabled the dehumanisation of Jewish people who were portrayed as a poison towards German culture and language.

Moreover, Lobin (2021) also found that his kind of language is evident in the reader's responses that are published in the association's quarterly magazine. The most prevalent examples Lobin reports on are depicting the German language as a beautiful feminine entity that is disfigured, mutilated, and raped through the use of gender sensitive language. Thereby, the repetition of the metaphors concerning terrorist activity is, in consideration of this, meant to signal the need to defend the German language from an opposing force that intends to sow destruction. Another aspect of the metaphoric used within these responses is the attribution of mania, insanity, and ridiculousness to gender sensitive language constructs and the users of them to discredit them. Generally, neither the VDS's nor their supporters' language differs from previous examples of language purism in Germany, however, the rhetoric shift of the purists since the national socialism seems to be from that of the aggressor in culture wars to that of defenders in times of terrors. According to Stukenbrock (2005), this metaphor resulted from the many wars that were fought throughout Europe during the 19<sup>th</sup> century. The national socialists then extended the usage of this metaphor to also apply to language.

The second political actor Lobin (2021) mentions is the AfD. The AfD was founded in early 2013 and entered the federal parliament in Germany in 2017, where it has remained since. The fundamental political orientation of the party can be described as 'deeply nationalistic and populist' (Klikauer 2020:1).<sup>9</sup> While the AfD is not directly connected to the VDS, it does frequently refer to the VDS and even uses the same topics and phrasing in its press releases

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<sup>8</sup> See: Verein Deutsche Sprache (VDS) (n.d.). AG Gendersprache. Retrieved December 20<sup>th</sup> 2022, from <https://vds-ev.de/arbeitsgruppen/deutsch-in-der-oeffentlichkeit/ag-gendersprache/>

<sup>9</sup> For a full analysis on the AfD, their origin, and politics, see Klikauer, T. (2020). *Alternative für Deutschland: The AfD: Germany's New Nazis or another Populist Party*. Liverpool University Press.

that the VDS already addressed (Lobin 2021). Lobin (2021) further claims that this allowed the AfD to use the German language as a seemingly politically moderate substitute for a nationalist ideology to target the educated middle class. This is related to the way the AfD portrays language and culture. Their stance towards the German language is a central aspect of their stature. In the preamble leading up to the chapter regarding language and identity, the AfD focuses on the relationship between German culture and identity. There, they indicate that this cultural identity is currently exposed to certain forces that need to be undermined. In the chapter, they claim to want to maintain the German language to ensure that the following generations may receive it as a part of their cultural inheritance. Moreover, they also claim to want to help develop the German language in light of the growing digitalisation of globalisation of the world, however, they mention that they intend to maintain its unmistakable particularities and artistic importance. Whereas this is still relatively unspecific, their purist language ideology is displayed in the subsequent paragraphs. They state that the dangerous forces towards the German language consist of multiculturalism and specifically Islam, as well as what they refer to as internationalisation, which consists of the influence of English on the German language and the use of gender sensitive language. In regard to what the AfD wants to protect and maintain, they refer to standardised German, as well as regional variants. Moreover, the AfD asserts the importance of the German language as the bond between the German people and its importance for the role of Germany within its central position in Europe.<sup>10</sup> In regard to the German language, the AfD and the VDS seem to have very similar intentions, however, it must also be noted that the AfD only mentions language peripherally in their stature, as the chapter mentioned here mostly refers to the Islam in Germany and abroad. Weisskircher (2020) points out that the rise of the far-right party is, especially in East Germany, partially based on feelings resulting from a perceived lack of political representation and national identity, as well as a strong prevalence of anti-immigration attitudes that the AfD can exploit through populism. As with the VDS, there are interesting insights from interviews and press releases that prominent members, such as Jörg Meuthen, the head of the party, made in regard to gender sensitive language. Lobin (2021) summarises these and finds a language use that is reflective of the language used by the VDS and the readers of the VDS' press releases. Generally, the biological-pathologizing metaphors are echoed by the AfD, specifically those that refer to the German language as a female body that is being attacked. The difference seems to be that the AfD also refers to the perpetrators of these attacks on the language, namely any form of left-wing ideology. However, the VDS and the AfD are not the only forms of actors in the debate on language purism, as there is a long-standing influence of linguistic purism in the German media ever since the reunification.

#### *2.4. The role of the media in German language purism*

Spitzmüller (2007) explains that there was a renewed interest in the language and its varieties after the reunification due to the need to renegotiate German society. By analysing a corpus consisting of 1380 documents from traditional forms of mass media, that is, predominantly texts from newspapers, but also TV and radio broadcasts. This corpus included texts that were written between 1990-1996, as well as 2001. Spitzmüller's analysis shows four broad categories of metaphors that are, to a degree, similar to the metaphors used by the VDS and the AfD. In 33-52.4% of the documents, biological pathologizing metaphors are used like those

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<sup>10</sup> See: Alternative für Deutschland (AfD). (2016). Programm für Deutschland. Das Grundsatzprogramm der Alternative für Deutschland. Stuttgart.

already mentioned in this paper. The other two categories are different and describe language as a container that can be flooded and infiltrated (24%), and as an artefact like a building (13%). Spitzmüller describes how specifically the metaphors related to language as a container highlight the boundaries of acceptance, as there is a dichotomy between an inside identity and an outside alterity. Spitzmüller's interpretations mention that one additional reason for the use of these metaphors outside of genuine language purism is based on the folk linguistic conception to decrease the diversity within the German speech community to construct a shared sense of identity.

Spitzmüller's analysis only relates to the phenomena of language contact between German and English, as gender sensitive language has, at the time of publication, not received public attention. However, what this study, as well as the analysis by Lobin (2021) show, is that there is a long-standing tradition of language purism and several institutionalised forces interested in maintaining a specific version of the German language. What is not explored is to which degree these ideologies have manifested within the general population. As Curzan (2014) points out, the effect of institutionalised language regulation efforts can have a strong influence on how speakers think about a language, how they use the language themselves, as well as to which degree they see themselves in the right to comment on the language use of other members of their speech community. Specifically with the concept of *verbal hygiene*, as coined by Cameron (1995), critical evaluations of language have the latent potential to be part of every communicative act and allow the individual to gain a sense of control over their discourse. Thereby, speakers are able to inform what they perceive to be normal and acceptable language usage in relation to their own identity, as well as that of the groups and communities they are part of. To investigate this, social media platforms, such as Twitter, offer valuable data since they foster the expression of users' political opinions, as well as participation in societally relevant discourses (Neubaum & Krämer 2017). However, Schöne et al. (2021) establish that it is far more likely for negativity, such as negative language or emotions to be spread and reinforced on this particular social media platform. This could also be reflected in the responses elicited in this study. As such, it is important to consider the results of this study in relation to the source of the data and not assume the data set to be representative of the public's opinion.

### 3. Data

The data for this study was extracted from Twitter through the use of the Twitter API and the *rtweet* package (Kearney 2019) for the statistical computing programme R.<sup>11</sup> Based on a previous small-scale data extraction of 1,000 tweets on the same topic (Pohl 2022), the package was used to code the extraction of up to a maximum of 5,000 tweets that were written in the German language and included the target word *gender*. The target word is the colloquial verb usually used to describe the usage of gender sensitive language in German. It was chosen in favour of other words related to the topic, such as *Genderstern*, *generisches Maskulin*, and *geschlechtergerechte Sprache* as the previous data extraction showed that these other words only procured around one percent of the tweets that were elicited by the use of *gendern*. Due to the limitation of the Twitter API, only data from a limited period, that is, the past 7 days, could be extracted. As such, the data was extracted in three rounds, eliciting 3,849 tweets from 19/10/2022 to 26/10/2022, 3,311 tweets from 28/11/2022 to 06/12/2022, and 3,569 tweets from

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<sup>11</sup> See: R Core Team. (2022). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. <https://www.R-project.org/>.

09/12/2022 to 18/12/2022; the final dataset thus obtained consists of 10,729 tweets and 99,569 words. A reference corpus was then used to conduct a keyness analysis on the dataset. The reference corpus consisted of data taken from the DeReKo, which is an online archive collecting corpora on contemporary written German.<sup>12</sup> Due to the internal limitations of the archive, only 10,000 excerpts could be downloaded. Additionally, it was required to use a target word for the elicitation, for which the German word for language, *Sprache*, was chosen. In addition to the sentence in which the target word appeared, the previous, as well as the following sentence, was also elicited. This ultimately led to a reference corpus of 508,320 words.

#### 4. Methodology

The keyness analysis was conducted in R as well with the use of the *tidyverse* (Wickham et al. 2019), *tidytext* (Silge & Robinson 2016), *readtext* (Benoit & Oben 2021)<sup>13</sup>, and *quanteda* (Benoit et al. 2018) packages. The results from the keyness analysis were depicted in a table for all words in both corpora. In order to assess the keyness *Log-Likelihood* (G2) and approximate *Bayesian Information Criterion* (BIC) were chosen as measurements. As Gabrielatos (2018) explains the G2 value in keyness analyses corresponds to the distinctiveness of an item within a corpus. For the calculation of the statistical significance, the approximate BIC was chosen based on Gabrielatos' assessment of statistical significance thresholds. They explain the low suitability of the p-value to account for the keyness of items. Generally, a BIC over 10 can be considered strong evidence against the  $H_0$  in keyness analyses and would roughly correspond to a p-value of 0.000002. After formatting the table to depict the items with the highest G2 and approximate BIC values within the Twitter Corpus, the 10 statistically most frequently used items from the word classes nouns, verbs, adjectives/adverbs were manually classified and chosen as the focus of this study.<sup>14</sup> The 10-word cut-off point was determined due to the limited scope of this study. The word classes have been selected as they were deemed to be more likely to express the broader themes and attitudes within the corpus. This decision was made on the basis of the analysis of the small-scale data extraction (Pohl 2022) as well as the analysis of metaphors in Spitzmüller's (2007) study. These word classes were then further analysed through qualitative content analysis. For this, the data for the thirty words from the respective word classes was filtered with R and coded to be displayed with the ten preceding as well as ten following words for every instance in which any of these words appears. Based on similarities within the content, such as themes, the words were then divided into two groups. Then, based on the metaphors related to language that were found within the contexts of the most frequent words from the respective classes, the Twitter corpus was further investigated for related metaphors. As such, if the term *Vergewaltigung* 'rape' was found in the context, all other compound nouns that included this term were similarly extracted, such as *Sprachvergewaltigung* 'rape of the language'. These metaphors were then also classified based

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<sup>12</sup> See: IDS (2022): *Deutsches Referenzkorpus / Archiv der Korpora geschriebener Gegenwartssprache 2022-I* (Release vom 08.03.2022), Mannheim: Leibniz-Institut für Deutsche Sprache. PID: 00-04B6-B898-AD1A-8101-4.

<sup>13</sup> See: Benoit, K. & A. Oben (2021). *readtext: Import and Handling for Plain and Formatted Text Files*. <https://CRAN.Rproject.org/package=readtext>.

<sup>14</sup> Due to the syntactic structure of the German language, it is not always possible to determine whether a word is an adjective or adverb without its respective context. As such, these words were counted as one group and only classified after the content analysis.

on how they thematically relate to language. As some of these metaphors did not appear in the reference corpus at all, they were then also statistically assessed on the basis of their classification instead of an assessment of the items individually.

This study is limited in certain regards. The first thing that must be mentioned here is that the data used in this study may be slightly skewed due to the inclusion of second-order tweets, such as replies, in the corpus. This may have caused certain phrases and words to appear more than they would have otherwise. Their inclusion, however, should be warranted by virtue of having access to substantially more data. This may indicate that other corpora that do not include second-order tweets could potentially have different results and conclusions. A second limitation is that only small-time frames could be used for the data extraction. It is not possible to know to which degree the data for this study is representative of the entirety of the discourse on this topic on Twitter.

## *5. Results and analysis*

As stated in the introduction, this paper aims to investigate the discourse that surrounds gender sensitive alternatives to the masculine generics in German on Twitter. The general discourse will be assessed through the keyness analysis of the 30 items from the word classes, which are depicted in Tables 1 and 2. On the basis of the manual analysis of the tweets, the 30 items were put into groups based on overarching thematic similarities. As such, two subcategories were created. The first subcategory includes all the words that directly relate to gender sensitive language through e.g., metalinguistic comments. The second subcategory includes mentions of gender sensitive language along with other political topics. As the context of the data in these tables contained several thousand words, only the broader directions within them and a few examples will be presented. Further, due to the connections between language purism and metaphor usage in German, this study also considers the metaphors present within the Twitter corpus and depicts them in Table 3.

### *5.1. Keyness and content analysis*

Table 1 presents the words that were deemed to be used in contexts of a broader political nature. Tables 1 and 2 depict the word and English translation, its word type, its total frequency in the Twitter corpus and the reference corpus, its G2, as well as its BIC. As the BICs indicate, the log-likelihood of these words in Table 1 is highly significant in the Twitter corpus. The nouns in this table are of interest, as they all have a BIC of over 140, whereas the words from other categories have BICs ranging from 27 to 103.

	Translation	Word type	Frequency	Frequency in the reference corpus	G2	BIC
<i>Mehrheit</i>	majority	noun	305	19	577,91	564,592
<i>Ideologie</i>	ideology	noun	103	8	187,66	174,342
<i>Zwang</i>	compulsion	noun	102	9	181,11	167,792
<i>Bundeskanzler</i>	(German) chancellor	noun	80	1	175,71	162,392
<i>Hauptsache</i>	the main thing	noun	89	6	166,38	153,062
<i>Problem</i>	problem	noun	203	102	159,25	145,932
<i>(ab)lehnen</i>	to decline	verb	57	2	116,37	103,052
<i>aufregen</i>	upset / agitate	verb	40	2	78,28	64,9622
<i>spaltet</i>	splits	verb	34	2	64,99	51,6722
<i>interessiert</i>	interested	verb	53	27	41,04	27,7222
<i>linken</i>	left	adjective	69	9	111,17	97,8522

Table 1. keyness of the most frequent words of the broader political category in the Twitter corpus, their English translation, frequencies, log-likelihood and Bayes Factor.

One aspect that led to the classifications of these words as being used within political context is mentions of German political ideologies and parties and references to political systems like democracy. For example:

- (1) ‘@user @user @user Gendern ist eine -leider sehr erfolgreiche- Strategie der linksgrünwoken Khmer, die Gesellschaft in Gut und Böse aufzuteilen: die Guten gendern, und die, die nicht gendern, sind die Bösen. Politik, Medien, Behörden haben sich dieses demokratiefiernde Framing brav zu eigen gemacht.’  
‘@user @user @user Gendern is a -unfortunately very successful- strategy of the left-green woke Khmer to divide society into good and bad: the good people gender and those who do not gender are the bad ones. Politics, media, and authorities have dutifully adopted this democratic framing as their own.’  
(Tweet from 25.10.2022)

Within these contexts are additional occurrences of topics that are not directly related to the usage of gender sensitive language, such as references to Germany’s political responses to migration, foreign cultures and religions, such as the Islam, climate change, the war in Ukraine, as well as vaccination and facemasks policies. For example:

- (2) ‘@user Wenn man sich so die Hauptthemen des Westens anschaut, wie Gender, Umweltankleber, unkontrollierte Massenimmigration inkl. Lebenslanger Vollversorgung, Quotennichtsnutze und Förderung der Islamisten, dann kann man schon glauben, dass das alles Vollidioten sind.’  
‘@user If you look at the main issues of the West, such as gender, environmental stickers, uncontrolled mass immigration including full lifelong support, good-for-nothing and promotion of Islamists, then you can believe that they are all complete idiots.’  
(Tweet from the 25.10.2022)

More specifically in relation to gender sensitive language, the items in Table 1 depict gender sensitive language as an invention of a small elitist minority group that attempts to enforce their beliefs on the majority. What constitutes the majority varies, but generally refers to the German population, but also women, and university students. For example:

(3) ‘@user @user @user Dann gehörst du zu den 20 %. In Deutschland bestimmt eine Minderheit immer. Siehe Grün/SPD, Gendern. Etc. Das geht aber nicht ewig gut. Siehe Diktaturen. Die Mehrheit wird sich irgendwann wehren.’

‘@user @user @user Then you belong to the 20 %. In Germany, a minority always rules. See Green/SPD, gendern. Etc. But that doesn't go on forever. See dictatorships. The majority will eventually fight back.’

(Tweet from the 29.11.2022)

(4) ‘#gendereliten sind die sprachgewordenen unterdrücker gegen uns 99 % 🗣️ 🗣️’

‘#genderelites are the speech oppressors against us 99% 🗣️ 🗣️’

(Tweet from the 25.10.2022)

In line with these claims, unnamed studies and surveys are brought up that supposedly confirm these claims as facts. This elitist minority group is further portrayed as dangerous, woke, and identarian terrorists. Moreover, the tweets also attribute a certain frustration to the users that deem themselves to be part of this majority in that they feel themselves being taken for stupid and that the political parties ignore their needs by only focusing on unimportant topics such as gender sensitive language. It is also expressed that some of the users fear not being allowed to criticise or express any of their opinions anymore as a result of this left-wing terrorism. It is also brought up that gender sensitive language as a topic is supposedly leading to a fission within the German people.

Taken together, these results indicate that a part of the discussion surrounding gender sensitive language does not focus on either the linguistic aspects that are related to it, nor does this part of the discourse mention the more social aspects such as the visibility and inclusion of women and/or trans people. Instead, these items indicate that gender sensitive language is seen as an aspect of radical ideology that the users on Twitter see violently forced upon them. Specifically, the references towards a certain minority group imply that there is at least one small group of people who have a direct influence over the political direction Germany goes into. This supposed influence of the minority is then put into contrast with the vague notion of the various majorities, such as women, university students, or Germans. That is, these users do not feel seen or heard by the political parties in Germany. This is underlined by the repeated mentioning of unnamed surveys and studies that supposedly have proven the majority's attitude towards gender sensitive language. This supposed will of the majority can also be seen as the linking factor to other political topics like migration and climate change in that they also do not agree with the direction these policies are going despite their belief to be part of the largest part of the German population whose interest should be represented.

Table 2 depicts the items that, based on their respective contexts, were deemed to be directly related to gender sensitive language. Additionally, it includes the words that were deemed to not have any recognisable patterns within their contexts. These items are marked with an asterisk in the table. The words in this table also have frequencies in the Twitter corpus that are at least twice as high as in the reference corpus, as well as G2 values that are highly statistically significant.

	Translation	Word type	Frequency	Frequency in the reference corpus	G2	BIC
<i>Frauen</i>	women	nouns	385	165	346,86	333,542
<i>Geschlechter</i>	gender / sex	noun	161	4	339,17	325,852
<i>Vergewaltigung</i>	rape	noun	128	6	252,7	239,382
<i>Maskulinum</i>	masculine	noun	79	1	173,41	160,092
<i>verbieten</i>	forbid	verb	105	4	212,5	199,182
<i>gezwungen</i>	forced / compelled	verb	105	7	196,67	183,352
<i>vergessen</i>	forgot	verb	150	44	173,6	160,282
<i>kritisiert</i>	criticises	verb	67	27	63,1	49,782
<i>stimmt</i>	to agree	verb	63	28	54,96	41,642
<i>abgeschaltet</i>	switched off	verb	22	1	43,6	30,282
<i>einfach</i>	simply	adverb	455	225	362,37	349,052
<i>richtig</i>	right / correct	adverb	293	136	246,64	233,322
<i>korrekt</i>	correctly / rightly	adverb	113	15	181,14	167,822
<i>falsch</i>	wrongly	adverb	146	40	175,39	162,072
<i>echt</i>	really / genuinely	adverb	93	11	153,97	140,652
<i>wirklich</i>	truly	adverb	220	129	147,93	134,612
<i>dumm</i>	dumb	adjective	75	10	120,06	106,742
<i>absolut</i>	absolutely	adverb	66	9	88,4	75,082
<i>consequent</i>	consequent	adjective	54	10	77,41	64,092

Table 2. keyness of the most frequent words of the broader political category in the Twitter corpus, their English translation, frequencies, log-likelihood and Bayes Factor.

The contexts of these words deal with metalinguistic discussions about gender sensitive language, as well as reactions and attitudes towards it and its users. One of the broader topics within these items is about the purpose of gender sensitive language, that is, whether gender sensitive language increases the visibility of women. For example:

- (5) ‘Es zeigt sich immer klarer: Beim #Gendern geht es längst nicht (mehr) um die Sichtbarkeit von Frauen zwecks Gleichberechtigung als vielmehr um die allgegenwärtige Präsenz einer Ideologie, die es per (Selbst-) Hypnose zu verinnerlichen gilt. #Boehmermann.’

‘It is becoming increasingly clear that #gendern is no longer about the visibility of women for equal rights, but rather about the ubiquitous presence of an ideology that needs to be internalized through (self-)hypnosis. #Boehmermann.’

(Tweet from the 03.12.2022)

- (6) ‘Gendern ist Moral, die Moral Menschen sichtbar zu machen. Die Moral auch Minderheiten eine Stimme u Sichtbarkeit zu geben. Sprache ist Macht. Es ist nachgewiesen, dass wir bei männlichen Berufen zB Anwalt nicht an Frauen denken’  
 ‘Gendern is morality, the morality of making people visible. The morality of giving minorities a voice and visibility. Language is power. It is proven that we do not think of women when we think of male professions, e.g., lawyers’  
 (Tweet from the 07.12.2022)

In line with this, there are also claims that the masculine generics already include all -In this context binary- genders, which, supposedly makes gender sensitive language obsolete. Along these claims are dismissing notions towards those that do not agree with the degree of inclusion that masculine generics offer, as well claims that gender sensitive language has a detrimental effect on women’s rights by directing attention to the wrong issues that language will not be helpful in solving. On a related note, the key items *Frauen* and *Geschlechter* also include several mentions of trans identity invalidating rhetoric by, for example. referencing arbitrary numbers of gender identities, stressing male and female gender identities, or directly calling anything outside of the gender binary made up. Another focus within this area of the key items is the prevalent referencing of certain groups of people that supposedly condemn gender sensitive language, namely linguists, women, the German people, as well as disability rights organisations. Further, the attitudes expressed by the contexts of the key items indicates debates on the appropriateness of using rape analogies in regard to gender sensitive language, on whether people are actually forced to make use of gender sensitive language in universities and their everyday life, whether there is a linguistically correct version of gender sensitive language, and whether gender sensitive language could ever be considered to be correct language usage. For example:

- (7) ‘@user Nein, das ist nicht notwendig. Da gibt es besser Geeignete. P.S. Gendern, unklarer Inhalt und kein richtiges Deutsch passen zusammen.’  
 ‘@user No, that is not necessary. There are better-suited ones. P.S. Gendering, unclear content and no proper German go together.’  
 (Tweet from the 04.12.2022)
- (8) ‘Es gibt eine deutsche Rechtschreibung. Gendern ist dort nicht vorgesehen. In der Schule wird die richtige Sprache gelehrt und nicht der Mainstream von einigen, die sich erhoben fühlen, unsere Sprache zu verändern. Ich jedenfalls habe als CEO das G. bei mir verboten’  
 ‘There is a German orthography. There is no provision for gendering. The correct language is taught in school and not the mainstream of some who feel elevated to change our language. I, for one, as CEO, have banned the use of gender sensitive language at my company’  
 (Tweet from the 19.10.2022)

Within these debates it is also possible to distinguish between two sides, that is the supporters of gender sensitive language and those who oppose it. The people that support gender sensitive language claim that those that oppose gender sensitive language are not informed about what gender sensitive language means, that they are also the only ones making an issue out of the

topic, and that there is a certain irony in how these people claim to be restricted in their language usage when they want to outright aim to restrict the language usage of others. Lastly, the people that oppose the usage of gender sensitive language within these debates make negative claims about gender sensitive language along the lines of denoting it and its users to be stupid, or overtly ridiculing gender sensitive language by using it in contexts where it is not required.

Unlike the first subset of key items, the second group indicates a greater diversity within the discussions. Within this dataset are people both agreeing and disagreeing with certain notions, such as the degree of visibility gender sensitive language offers to women. Whereas there is an overtly negative attitude towards gender sensitive language, there are also users supporting it that similarly oppose or belittle the other side. The opposition towards gender sensitive language seems to originate mainly from three broader fields. The first is that people assume it to be entirely superfluous due to the believed genericity of many of the grammatically masculine nouns in the German language. A second seems to be rooted in transphobia, as the focus is on the supposedly absolute nature of a biological sex binary and the attempts to ridicule gender identities outside of them. Thereby, these claims function as justifications for the exclusion of trans and intersex identities from the language. The last field is a linguistic argument, as there are claims that are based on the grammaticality of gender sensitive language with users completely denouncing it as grammatically incompatible with German grammar rules. All these three fields indicate an inherent wrongness of the use of gender sensitive language. The ridicule that is then inflected upon people that use gender sensitive language and the phenomenon itself is, in this regard, a reinforcement as well as a consequence of that by, for example, belittling the intellectual capacity of anyone using the phenomenon. It is interesting to note that the supporters of gender sensitive language argue in the same manner since they also refer to a lack of understanding from the other side and belittle them as well.

To summarise, in this section, the more general aspects of the discourse on gender sensitive language were discussed. One larger aspect of this discourse is the political nature of the topic, as it is often used in relation to other notions, such as migration politics, that position it as an aspect of a larger concern. A second aspect of the discourse is more directly focused on gender sensitive language and includes debates on its grammaticality, its function, and judgements of it.

### *5.2. Metaphor data and analysis*

The metaphors found within the content analysis, as well as the search for related words in the corpus, were divided into three categories based on how they relate to language. The first category, which is depicted in Table 3, shows the metaphors that express a form of violence enacted upon the language. A comparison of the total frequencies in the corpora, as well as the G2 values, indicate a strong distinctiveness of these metaphors within the Twitter corpus, which is also highly statistically significant. The metaphors in this table include those that express sexual violence, destruction and distortion, as well as aesthetic destruction of the language. The metaphors all project a female body onto the German language. Interestingly, there is a certain dichotomy present between the metaphors that indicate sexual violence and those that indicate violence done towards the language's inherent aesthetic. Sexual violence can only be inflicted upon a living entity, whereas the phrasing of the metaphors expressing violence towards aestheticism could rather be applied to objects, such as paintings or statues.

This implies a static image of language as a whole since living entities, similar to language themselves, are inherently subject to change.

	Translation	Frequency	Frequency in the reference corpus
<i>Schänder (Sprachschänder)</i>	violator (of language)	4	0
<i>Sprachmisshandlung</i>	abuse of language	1	0
<i>Vergewaltigung (Sprachvergewaltigung)</i>	rape (of language)	135	6
<i>Verhunzung (Sprachverhunzung)</i>	spoilage (of language)	28	1
<i>Verschandelung (Sprachverschandelung)</i>	disfigurement (of language)	6	0
<i>Verstümmelung (Sprachverstümmelung)</i>	mutilation (of language)	12	0
<i>Verunstaltung (Sprachverunstaltung)</i>	deformation (of language)	15	0
<i>Sprachverzerrung</i>	distortion (of language)	2	0
<i>Sprachzerstörung</i>	destruction of language	3	0
<i>Sprachpanscherei</i>	adultery of language	2	1
<i>Kulturzerstörung</i>	destruction of culture	2	0

Total frequency of violent metaphors in the corpus = 210  
 Total frequency of violent metaphors in the reference corpus = 8  
 $G^2 = 694,483$   
 $BIC = 681,165$

*Table 3. Metaphors expressing direct violence done towards language from the Twitter Corpus, their English translation, frequency as well as total frequency, log-likelihood, and Bayes Factor.*

The metaphor group in Table 4 includes metaphors that are less directly related to language itself. It also includes compound words that relate to more general political aspects similar to the first subcategory from Table 1. As in Table 2, the metaphors in Table 3 reference violence. However, unlike in Table 2, these items depict violence as it is exerted through, e.g., language or an opinion. The distinctiveness and statistical significance of these metaphors in the Twitter corpus are again very high. The exertion of violence in this table is represented through the prevalence of the use of dictatorship, fascism, as well as terrorism. The combination of these metaphors within the discourse is interesting as it already implies that the German people are living under a totalitarian regime in regard to certain topics, such as opinions and language, but also that the rest of their freedom that they cling onto is being endangered through by the prospect of cultural terror. It is interesting to note that in comparison to the metaphors in Table 3, language is not only to be protected and a victim of violence but also the weaponised into a tool and the means of violence.

	<b>Translation</b>	<b>Frequency</b>	<b>Frequency in the reference corpus</b>
<i>Diktatur</i> ( <i>Sprachdiktatur, Genderdiktatur, Gesinnungsdiktatur, GrüneDiktatur, Meinungsdictatur, Minderheitendiktatur</i> )	Dictatorship (of language, gender, attitude, green, opinion, minority)	30	7
<i>Sprachfaschismus</i>	Language fascism	1	0
<i>Nazis</i> ( <i>Sprachnazis, Klimanazis</i> )	Nazis (language, climate)	40	12
<i>Terror</i> ( <i>Sprachterrorismus, Fahrradterroristen, Klebeterroristen, Terroristinnen, Klimaterroristen, Terrorgruppe, Terrorisiert, Terroristen, Umwelterroristen</i> )	Terror (language, bicycles, Gluing, female terrorists, climate, terror group, terrorising, terrorists, climate terrorists)	46	15
<i>Kulturkampf</i>	War on culture	10	2

Total frequency of oppressive metaphors in the corpus = 127

Total frequency of oppressive metaphors in the reference corpus = 36

Log-likelihood = 300,396

BIC = 287,0783

*Table 4.* Metaphors depicting oppressive forces within the Twitter Corpus, their English translation, frequency as well as total frequency, log-likelihood, and Bayes Factor.

Lastly, Table 5 represents the metaphors that describe the state of the language. Unlike in Tables 2 and 3, the metaphors in Table 5 do not have a uniform direction in terms of whether something is done to or with language, as some of the states described in Table 5 are static, whereas others are processes that had to be induced by someone or something. While these metaphors have an overall lower frequency and G2 value, they are still highly statistically significant. The metaphors in Table 5 range from derogatory judgements of language towards broader implications of the artificial deterioration of language. In the context of the discourse, these metaphors can be seen as the devaluation of the language, which would be the consequence of allowing gender sensitive language to continue existing. Thereby, these metaphors also support the attempts at ridiculing and lowering the credibility of gender sensitive language.

	Translation	Frequency	Frequency in the reference corpus
<i>Sprachdiarrhoe</i> ( <i>Genderdiarrhoe</i> )	Language diarrhea	2	0
<i>Entgleisungen</i> ( <i>Sprachentgleisung</i> )	Derailment (of language)	4	1
<i>Sprachmüll</i> ( <i>Tranzenmüll</i> )	Language garbage (tranny garbage)	3	0
<i>Unsinn*</i> ( <i>Sprachunsinn</i> )	Nonsense (language nonsense)	59	11
<i>Verdummung</i> <i>Sprachverdummung</i>	Dumbing down (of language)	7	0
<i>Sprachpfuscherei</i>	Bungling (of language)	2	0

Total frequency of negative state metaphors in the corpus = 77

Total frequency of negative state metaphors in the reference corpus = 12

Log-likelihood = 212,554

BIC = 199,236

*Table 5.* Metaphors depicting the state of the German language from the Twitter Corpus, their English translation, frequency as well as total frequency, log-likelihood, and Bayes Factor.

## 6. Discussion

The first research question this paper aimed to answer was how the discourse on gender sensitive language in German is on Twitter. The results of this study indicate that the discourse is largely twofold. Politically, gender sensitive language is negatively seen as one ideological aspect of a larger movement that only supports a minority of people. Therefore, it is often put in relation to topics such as climate change and migration. Another aspect of the discourse is more directly concerned with gender sensitive language as a phenomenon. Specifically, this part of the discourse features debates on the function, grammaticality, and opinions on gender sensitive language. Most of this part of the discourse indicates a negative attitude towards gender sensitive language in these regards. As such, it would primarily indicate that Twitter users do not think that gender sensitive language increases representation, that it is ungrammatical, and they share a general negative sentiment towards it. A second focus in the analysis of the discourse was set on metaphors. The results from the metaphor analysis reflect this general negative sentiment towards gender sensitive language as they depict violence enforced through and with language as in Tables 3 and 4. Especially Table 2 reinforces the aspect of gender sensitive language merely being seen as an aspect of a larger concern due to the inclusion of metaphors that relate to other issues, such as climate change.

These results can be put in relation to the general discourse on gender sensitive language outside of Twitter in several regards. Based on Johnson's (2012) assessment of language reforms, this would position the use of gender sensitive language variants as illegitimate. However, some of the notions discussed in the Twitter discourse have been discussed within the academic discourse as well. Firstly, one of the major arguments against gender sensitive language presented in the previous section is the claim that masculine generics are already sufficient by including everyone regardless of their gender identity. Here, it is interesting to

note that this is not a new argument, as Pusch (1984) already questioned the degree of inclusion of minority groups within the languages due to the culturally male-dominated discourse. As studies such as that by Linner & Irmen (2005) have shown, the intention to include everyone through masculine generics is simply not enough. This could potentially mean that there is very little awareness as to how grammatical gender influences people's perception and thinking, which Boroditsky (2009) has found evidence for. Besides awareness, the normativity of a usage-based phenomenon, such as the masculine generics, might also play a role in their persistence in favour of newer variants regardless of the potential shortcomings. Further, another argument explaining the persistence of the claim that masculine generics already include everyone could relate to the lack of representative association that variants of gender sensitive language cause, which would mean that people do not feel represented by gender sensitive language despite that being its purpose. This representation and recognition problem was already pointed out by Pusch (1984) as a potential issue with the implementation of other variants of gender sensitive language.

This potentially perceived lack of representation through gender sensitive language could also be one of the indicators for the negative attitudes towards gender sensitive language. Specifically, as a variant, gender sensitive language does present a larger change that seemingly only caters to a small group of people, namely trans and intersex people. The evident transphobia in the corpus suggests a certain dismissal of these identities and therefore also a dismissal of the need to linguistically include them. Furthermore, this perceived catering towards only a small group of people could stand at odds with a general frustration regarding several other political topics and policies, such as climate change and immigration. This could potentially explain the strong focus on the minority-majority dichotomy that appears repeatedly within the corpus. In this regard, it is also important to take note of the portrayal of a small, elitist group that is pushing these changes. Although it is not clear whether or not it is the same minority group, the emphasis on their supposed elitist does support the claim that the people opposing gender sensitive language have the feeling that decisions are made over their heads and not for them. Here, it is possible to point towards Weisskircher's (2020) analysis of the reasons for the rise of the AfD, as the lack of political representation is one of the main indicators that motivates political frustration.

The second research question relates to the use of metaphors within the data set and how it relates to the history of German language purism. Interestingly, the aspect of danger that minority groups supposedly pose was expressed in the corpus through the metaphor usage and reflects Lobin's (2021) findings. Specifically, the usage of biological pathologizing metaphors and those that relate to militarism. While there are certain overlaps, such as the portrayal of language as a living entity that is subject to violence such as rape and disfigurement and the use of terrorism to portray a cultural attack on the language within the metaphors, there are still interesting differences between their usage on Twitter and those found by Lobin. In the Twitter corpus, the usage of metaphors that are directed towards the aestheticism of language is leaning more towards the depiction of a language as an inanimate object. Despite this difference, they still fulfil the same function in that they conjure up an image of the language as something that is vulnerable and must be protected. An additional difference is that the metaphors in Table 1 also indicate that language must be preserved the way it is. Thereby, a part of these metaphors is more closely related to one of the metaphor groups that Spitzmüller (2007) identified within their dataset on purist metaphoric in media documents. There, language is also deemed to be like an inanimate object, such as an artefact. This, however, does not change the relation to the second set of metaphors in Table 4. Just as Lobin (2021) pointed out in his analysis of metaphor usage, as language is portrayed as something to be protected, there is something it needs to be

protected from. In Lobin's analysis, this mostly refers to metaphors of terrorism that lean towards portraying the language as an instrument of warfare. This is similarly present within this corpus. Here, however, there is again a bigger focus on other political aspects than solely on the language itself with reference towards climate change being the second focus of the terrorism depiction. In addition to this, the data in the corpus also suggests a stronger focus on victimhood. By portraying several political issues as an aspect of a social and political dictatorship, the users portray themselves to be not only attacked but also oppressed. This is even further solidified by the references to national socialism and fascism. The variety in the political and social topics referenced through these metaphors relates to the frustration that was explained in the previous paragraph. The last set of metaphors differs from the previous two by virtue of not being along the historical traditions that Lobin (2021) found in his analysis of the rhetoric employed by the AfD and VDS. Instead, they fulfil a devaluating role in the discourse meant to demean people using the gender sensitive variant and the variant itself. About the political actors involved within the discourse on gender sensitive language, it is of note that in addition to the similarities in metaphors, there is a certain degree of reflection of the propagated attitudes. For example, the depiction of the Islam as a dangerous cultural and social force is also prevalent within the corpus. Interestingly, other points of focus, such as the cultural role of German in Germany and Europe are not more frequent within the Twitter corpus.

### 7. Conclusion

This paper aimed to answer research questions dealing with how the discourse on gender sensitive language in German is presented on the social media platform Twitter as well as the purpose of the metaphors used within the discourse. As previous studies, such as Klein (2004) and Braun et al. (2005) have shown, masculine generics are, despite being a widely accepted usage-based phenomenon, only semi-generic in their function as they often lead towards masculine associations. To counter this, gender sensitive alternatives meant to include women, and later trans and intersex people, were proposed (Push 1984; Diewald 2018). In the past few years, these variants have gained political and social traction due to the partial institutionalised implementation. This has stirred up discussions and incited various reactions. Prevalent political actors, such as the AfD and the VDS have strongly voiced their opinion against the usage of gender sensitive language. Their views include traditional language purism in the form of metaphors. That is, the use of biological pathologizing language portraying language as a feminine body that must be protected, and metaphors related to warfare and terrorism, that depict gender sensitive language and its users as the instigators and attackers in a war on culture. The results from the keyness and metaphor analysis of the Twitter corpus showed that the discourse on gender sensitive language is partially informed by other political topics, such as migration and climate change. Within these lines, gender sensitive language is merely one of the various problems that some of the users on Twitter see within the current political actions that supposedly only focus on the interests of a small minority within the German population. Further, within the parts of the discourse on language, there is a consensus on the ungrammaticality of the gender sensitive alternatives and that the users within this discourse do not feel themselves to be represented through the use of gender sensitive language. Another aspect from the analysis revealed that the metaphors used within the discourse are thematically very similar to the ones that have been historically used in German language purism, as well as recently by the AfD and VDS. While these similarities cannot account for a direct correlation

between the political frustration of the opponents of gender sensitive language, it is an indicator that could be interesting in further research into the phenomenon. Along this line, it may also be useful to investigate a bigger corpus that accounts for a larger time frame, as one of the limitations of this study is that it cannot account for the representativeness of the results. Other aspects that might be of relevance within further research could be psycholinguistic studies researching the associations caused by gender sensitive alternatives, or studies looking into the perception and attitudes about gender sensitive language. Since German is a pluricentric language, it may also be useful to investigate the differences in attitudes and perceptions between the various European countries that count German as one of their official languages.

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**Functional categories from a conceptual perspective**  
A case study of the multifunctional morpheme *ge-* in Gaoping Jin

Shangze Li

Functional morphemes have been the subject of intense study in recent years. Certain functional morphemes indicate various functions and the same form of one functional morpheme may appear in different syntactic domains. The present study aims at probing into this phenomenon by focusing on the multifunctional morpheme *ge-* in Gaoping Jin. I study the morphosyntactic properties of *ge-* and found that the functional morpheme *ge-* in GPJ is category-neutral, and thus the same form of *ge-* can occur in several different domains. For this reason, the morpheme *ge-* can be used cross-categorially.

*1. Introduction*

According to Carnie (2007), functional categories (as opposed to lexical categories) are categories providing grammatical information. In the same way, functional morphemes (as opposed to content morphemes) are morphemes modifying words and only provide certain functional or grammatical meanings. This kind of morpheme can be observed in Standard Mandarin and some Chinese varieties, with *ge-* in Gaoping Jin being a typical example.

It has been observed that the morpheme *ge-* in Gaoping Jin frequently appears in different syntactic contexts.

- (1) a. *zhu qilai le, ba gaizhe ge-xian kai*  
boil up ASP, *ba* lid *ge-*uncover open  
'The water is boiling, please lift the lid off the pot.'
- b. *ta ge-nao ke po le, qu yiyuan ge-liao zhe ji zhen*  
he head knock broken ASP, go hospital *ge-*stitch ASP several stitch  
'Since he cut his head open, he went to the hospital for some stitches.'

- c. *zai shui litou pao le yihuir, pizhe ge-chuo le*  
 in water inside soak ASP for-a-while, skin wrinkled ASP  
 ‘I put my hands in the water for a while, and the skin is wrinkled.’
- d. *gerjia tianqi hao, tian lan-ge-yingying zhe*  
 today weather nice, sky blue-ge-bright ASP  
 ‘It’s a nice day today. The sky is very bright and blue.’ (Gaoping Jin)

In (1), the verbs *ge-xian* ‘uncover’ and *ge-liao* ‘stitch’, the noun *ge-nao* ‘head’, the adjectives *ge-chuo* ‘wrinkled’ and ‘*lan-ge-yingying*’ show that *ge-* is frequently used in Gaoping Jin and it can appear in different syntactic domains.

To capture this phenomenon, this paper explores the various functions of the morpheme *ge-* in Gaoping Jin within the Distributed Morphology (henceforth, DM) framework.

DM was introduced in the early 1990s by Halle & Marantz (1993) and Halle & Marantz (1994). As Harley & Noyer (1998) point out, morphemes are of two basic types: f-morphemes and l-morphemes. According to Harley & Noyer (1999), the spell-out of an f-morpheme is deterministic, which means that the phonological expression is determined by the content of the f-morpheme itself. F-morphemes usually express purely grammatical properties and correspond to functional morphemes approximately. On the contrary, the spell-out of an l-morpheme is not deterministic. More than one VI may be inserted to fill an l-morpheme. These VIs need to be chosen at spell-out. For instance, if the syntactic position of an l-morpheme defines it as a noun, VIs like *horse*, *kitten*, *apple*, *pear*, *computer* etc. might be inserted, and thus there must be a choice among these items at spell-out to determine the specific insertion.

I study the syntactic distributions of *ge-* in Gaoping Jin and its syntactic nature. Moreover, I propose that *ge-* is an f-morpheme within DM and thus discuss the multifunctionality of *ge-*. I argue that *ge-* functions as an *Aktionsarten* and a degree morpheme.

The major empirical data in this paper are selected from Gaoping Jin. Gaoping Jin is spoken in and around the city of Gaoping, which is located in the southeast of Shanxi Province in northern China. It is worth noting that the grammatical judgments on the empirical data in Gaoping Jin have been verified by native speakers from Gaoping. By undertaking a study of *ge* in this Chinese variety, this paper will provide a basis for further studies in Gaoping Jin, which is still highly understudied in generative syntax.

The rest of the article is organized as follows. section 2 reviews some previous analyses on *Aktionsarten* and diminutives. In section 3, I provide a data illustration and discuss the compositionality and syntactic status of *ge-* in section 4. section 5 concludes this paper by briefly summarizing the main proposals.

## 2. Previous studies

In this section, I provide an overview of syntactic analyses developed for *Aktionsarten*, exemplified by cross-linguistic data in section 2.1. In addition, diminutives are studied widely in world languages and are also studied in more detail in this paper. Hence, I review some representative studies on diminutives in section 2.2.

2.1. Analyses on *Aktionsarten*

To begin with, it is necessary to make a distinction between *Aktionsart* and aspect. *Aktionsart* is different from aspect. According to Kiefer (2010), while aspect has to do with the internal temporal constituency of events, *Aktionsart* is the modification of verb meaning by morphological means. Morphology adds one or two semantic features to the meaning of the base verb (cf. Svenonius 2012, Kortmann 1991).

Kiefer (2010) focuses on the formation of *aktionsarten* in languages like German, Hungarian, Slavic, Romani, and Yiddish. Specifically, he studies *Aktionsarten* derived by means of preverbs (i.e., verbal prefixes and verbal particles).

Take the perfectivizing particle *el* in Hungarian as an example. *El* developed from an adverbial with the meaning ‘away’. It can be used to delimit the duration of the activity if used with certain types of (nontelic) activity verbs. For example, by suffixation, the verb *néz* ‘look’ forms the diminutive *néz-egét* ‘look a little bit’. If the perfectivizing particle *el* is prefixed to *néz-egét*, the delimitative *Aktionsart el-néz-egét* is formed with the meaning ‘look a little bit for a while’. In other words, by attaching a perfectivizing particle to various types of verbs, the *Aktionsart* meaning can be derived on the basis of the perfective meaning of the particle and the meaning of the verb, which means that an *Aktionsart* has always compositional meaning. Similarly, in Gaoping Jin, the *Aktionsart* meaning can also be derived on the basis of the meaning of the prefix *ge* and the meaning of the verb, which will be analyzed in section 4. One more example in Hungarian is shown below.

- (2) *el-olvas-gat*  
 DELI-read-DIM  
 ‘read for awhile’ (Hungarian; Kiefer 2010:4)

In (2), the suffix *-gat* introduces the diminutive *Aktionsart* and the particle *el-* the delimitative *Aktionsart* (‘do something for awhile’). Moreover, Kiefer summarizes the *Aktionsarten* derived by prefixation in Russian, German, Hungarian, and Yiddish. Here I just review delimitative, iterative, and diminutive, all of which are closely related to *ge* in Gaoping Jin.

- (3) a. delimitative, prefix *po*, *po-rabotat* ‘work for awhile’  
 b. iterative-diminutive, prefix *po* and the iterative form of the verb ending in *yva/iva*, *po-čit-yvat* ‘read a little from time to time’ (Russian; Kiefer 2010:4)

The Yiddish equivalents of the Russian *Aktionsarten* are listed below.

- (4) a. delimitative, prefix *avek*, *avek-arbetn* ‘spend a certain time with work’  
 b. iterative-diminutive, prefix *tsu*, *tsu-shmejchlen* ‘smile a little bit’; or prefix *unter*, *unter-shmejchlen* (Yiddish; Kiefer 2010:9–10)

The cross-linguistic data summarized by Kiefer provide an insight into the study of *ge-* in Gaoping Jin. In section 3, I argue that *ge* in Gaoping Jin is a productive *aktionsarten*. Specifically, it is a typical delimitative, iterative, and diminutive *Aktionsarten*, which will be illustrated in more detail in the following sections.

## 2.2. Analyses on diminutives

One of the most frequently used aktionsartens in Gaoping Jin is diminutive affixes. In fact, diminutives are widely available in many languages. However, the morphosyntactic structure of diminutives varies from language to language. Previous analyses of diminutives make a distinction between derivational diminutives and inflectional diminutives, mainly represented by De Belder et al. (2014) and Wiltschko & Steriopo (2007). Specifically, the morphosyntactic properties of diminutives are discussed from two points of view: i) at which level diminutives are attached: below or above the word level; and ii) how diminutives are merged: as head or modifier. Moreover, diminutives are also found in other Chinese varieties, with Gan as an example.

In this subsection, I first review Wiltschko & Steriopo's (2007) analyses, which discuss diminutive markers in Salish, German, and Russian. Then, I review De Belder et al.'s (2014) analyses on diminutives in Dutch, Italian, and Modern Hebrew. Moreover, I review Li & Liu's (2009) analyses on diminutives in Gan Chinese. All of these previous analyses lay the theoretical foundation for the analysis of diminutives in Gaoping Jin.

### 2.2.1. Wiltschko & Steriopo's analysis

According to Wiltschko & Steriopo (2007), diminutives do not have a uniform syntax either across languages, or within a single language. By studying diminutives in German, Halkomelem, and Russian, they propose that diminutives vary across two dimensions: i) how diminutives are merged: as head or modifier, and ii) where diminutives are merged: above or below the word level. Specifically, there are four logical possibilities of the diminutive syntax, as schematized in Table 1.

	head	modifier
$DIM+\sqrt{root}$	Russian	Halkomelem
$DIM+n$	German	Russian

Table 1. Variation in the morphosyntax of diminutives (across languages)  
(Wiltschko & Steriopo 2007:11–12)

Leaving aside Russian, in what follows, I show how Wiltschko & Steriopo's analyses work with the data in German and Halkomelem.

According to Wiltschko & Steriopo (2007), the formal properties of diminutives are different across languages. In German, diminutives (e.g., *-chen*) can change the formal properties of the base, such as gender or mass/count features of the noun. The following examples show that the affixation of *-chen* changes the gender of the noun into neutral.

- (5) a. *der Baum*  
 DET.masc tree  
 'tree'
- b. *das Bäum-chen*  
 DET.neut tree-DIM  
 '(cute) little tree'

(German; Wiltschko & Steriopo 2007:2)

- (6) a. *die Flasche*  
 DET.fem bottle  
 ‘bottle’
- b. *das Fläsch-chen*  
 DET.neut bottle-DIM  
 ‘(cute) little bottle’ (German; Wiltschko & Steriopolo 2007:2)

As suggested by the pronominal determiners in (5) and (6), the affixation of *-chen* changes the gender of the nouns from masculine and feminine into neutral. Moreover, the diminutive *-chen* can also change the mass/count features of the noun.

- (7) a. *viel Brot*  
 Q bread  
 ‘much bread’
- b. *viele Bröt-chen*  
 Q.PL. bread-DIM  
 ‘many rolls’ (German; Wiltschko & Steriopolo 2007:2)

As indicated by the pattern of adjective agreement in (7), the noun *Brot* ‘bread’ is a mass noun, while the derived diminutives form *Bröt-chen* ‘rolls’ is a count noun. Since German diminutives change the categorial properties of the base (e.g., gender or mass/count features of noun), it behaves like a derivational morpheme.

Furthermore, diminutives in German attaches inside inflectional morphology, which further supports the claim that diminutives in German is a derivational morpheme, as exemplified in (8).

- (8) a. *das Baum-erl*  
 DET.neut tree-DIM  
 ‘(cute) little tree’
- b. *die Baum-erl-n*  
 DET.PL. tree-DIM-PL  
 ‘(cute) little trees’ (German; Wiltschko & Steriopolo 2007:2)

One thing to notice is that *-erl* is a diminutive in colloquial German. In (8), the plural marker *-n*, which is an inflectional morpheme is attached to *N-erl*. These pieces of evidence prove that the diminutive in German is derivational. In other words, the diminutive in German derives a new word, which is different from its base. It indicates that diminutives in German operate at the word level.

By contrast, diminutives in Halkomelem do not change the formal properties of the base. For example, in Halkomelem, mass nouns are not changed into count nouns via diminutivization, as exemplified below.



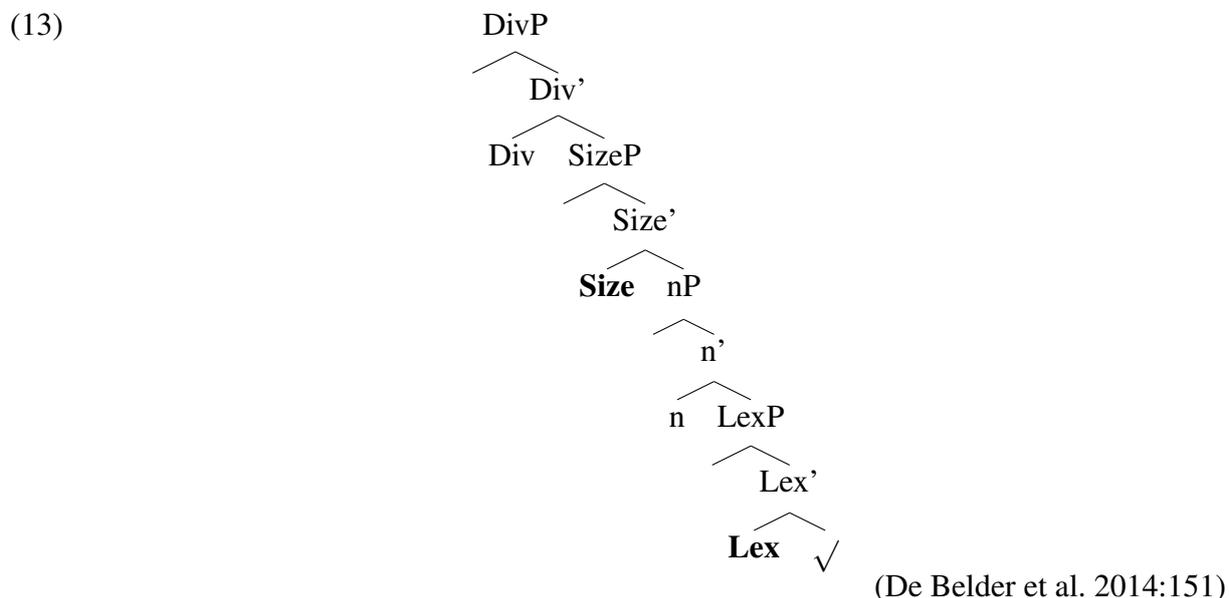
## 2.2.2. De Belder et al.'s analysis

De Belder et al. (2014) propose that there are two types of diminutivization: compositional and non-compositional diminutives, as exemplified below.

- (12) a. *nas-ino*  
 nose.DIM  
 ‘small nose’
- b. *pan-ino*  
 bread.DIM  
 ‘sandwich’
- (Italian; De Belder et al. 2014:149)

In (12a), *nose*+DIM refers to a smaller version of *nose*, namely ‘small nose’. Hence, the diminutive morpheme *ino* in examples like (12a) is a diminutive with a compositional meaning. By contrast, the diminutive morpheme *ino* in (12b) drives a new denotation. *Bread*+DIM refers to ‘sandwich’ rather than ‘\*small bread’. Hence, the diminutive morpheme *ino* in examples like (12b) is a diminutive with a non-compositional meaning.

In other words, diminutives can appear both in the derivational and in the inflectional domains. Derivational diminutives merge with the root and are realized as LexP, which transfer non-compositional meanings. Inflectional diminutives occupy a position higher than nP and are realized as SizeP, which transfer compositional meanings. The two positions for derivational and inflectional DIMs are schematized below.



As shown in (13), low diminutives occupy a position to the root, which is called LexP. Since LexP is between the root and the category-assigning head, it is not marked for category. In other words, a diminutive marker may yield more than one category. The same phenomenon can be observed in Gaoping Jin, which is illustrated in section 4.

Another position for diminutives is called SizeP, which is higher than the categorial head. This position is characterized by compositionality.

In sum, by examining empirical data in Italian and Hebrew, De Belder et al. postulate two different projections to host diminutives: SizeP and LexP. One of the major differences between high diminutives and low diminutives is compositionality, which can also be used to classify different types of *ge* in Gaoping Jin. I analyze the compositionality of *ge* in section 4.

Both approaches proposed by De Belder et al. (2014) and Wiltschko & Steriopo (2007) propose that diminutives may be realized either at the root level (i.e., derivational diminutives) or at the word level (i.e., inflectional diminutives).

The proposal that diminutives should be distinguished at different morphosyntactic levels is undoubtedly illuminating for the present analysis. However, it appears that both of them indicate that diminutives can be realized either at the root level or at the word level, ignoring the level higher than the word level. It is possible that diminutives may go higher than the word level (e.g., at the phrasal level). For example, Li & Liu (2019) analyze the diminutive marker *-tsi?* in Yichun Gan, which works at the phrasal level and thus cannot be accounted for based on De Belder et al. (2014) and Wiltschko & Steriopo's (2007) analysis.

### 2.2.3. Xuping Li & Hongyong Liu's analysis

By analyzing diminutive markers in Yichun Gan, Li & Liu (2019) argues that the dichotomy between derivational and inflectional diminutives cannot cover all the possibilities that diminutives may be in world languages. Specifically, they analyze two diminutive markers: *-li* and *-tsi?*. They propose that the diminutive *-li* works at the root level and functions as a root nominalizer, while *-tsi?* operates at the phrasal level and is a phrasal diminutive modifier.

According to Li & Liu (2019), the morpheme *-li* is suffixed to roots to create nouns. Since the derived noun N-*li* invariantly express various diminutive meanings, *-li* is proposed as a diminutive marker in N-*li*, as exemplified below.

- (14) a. *na*<sup>44</sup>-*li*  
son-DIM  
'young man'
- b. *mau*<sup>34</sup>-*li*  
cat-DIM  
'cat'
- c. *t<sup>h</sup>ao*<sup>44</sup>-*li*  
peach-DIM  
'peach'
- d. *kua*<sup>44</sup>-*li*  
tree  
'small branch'
- e. *kau*<sup>44</sup>*fa*<sup>53</sup>-*li*  
beggar-DIM  
'beggar'

(Yichun Gan; Li & Liu 2019:40–42)

As shown in (14), the pattern *n-li* refers to 'young men', small sized animals (i.e., 'cat'), fruit or seeds of plants (i.e., 'peach'), entities of a small size, and entities with some pejorative meaning

respectively. In all of the examples in (14), *-li* is a diminutive suffix. Moreover, *-li* is a root nominalizer carried with diminutive meanings.

- (15) a. \**na*<sup>44</sup>  
son  
Intended: ‘son’
- b. \**mau*<sup>34</sup>  
cat  
‘cat’
- c. \**t<sup>h</sup>ao*<sup>44</sup>  
peach  
‘peach’
- d. \**kua*<sup>44</sup>-*li*  
tree  
‘small branch’
- e. \**kau*<sup>44</sup>*fa*<sup>53</sup>  
beggar  
Intended: ‘beggar’
- (Yichun Gan; Li & Liu 2019:40–42)

The ungrammatical examples in (15) shows that the nouns that *-li* attaches to cannot be used independently. For this reason, Li & Liu (2019) argues that the diminutive marker *-li* applies to roots but not words. Moreover, the suffixation of *-li* determines the categorial feature of the derived words and turns roots into nouns. Hence, the diminutive *-li* is a root nominalizer in Yichun Gan.

Another diminutive marker *-tsi?* presents a different picture. The diminutive marker *-tsi?* is different from *-li* in the sense that *-tsi?* is cross-categorial, which means that it can follow nouns, classifiers, adjectives, and verbs, as exemplified below.

- (16) a. *tiao*<sup>53</sup>-*li*-*tsi?*  
bird-DIM-DIM  
‘little bird’
- b. *man*<sup>53</sup> *ion*<sup>44</sup> (*tsi?*) *ko* *si*<sup>34</sup>*kua*<sup>34</sup>  
relatively round DIM MOD watermelon  
‘relatively round(-ish) watermelon’
- (Yichun Gan; Li & Liu 2019:57–58)

As shown in (16), *-tsi?* can be attached to nouns and adjectives (see more examples in Li & Liu (2019)). Since the diminutive marker *-tsi?* has the property of being cross-categorial, Li & Liu (2019) suggest that *-tsi?* is not a head but an adjoined modifier.

Although both *-tsi?* and the diminutive marking in Salish are cross-categorial, they are attached to different types of bases. The bases are taken as roots in Salish but are taken as phrases in Yichun Gan.

To sum up, Li & Liu (2019) argues that the diminutive markers in Yichun Gan are syntactically different from those in other languages. In Yichun Gan, *-li* is a derivational morpheme

and *-tsi?* is a phrasal diminutive modifier. In other words, there is no inflectional diminutive in Yichun Gan, which further proves that the dichotomy between derivational and inflectional diminutives cannot cover all the syntactic possibilities that diminutives may embody in world languages.

Partly based on Li & Liu's (2019) analysis, I study two types of *ge-* in Gaoping Jin. One can be taken as a root categorizer, while the other can be taken as a cross-categorial modifier. I study these two types of *ge-* in the next section.

### 2.3. Analyses on *ge-*

There have been some scholars studying *ge-* in Jin. Here, I make a review of previous studies on *ge-*, most of which center around its meaning, origin, and syntactic distributions in Jin.

Wang (2001) studies the grammatical function of *ge-* in Jin. He observes the usage of *ge-* and summarizes that *ge-* has certain grammatical meanings. For instance, nouns with *ge-* as the prefix usually describe some small things. Wang (2001) takes *ge-dui* as an example and I put the noun *ge-dui* in the sentence below.

- (17) *wo kanjian you jige ge-dui, xiao-xin-dian-er*  
 I see have several hillock, careful  
 'Be careful, there are several little hillocks.' (Gaoping Jin)

In (17), the noun *ge-dui* means little hillock rather than peak. *Ge-* in *ge-dui* has the grammatical meaning "small".

Bai (2005) explores *ge-*'s distributions in Jin and holds that there are two types of *ge-* in Jin: *ge-* as a morpheme to form words with certain lexical or grammatical meanings, and *ge-* as a syllable to form disyllabic words in Jin.

Ma (1995) observes that *ge-* in Gaoping Jin can be divided into three types: *ge-* as the dialectal pronunciation of various lexical morphemes, *ge-* as a functional morpheme, and *ge-* as a syllable but not a morpheme. The first type of *ge-* is illustrated by the following examples.

- (18) a. *yi tian chishang liage ge-tao*  
 one day eat two walnut  
 'You can eat two walnuts everyday.' (Gaoping Jin)
- b. *yi tian chishang liangge he-tao* (Standard Mandarin)
- (19) a. *wo ge-long teng lie*  
 I throat sore ASPECT  
 'I am having a sore throat.' (Gaoping Jin)
- b. *wo hou-long teng ne* (Standard Mandarin)

- (20) a. *hui-ge ba*  
 come back  
 ‘You can come back your home.’ (Gaoping Jin)
- b. *hui-qu ba* (Standard Mandarin)

As shown above, *ge-* is the dialectal pronunciation of the lexical morphemes *he-*, *hou-*, and *qu-* in *he-tao*, *hou-long* and *hui-qu* respectively. Such usage of *ge* abounds in Gaoping Jin, but is not the main focus of the present study.

By contrast, since *ge-* does not have clear lexical meanings, it only provides grammatical meanings, which means that *ge-* is a *functional morpheme*. Such usage of *ge-* is the emphasis of the present study. When *ge-* is a functional morpheme, it can appear as a prefix, as exemplified below.

- (21) *diao shu wo jiusi ge-fan le lia yer*  
 this book I just open ASP two page  
 ‘For this book, I just read two pages casually.’ (Gaoping Jin)

In (21), *ge-* is a functional morpheme, which does not express lexical meaning by itself. It is a prefix and is combined with *fan* to form the verb *ge-fan*. Moreover, sometimes *ge-* is merely a syllable but not a morpheme in Gaoping Jin.

- (22) *ge-nong shen lie zai nar*  
 do what ASP at there  
 ‘What are you doing?’ (Gaoping Jin)

In (22), *ge-* and *-nong* are two syllables of a single morpheme, which means they are morphologically indivisible.

To sum up, previous analyses on *ge-* mainly focus on the meaning and syntactic distributions of *ge-* in Jin. However, there is hardly any paper studying *ge-* from a generative point of view. To fill in this research gap, I collect empirical data on *ge-* in Gaoping Jin and divide them into three types as well, partly based on Ma’s classification. However, unlike Ma’s (1995) classification, I divide the empirical data based on *ge-*’s various functions, which are presented in the following sections.

### 3. *Ge-* in Gaoping Jin

In this section, I present a detailed case study of the functional morpheme *ge-* by studying its syntactic distributions. I hold that there are mainly three types of *ge-* in Gaoping Jin: *ge-* as a diminutive prefix, *ge-* as a degree morpheme, and *ge-* as a syllable but not a morpheme in disyllabic words, with the first two being the main focus of this paper.

#### 3.1. *Ge-* as a diminutive prefix

Diminutive is a grammatical category implying smallness. As reviewed in section 2, diminutive is widely available in many languages. For instance, in German, the suffix *-chen* is always used

to form diminutives, like *Kätzchen* ‘kitten’ for *Katze* ‘cat’, and *Hündchen* ‘puppy’ for *Hund* ‘dog’. In French, *-on* is a frequently used suffix to form diminutives, like *le chaton* ‘kitten’ for *le chat* ‘cat’. All of the examples show that the diminutive can be created by the addition of a suffix to the root. Examples of diminutive in Gaoping Jin can also be observed. For instance, *ge-* can be taken as a diminutive prefix and be frequently used. In this case, *ge-* has different syntactic distributions.

### 3.1.1. *Ge-* in nouns

When *ge-* is a diminutive prefix, it can be combined with the root of nouns and the combination is *ge*+N, which means small things.

- (23) *dengr you ge ge-dao, xiaoxindianr*  
 there have a DIM-pit careful  
 ‘Be careful, there is a small pit.’ (Gaoping Jin)

In (23), *ge-dao* means a small pit, which contrasts with a crater. This usage of *ge-* shows a certain level of productivity, which can be illustrated with more examples.

- (24) *dengr diao ge-tengr bu gao*  
 there this DIM-step not high  
 ‘The steps here are not high.’ (Gaoping Jin)

In (24), *ge-tengr* means a small step, which rises in easy flights.

- (25) *wo jide dengr you ge ge-bar*  
 I remember there have one DIM-handle  
 ‘I remember that there is a small handle.’ (Gaoping Jin)

In (25), *ge-bar* means small handle, which contrasts with long handles.

- (26) *niang ge-lar ye de shaoshao*  
 that DIM-corner also need sweep  
 ‘Remember to clean the corners.’ (Gaoping Jin)

In (26), *ge-lar* means corner, which is a small area. As shown in these examples, the nouns are prefixed by *ge-*, and their combinations form *ge*+N, which express diminutive meanings.

### 3.1.2. *Ge-* in classifiers

Moreover, the diminutive *ge-* is used to form classifiers, as shown below.

- (27) *die ge-xingr dongxi gou gan shen*  
 this DIM-CLS thing enough do what  
 ‘What can we do with such small amount of things.’ (Gaoping Jin)

In (27), although *xingr* can represent “a fraction of something” by itself, *ge-* narrows down the scope represented by the classifier further and points to a smaller amount of things. More examples are presented as follows.

- (28) *gei wo na yi ge-duozhe shuan*  
 give me bring one DIM-CLS garlic  
 ‘Please give me one small garlic.’ (Gaoping Jin)

- (29) *gei wo yi ge-dar mian jiu xing*  
 give me one DIM-CLS dough just ok  
 ‘You can just give me a small piece of dough.’ (Gaoping Jin)

However, some classifiers can not be prefixed by *ge-*, as exemplified below.

- (30) \**die ge-liang qiche si huisede*  
 this DIM-CLS car is grey  
 ‘This car is grey.’ (Gaoping Jin)

- (31) \**die ge-ke shu shangtou yer ke duo*  
 this DIM-CLS tree up leaf really many  
 ‘This tree is luxuriant.’ (Gaoping Jin)

In the ungrammatical (30) and (31), classifiers like \**ge-liang* and \**ge-ke* are not acceptable. The reason why these classifiers are unacceptable is that *ge-* is a diminutive marker. In other words, the nouns modified by *ge-CL* refer to entities of a small size. Hence, *ge-CL* can modify small-sized entities like *shuan* ‘garlic’ and *mian* ‘dough’ but not large-sized entities like *che* ‘car’ and *shu* ‘tree’. The contrast between (32a) and (32c) further proves this point.

- (32) a. \**die ge-pianr di dou si mande*  
 this DIM-CLS land all is ours  
 ‘This vast land belongs to us.’  
 b. *die pianr di dou si mande*  
 this DIM land all is ours  
 ‘This vast land belongs to us.’  
 c. *die ge-lianr di si niede*  
 this DIM-CLS land is yours  
 ‘The little piece of land belongs to you.’ (Gaoping Jin)

In the ungrammatical (32a), the classifier *ge-pian* is unacceptable, which can be accounted for by the diminutive *ge-*. As a diminutive marker, *ge-* is used to modify small-sized entities rather than large-sized entities like *di* ‘land’. By contrast, *die ge-lianr di* ‘the little piece of land’ in (32c) is acceptable. The diminutive meaning of *die ge-lianr di* is guaranteed by the affixation of *ge-*.

3.1.3. *Ge-* in verbs

When *ge-* is a diminutive prefix to form verbs and adjectives, it means “slightly” or “casually”, which implies that the amplitude of the action is small and the person performing the action does not follow certain rules seriously. In this case, *ge-* is a lexical aspect marker or an *Aktionsart* marker. Take Smith’s (1991) explanation on *Aktionsart* as an example. Smith (1991) uses the term *Aktionsart* marker for “temporal properties of situations or situation types”. *Ge-* is productively used to form *Aktionsart*, as shown below.

- (33) a. *buyao zai qiangshang ge-hua*  
 don’t on wall AKT-draw  
 ‘Please don’t scribble on the wall.’ (Gaoping Jin)
- b. *buyao zai qiangshang suiyi luanhua*  
 don’t on wall casually scribble  
 ‘Please don’t scribble on the wall.’ (Standard Mandarin)

On the surface, the sentence in (33a) looks like that in Standard Mandarin, but their meanings are slightly different. In Gaoping Jin, if someone *ge-hua* on something, it usually means that this person may scribble something down casually, which means *suiyi luanhua* in Standard Mandarin, as shown in (33b).

One thing to notice is that *ge-* in *ge+V* is not only a diminutive *Aktionsart* marker, but also an iterative one at the same time. In other words, *ge-* in *ge+V* is usually a combination of the diminutive and the iterative. The combination of these two *Aktionsart* markers means something like “do sth. with diminished force but increased frequency” or “repeatedly but slightly do sth. within a short time.” In other languages like Hungarian or Japanese, we can also find this type of prefix. For example, Song (2016) reclassifies some of the *Aktionsarten* in Hungarian and Japanese, including the Hungarian diminutive morpheme *-gat*, which can be used to describe the degree of an event.

- (34) *el-olvas-gat*  
 DIL-read-DIM  
 ‘read for a while’ (Hungarian; Kiefer 2010)

In (34), *olvas* stands for ‘read’. The suffix *-gat* introduces the diminutive *Aktionsart* and the particle *el-* the delimitative *Aktionsart*.

3.1.4. *Ge-* in adjectives

When adjectives are formed with *ge-*, they usually mean “slightly+adj”.

- (35) *niangen zhizhe ge-liao le*  
 that branch AKT-bend ASP  
 ‘That branch becomes slightly bent.’ (Gaoping Jin)

In (35), *ge-liao* itself means “slightly bent”, contrasting with “totally bent”. Furthermore, I find that adjectives with *ge-* as a prefix always have a pejorative sense, as exemplified in (36).

- (36) *ni zhen ge-dan*  
you really stupid

‘You are really stupid.’

(Gaoping Jin)

Based on *ge-liao* in (35) and *ge-dan* in (36), it can be observed that most *ge*-adjectives are used to describe something unsatisfactory. Adjectives like *ge-dan* can be designated as “*geA*” adjectives.

In addition to the adjectival patterns of *geA*, there are three other adjectival patterns with *ge*: *ge AA* [de], *ge A ge A* [zhe], and *A ge BB* [zhe]. All of these four adjectival patterns will be analyzed in this thesis. For example, in adjectives like *A ge BB*, *ge-* functions as a **degree morpheme**, which is illustrated in the next subsection.

### 3.2. *Ge-* as a degree morpheme

If *ge-* is combined with ABB adjectives, it stands as a degree morpheme.

- (37) *diao tian lan-ge-yingyin-zhe*  
this sky blue-DEGW-bright-ASP

‘The sky is very blue.’

(Gaoping Jin)

Adjectives like *lan-ge-yingyin* in (37) belong to the category of “*A ge BB*” adjectives. In this kind of adjective, it seems that the degree morpheme *ge-* makes the adjectives more emotional and thus sound pleasing. We can find similar adjectives like *bei-ge-shengsheng* (used to praise the whiteness of the skin), *chou-ge-duoduo* (used to praise thick and thus delicious porridge), *xiang-ge-penpen* (used to praise something fragrant), to name just a few. All of these descriptive adjectives convey a complimentary sense. To understand the meaning of the degree morpheme *ge-*, we can compare ABB adjectives with the corresponding *A ge BB* adjectives, as illustrated below.

- (38) a. *diao xiaohair kanqilai bai-ge-shengsheng-zhe*  
this baby look white-DEGW-very-ASP

‘The baby’s skin really looks very fair.’

- b. *diao xiaohair kanqilai bai-shengsheng-zhe*  
this baby look white-very-ASP

‘The baby’s skin looks fair.’

(Gaoping Jin)

Based on the comparison between (38a) and (38b), it is crystal clear that *bai-ge-shengsheng* is more emotional than *bai-shengsheng*. The compliment expressed by *bai-ge-shengsheng* sounds more sincere than *bai-shengsheng* in Gaoping Jin.

As mentioned above, the functional morpheme *ge-* is active in forming nouns, verbs, classifiers, and adjectives, which means that the diminutive *ge-* is cross-categorial.

### 3.3. *ge-* as a syllable but not a morpheme in disyllabic words

When reading previous literature on *ge-*, I notice that even though the same character is used to record all the *ge-* occurrences, not all those occurrences qualify as morphemes. In other words, in addition to cases where *ge-* as a diminutive prefix and *ge-* as a degree morpheme, *ge-* can also be taken as a syllable involved in disyllabic roots in Gaoping Jin, as exemplified by *gebie* below.

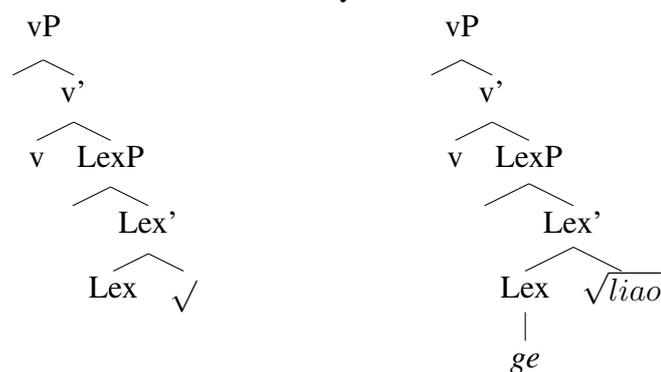
- (39) *xiangzi man-le, buyao gebie le*  
 suitcase full, don't cram ASP  
 'This suitcase has been full. You cannot cram anything else.' (Gaoping Jin)

In (39), *ge-* and *-bie* cannot be separated. *Gebie* is a monomorphemic word with a disyllabic root. *Gebie* only contains a single morpheme, which in turn contains two syllables *ge-* and *-bie*.

### 4. Compositionality of *ge-*

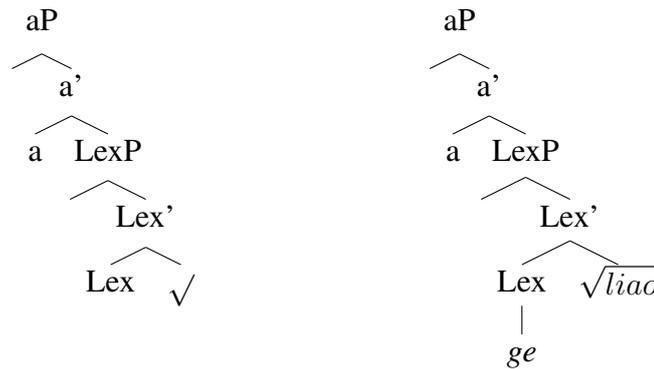
As mentioned in section 2, De Belder et al. (2014) argue that two types of diminutives can be observed, namely high diminutives and low diminutives. Specifically, low diminutives occupy a position to the root, which is called LexP and high diminutives occupy a position higher than the categorial head, which is called SizeP. Since LexP is between the root and the category-assigning head, it is not marked for category and thus cross-categorial, which means that the diminutives can yield more than one category. Similarly, as illustrated in section 3, the diminutive *ge* is also cross-categorial, which can be further exemplified as follows.

- (40) *qiantou duzhu le, ge-liao shang zou ba.*  
 front choke ASP, DIM-detour up go ASP  
 'Let us take a short detour to avoid the heavy traffic.' (Gaoping Jin)



In (40), *ge-liao* 'take a short detour' is a verb, which means detour slightly. Based on De Belder et al's analyses, part of the tree diagram is shown above. However, *geliao* can also be an adjective.

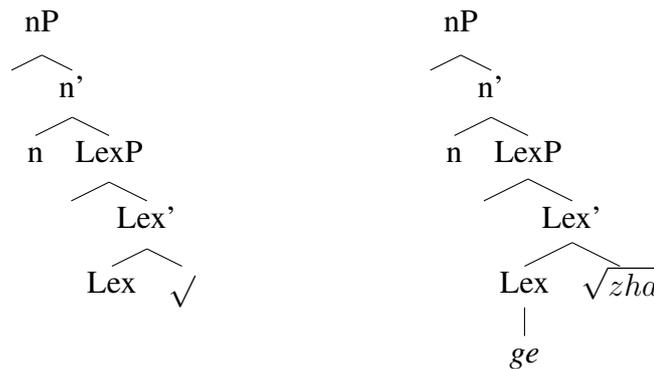
- (41) *diao lu shizai shi ge-liao, kai man dianr.*  
 this road very is DIM-crooked, open slow a little  
 'Since the road is very crooked, you should drive slowly.' (Gaoping Jin)



In (41), *ge-liao* ‘crooked’ is an adjective. These two examples show that the diminutive marker *ge* in Gaoping Jin can yield more than one category. For this reason, *ge* should occupy a position to the root. In other words, *ge+n./v./a.* can be a LexP. More examples are shown below.

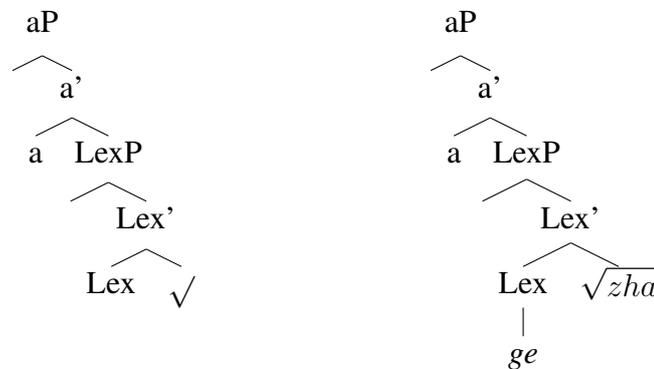
- (42) *ge-zha*      *reng le meiyou?*  
 DIM-rubbish throw ASP no  
 ‘Did you throw away the rubbish?’

(Gaoping Jin)



- (43) *diao shou tai ge-zha le, gankuai xi yi xi.*  
 this hand too DIM-dirty ASP, quick wash one wash  
 ‘Your hands are so dirty. You should wash them as soon as possible.’

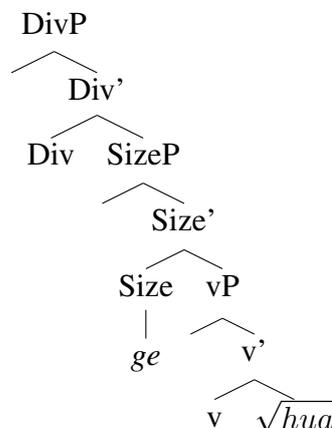
(Gaoping Jin)



Similarly, the diminutive *ge* can yield more than one category: noun and adjective in this pair of examples. Moreover, examples of higher diminutives can also be found in Gaoping Jin, as shown below.

- (44) *buyao zai qiangshang ge-hua*  
 don't on wall AKT-draw  
 'Please don't scribble on the wall.'

(Gaoping Jin)



In (44), *hua* 'draw' is a verb by itself, which means that the position of *ge-hua* is higher than the categorial head. Hence, *ge-hua* here is a SizeP. The diminutive meaning of *ge-hua* can be derived from the meaning of *ge* and the meaning of *hua*.

According to De Belder et al. (2014), diminutives attached to the roots (i.e., LexP) are non-compositional, while diminutives attached to a position higher than the categorial head (i.e., SizeP) are compositional (see section 2 for more details). If this is on the right track, then the diminutive *ge-* in words like *ge-zha* and *ge-liao* should be non-compositional, and *ge-* in *ge-hua* should be compositional.

However, it is worth noting that most of the bases that the non-compositional *ge-* attaches to cannot be used independently, as shown below.

- (45) a. *diao lu shizai shi ge-liao, kai man dianr.*  
 this road very is DIM-crooked, open slow a little  
 'Since the road is very crooked, you should drive slowly.'

- b. \**diao lu shizai shi liao, kai man dianr.*  
 this road very is crooked, open slow a little  
 'Since the road is very crooked, you should drive slowly.'

(Gaoping Jin)

- (46) a. *diao shou tai ge-zha le, gankuai xi yi xi.*  
 this hand too DIM-dirty ASP, quick wash one wash  
 'Your hands are so dirty. You should wash them as soon as possible.'

- b. \**diao shou tai zha le, gankuai xi yi xi.*  
 this hand too dirty ASP, quick wash one wash  
 'Your hands are so dirty. You should wash them as soon as possible.' (Gaoping Jin)

The above examples show that the diminutive marker *ge-* applies to roots but not words. In this case, the non-compositional *ge-* in Gaoping Jin is similar to *-li* in Yichun Gan, both of which are attached to roots but not words (see more details in section 2.2.3). In other words,

both the prefixation of *ge-* and the suffixation of *-li* determine the categorial feature of the derived words. However, being different from *-li*, which is just a root nominalizer, *ge-* is more productive. More precisely, *ge-* can turn roots into nouns, classifiers, verbs, and adjectives, and thus is a root categorizer.

By contrast, the compositional *ge-* is a modifier at the word level. The compositional *ge-* is different from *-tsi?* in Yichun Gan in that compositional *ge-* is less cross-categorial but is mainly restricted to the verbal domain, which can be exemplified by *ge-hua* ‘draw casually and slightly’, *ge-chou* ‘glance slightly’, and *ge-xing* ‘drizzle’, to name just a few.

### 5. Conclusion

The present study shows how the multifunctional morpheme *ge-* in Gaoping Jin is syntactically distinctive from those in other languages. Leaving aside the syllable *ge-*, I argue that *ge-* in Gaoping Jin functions as an *Aktionsart* and a degree morpheme.

Specifically, I discuss the diminutive *ge-* in detail and argue that the diminutive *ge-* in Gaoping Jin is cross-categorial. Furthermore, I make a distinction between compositional *ge-* and non-compositional *ge-*. By examining much empirical data in Gaoping Jin, I propose that the non-compositional *ge-* is a root categorizer, the prefixation of which can turn roots into nouns, classifiers, adjectives, and verbs. On the other hand, the compositional *ge-* functions as a modifier at the word level, which is highly productive in the verbal domain.

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### Abbreviations

ASP	aspect
DIM	diminutive
CLS	classifiers for small things
DELM	delimitative
DSGW	degree morpheme
AKT	<i>Aktionsart</i>

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a topic, as in (2b) (K. Kim 1998; Ahn & Cho 2007, 2009; Lee 2016; among others).

- (2) a. Nwukwu-lul/ø<sub>i</sub> Yenghi-ka t<sub>i</sub> manna-ss-ni?  
 who-ACC/Ø Yenghi-NOM meet-PST-Q  
 ‘Who did Yenghi meet?/Who is such that Yenghi meet (him/her)?’  
 (Ahn & Cho 2009:115)
- b. Chelswu-lul/ø<sub>i</sub> Mary-ka t<sub>i</sub> manna-ss-e.  
 Chelswu-ACC/Ø Mary-NOM meet-PST-DECL  
 ‘Chelswu, Mary met.’ (*Chelswu* is interpreted as a topic) (Ahn & Cho 2007:54)

Furthermore, Haewon Jeon (p.c.) points out that if a Caseless object is focused, it becomes a possible candidate for the application of displacement, as demonstrated in (3), where the displaced object obtains a focus interpretation, with the overt focus particle *-man* ‘only’ being attached to it.<sup>1, 2</sup>

- (3) Cha-man-ul/ø<sub>i</sub> Sue-ka ecey t<sub>i</sub> po-ass-ta.  
 car-only-ACC/Ø Sue-NOM yesterday see-PST-DECL  
 ‘It is only a car that Sue saw yesterday.’

Based on the observations above, Caseless objects in Korean can be realized if they occur under adjacency to the verb on the surface, or if they undergo movement to yield a discourse-related reading. The first issue that I will discuss is why the Caseless objects in Korean can only be dislocated by *wh*-movement, topicalization, and focalization, as shown in (1), (2), and (3). The second issue is why the Caseless objects in (1a), (2), and (3) are licensed in the first place, given the traditional Case Filter proposed by Chomsky (1981). Note that I capitalize the first letter when referring to abstract Case, as in ‘Case’, but not with morphological case, as in ‘case’.

## 2. Caseless objects in Korean

### 2.1. Case theory

In the course of the development of the syntactic theory, Case theory has been assumed to

<sup>1</sup> According to Haewon Jeon (p.c.), if a Caseless object obtains a contrastive focus interpretation at the sentence-initial position, the sentence in (3) can also be grammatical even if the overt focus particle *man* ‘only’ is not attached to the fronted Caseless object. This point is illustrated in (i).

- (i) Cha-ø<sub>i</sub> Sue-ka ecey t<sub>i</sub> po-ass-ta.  
 car-Ø Sue-NOM yesterday see-PST-DECL  
 ‘A car Sue saw yesterday (, not a train).’

Although the sentence in (i) is acceptable, Haewon Jeon (p.c.) points out that its grammaticality greatly improves if the determiner *ku* ‘the’ is attached to the moved Caseless object, as shown in (ii).

- (ii) Ku cha-ø<sub>i</sub> Sue-ka ecey t<sub>i</sub> po-ass-ta.  
 the car-Ø Sue-NOM yesterday see-PST-DECL  
 ‘The car Sue saw yesterday (, not the train).’

<sup>2</sup> Ko (2000) points out that the accusative Case-marker in Korean cannot be omitted when objects to which it is attached are contrastively focused. Ko’s (2000) analysis might offer a counterexample to (3). Consistently with the current analysis, however, Lee & Choi (2010) and Lee (2011) provide experimental evidence that focused objects in Korean can naturally drop the accusative Case-marker. Thus, the data presented in (3) lends further support to the analyses in Lee & Choi (2010) and Lee (2011) (see also footnote 1 regarding case ellipsis on contrastively focused objects). For more details of the analyses, see Ko (2000), Lee & Choi (2010), and Lee (2011).

consist of two fundamental components: (i) DP licensing through syntactic dependencies, and (ii) DP morphology (Vergnaud 1977/2008; Chomsky 1980, 1981, 1986, 2000, 2001, 2004, 2008; among others). It is widely assumed in the minimalist approach that DP licensing is achieved through Case assignment: when an unvalued Case feature ([*u*Case]) on a DP receives a value by entering into a syntactic dependency with an appropriate head potentially capable of Case assignment, the DP is licensed through the valuation of [*u*Case] (Chomsky 2000, 2001, 2004, 2008).<sup>3</sup> In all other contexts, it is acknowledged that the appearance of the overt DP is not permitted because of constraints attributable to the Case Filter in (4).

(4) Case Filter

\*NP if NP has phonetic content and has no Case.<sup>4</sup>

(Chomsky 1981:49)

Moreover, DP licensing is assumed to have a great impact on DP morphology in that the valuation of [*u*Case] is directly correlated with the morphological realization of the DP, as argued by Chomsky (2000, 2001); for instance, if [*u*Case] is valued as nominative, the DP is pronounced with nominative case, whereas if [*u*Case] obtains the value of accusative, it appears with accusative case.

## 2.2. Case-marking on objects in Korean

Recall from section 1 that Korean allows for the appearance of objects with or without an accusative Case-marker. I argue that these two types of objects have different values of [*u*Case], leading to the two different morphological realizations of Case. Given that the value of [*u*Case] determines nominal morphology, as discussed in the preceding section, it is plausible to consider that when the object obtains a value of accusative, it is pronounced with accusative case, while when the object does not receive the value of [*u*Case], it is eventually realized without Case. If this assumption is on the right track, the acceptability of the Caseless objects in (1a), (2), and (3) cannot be expected under the Case Filter proposed by Chomsky (1981) because the absence of Case would lead to an ungrammatical sentence; however, these Caseless objects should arguably be licensed because the occurrence of these objects does not contribute to the ungrammaticality. Thus, the Case Filter proposed by Chomsky (1981) is no longer tenable, and its validity must be reexamined.<sup>5</sup> To resolve this problem and capture the

<sup>3</sup> It is generally assumed that the value of [*u*Case] is assigned as a reflex of phi-feature agreement in terms of the recent minimalist framework (Chomsky 2000, 2001, 2004, 2008). This assumption straightforwardly holds of English, a language known to employ phi-feature agreement. However, it is pointed out that Korean does not exhibit phi-feature agreement altogether (e.g. Kuroda 1988; Saito 2016; Park & Park 2018; among others). This line of argument forces the valuation of [*u*Case] in Korean to take place without appeal to phi-feature agreement. To solve this fundamental problem, I assume with Moritake (2022) that the valuation of [*u*Case] in Korean is controlled by Upward Agree in the sense of Zeijlstra (2012); Upward Agree applies between [*u*Case] on a DP and the phase heads (C and v\*) assumed to be able to assign Case under Moritake's (2022) analysis. Notice that this mode of the valuation of [*u*Case] is independent of phi-feature agreement. For a detailed discussion, see Moritake (2022).

<sup>4</sup> Chomsky (1981) uses an 'NP' when referring to a noun phrase, but this paper categorizes it as a 'DP', since the distinction between these two terms is irrelevant to the present discussion. Thus, I assume that Case assignment is applicable to the DP.

<sup>5</sup> Some previous studies exhibit a skeptical attitude to the Case Filter proposed by Chomsky (1981) (e.g. Marantz 1991; McFadden 2004; Sigurðsson 2012; to name a few). Furthermore, it is sometimes pointed out that the Case Filter is potentially parameterized across languages (e.g. Carstens 2011; Diercks 2012; van der Wal 2015;

distribution of Caseless objects in Korean, I will propose two types of nominal licensing conditions that accommodate the distribution of DPs with or without Case.

Before moving onto the next section, I should deal with one remaining issue of why the object in Korean is allowed to appear in two forms, i.e. why it can be realized with or without Case in the first place. It is traditionally assumed that a head that is potentially capable of assigning Case must discharge its Case onto a DP, and this constraint is sometimes called the Inverse Case Filter (Martin 1999; Bošković 2002; Epstein & Seely 2006; among others). In contrast, the presence of Caseless objects in Korean implies that the valuation of [*u*Case] should optionally apply to a DP since [*u*Case] on Caseless objects must remain unvalued under the current analysis. Thus, what needs to be addressed is the (potential) elimination of the Inverse Case Filter. In fact, Bošković (2007) provides empirical evidence from some constructions to argue against the Inverse Case Filter, concluding that such a constraint is no longer tenable. First, Bošković (2007) observes that accusative Case assignment is not forced in some cases in English, as shown in (5). In combination with the fact that internal arguments of verbs can be elided in (5), this means that transitive verbs may or may not assign accusative Case.

- (5) a. Mary is dressing (herself).  
 b. Peter is eating (apples). (Bošković 2007:622, fn. 58)

Second, following Franks (2002), Bošković (2007) points out that Case assignment fails in Slavic languages when the genitive of negation and the genitive of quantification apply. Consider the Polish example in (6). As demonstrated in (6a), accusative Case is successfully given to an object in normal cases, whereas when the sentence involves negation, the same object appears with genitive Case instead of accusative Case, as shown in (6b). In other words, accusative Case of the transitive verb in (6b) is suppressed, and thus the object in question cannot be assigned accusative Case.

- (6) a. Janek czytał książkę.  
 Janek read books.ACC  
 ‘Janek read books.’  
 b. Janek nei czytał książki.  
 Janek NEG read books.GEN  
 ‘Janek did not read books.’ (Bošković 2007:622, fn. 58)

As represented in the examples in (5) and (6b), accusative Case assignment to the objects may be suspended even if the transitive verbs are used in the sentences, which obviously goes against the tenet of the Inverse Case Filter. In light of this discussion, I assume with Bošković (2007) that the Inverse Case Filter cannot be maintained in the theory, thereby arguing that the optional valuation of [*u*Case] is indeed possible under the current analysis. This optionality leads to the possibility of the realization of objects without an overt accusative Case-marker in Korean.

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Sheehan & van der Wal 2018; among others). To identify whether or not the Case Filter is subject to parametric variation goes well beyond the scope of this paper, so that this issue is left for future research.

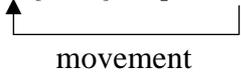
## 3. Proposals

## 3.1. Nominal licensing conditions

As argued in section 2.2, the Case Filter proposed by Chomsky (1981) faces empirical problems with respect to the licensing of Caseless objects in Korean. In light of the Case Filter introduced in (4), the DP is unable to be licensed when its [*uCase*] is underspecified in the derivation. Nevertheless, it is trivial truth that the licensing of Caseless objects in Korean, such as the ones in (1a), (2), and (3), should obviously succeed despite the absence of the value of [*uCase*], since the sentences with Caseless objects are completely fine. Thus, I must treat these objects and offer a principled mechanism of the licensing of DPs, including both objects marked with Case and Caseless objects. I propose alternative licensing strategies of DPs sketched in (7a) and (7b). (8a) and (8b) correspond to a rough illustration of (7a) and (7b), respectively.

## (7) Nominal Licensing Conditions

- a. At least one [*uF*] on multiple occurrences of the same DP must be valued as [*vF*] in order for them to be identified as a proper copy at the interface. Such a DP is interpreted and licensed correctly, insofar as this condition is met.
- b. A single occurrence of a DP is licensed regardless of whether or not [*uF*] is valued, since it can be interpreted without identifying the copy relation.

(8) a.  $[\dots DP_{[vF/*uF]} \dots [ \dots DP_{[uF]} \dots ]]$ 

movement

- b.  $\dots DP_{[vF/uF]} \dots$

The intuition behind the nominal licensing conditions proposed in (7) lies in an implicit assumption pertaining to the interpretation of a DP at the Conceptual–Intentional (C–I) and Sensorimotor (SM) interfaces, regarding the question of whether or not the proper copy relation needs to be established for the correct interpretation of the DP at both interfaces. It has been assumed that the proper copy relation must be formed for the DP bearing its multiple occurrences to be interpreted correctly at the interfaces. For the SM interface, the proper copy relation serves as a prerequisite for the correct pronunciation (notice that this is not intended to decide which copy should be pronounced; that is a matter of linearization). The proper copy relation is also relevant at the C–I interface; for instance, an argument structure of a verb demands that a copy left behind movement of a subject from within a verb phrase to Spec-T be interpreted. For the proper copy relation, Chomsky (1981, 1986), Nunes (2004), and others offer a working hypothesis that multiple occurrences of the same DP are required to involve one Case position in its (nontrivial) chain. According to this working hypothesis, Case serves as a precondition on the proper copy relation (chain). From the viewpoint of the current theoretical perspective, this working hypothesis is rephrased as follows: at least one [*uCase*] on the DP with its multiple occurrences is required to be valued as [*vCase*] for the proper copy relation. Note that Case is a type of feature such that an unvalued feature ([*uF*]) can be valued as a valued feature ([*vF*]) in the course of the derivation. Therefore, extending that working hypothesis, I present an alternative working hypothesis in (9).

- (9) At least one [*uF*] is required to be valued as [*vF*] to assign the proper copy relation to multiple occurrences of the same DP.

As long as the proper copy relation holds, the DP with its multiple occurrences is interpreted felicitously at the interfaces, with the immediate consequence that the licensing of such a DP is concomitantly achieved since an interpretable DP should be licensed (for a different point of view of the relation between the interpretation of DP and its feature specification, see Sportiche 2016; see also Muñoz Pérez 2018 for an alternative analysis). By contrast, the copy evaluation procedure is not necessary for a single occurrence of a DP since it can be interpreted without establishing the proper copy relation; it is interpreted as it is. It follows that the single occurrence of the DP is licensed irrespective of whether or not its [*uF*] obtains the value. As we can see, the proposed nominal licensing conditions are theoretically motivated in view of the correct interpretation of the DP at the C–I and SM interfaces; multiple occurrences of the same DP require the proper copy relation to be interpreted, while the single occurrence of the DP can successfully be interpreted and licensed without recourse to the valuation of [*uF*].

As proposed here, I assume that any type of [*uF*] can be a candidate for the licenser of a DP undergoing movement, insofar as at least one [*uF*] on them is specified during the course of the derivation. Before concluding this subsection, I will briefly explore potential features other than [*uCase*] that are able to license the DP. As an instance of [*uF*], Chomsky (2015) assumes that *wh*-expressions, such as *what* and *who*, have an unvalued Q feature ([*uQ*]), which turns into a valued Q feature ([*vQ*]) at Spec-C via agreement with the C head bearing [*vQ*]. Given that [*uQ*] on *wh*-phrases is one of the [*uF*]s, I hypothesize that [*uQ*] can participate in the licensing of the DP, as long as it is valued within narrow syntax. Let us further assume for now that the DP potentially bears an unvalued Topic feature ([*uTop*]) or an unvalued Focus feature ([*uFoc*]), which can get valued as a valued Topic feature ([*vTop*]) or a valued Focus feature ([*vFoc*]) at the designated area in the CP periphery, respectively, resulting in the specific topic/focus interpretation (Rizzi 1997), just like [*uQ*] argued by Chomsky (2015). Following this assumption, I propose that [*uTop*] and [*uFoc*] are both qualified to serve as licensing features of the DP. In summary, I assume in this paper that if at least one of the [*uF*]s, including [*uCase*], [*uQ*], [*uTop*], and [*uFoc*], is valued in the course of the derivation, then the DP can be licensed under the nominal licensing conditions developed in (7a).

### 3.2. Default case

#### 3.2.1. Formalization of default case

Leaving the details aside, it is commonly assumed in the literature that a DP is pronounced with default case when it does not obtain abstract Case (e.g. McCloskey 1985; Schütze 1997, 2001; McFadden 2004, 2007; among others). Schütze (1997, 2001) and McFadden (2007) offer arguments in favor of the view that default case is not abstract Case but morphological case, and that it is never ‘assigned’ to the DP within the syntactic component. Based on this argument, default case, one of the instances of morphological case, is realized at the phonological component, in contrast to the analysis in McCloskey (1985), in which it is assumed that default case is abstract Case syntactically assigned to the DP in a way that heads capable of assigning abstract Case do. In this paper, I follow Schütze (1997, 2001) and McFadden (2007) in assuming that default case serves as morphological case, as this approach has no need to posit ad hoc default case assignment within narrow syntax.

As already discussed in section 2.1, the value of [*uCase*], such as nominative or accusative, is directly correlated with the morphological realization of a DP; namely, the DP is eventually pronounced with morphological case in accordance with the value that [*uCase*] receives during

the course of the derivation. Building on this assumption, I hypothesize that [*uCase*] itself is in fact one of the Case values that has corresponding morphological case, just as with nominative and accusative. A plausible morphological realization of [*uCase*] itself would be default case because [*uCase*] has no specific value, compared to nominative or accusative. Given the discussions so far, I offer the theoretical implementation of default case in (10).

- (10) A DP is pronounced with default case when [*uCase*] remains unspecified at the SM interface.

Of central importance to this proposal is that [*uCase*] functions as an instruction to pronounce the DP with default case. The proposed analysis is conceptually more desirable than previous approaches to the extent that it does not need to assume an ad hoc default case ‘assignment’ to the DP within narrow syntax; rather, the current proposal puts forth a regulation of how the SM interface reads the DP with [*uCase*] in the same way as other DPs with the values of nominative or accusative are interpreted at the SM interface. The theoretical implementation of default case developed in this section is thus taken to be part of the more general procedure for the determination of case morphology of the DP, which is relevant at the SM interface. As discussed here, the present analysis has no need to require any additional syntactic mechanism to achieve the realization of the DP with default case, yielding a theoretically and conceptually desirable outcome.

### *3.2.2. The presence of [*uF*] at the interfaces*

Note that [*uCase*] is one of the [*uF*]s in the current theoretical framework, as pointed out in section 3.1. However, the standard system adopted in the minimalist approach is not designed to allow for the presence of [*uF*] at the interfaces; if [*uF*] remains unspecified in narrow syntax and is finally shipped to the interfaces, the derivation would fatally be unacceptable due to a violation of Full Interpretation (Chomsky 1986, 1995, 2000, 2001). One may consider that the current analysis runs against this standard assumption, as it is argued in this paper that the presence of [*uCase*] is tolerated at the interfaces. Indeed, Freiden & Vergnaud (2001) point out that the Full Interpretation and the Case Filter proposed by Chomsky (1981) show points of overlaps so that the former can serve as a condition filtering the unfavorable cases for the interfaces, while maintaining the empirical coverage of the latter. Some previous studies, however, cast doubt on such an assumption, claiming that a sentence would be grammatical even if [*uF*] remains unvalued at the interfaces (Epstein et al. 2010; Preminger 2011, 2014, 2021; Kornfilt & Preminger 2015; Levin 2015). It should be noted here that Chomsky & Lasnik (1993:514) provide the important suggestion that if a symbol has some contribution to the motor-perceptual interpretation, the representation at the phonetic component is considered to be legitimate. In relation to this remark, Hayashi (2022:44), following Hazout (2004), argues that the representation becomes legitimate if every symbol has some contribution to the C–I interface or the SM interface. Given these important remarks, it is implied that in some cases, the presence of [*uF*] is allowable if and only if it contributes to the interpretation at least at either interface. Following these suggestions, I assume that [*uCase*] is tolerable at both the C–I and SM interfaces, because at the SM interface, [*uCase*] has a designated instruction to realize the DP with default case; namely, [*uCase*] plays a decisive role in contributing to the interpretation at the SM interface. Although the current analysis permits [*uCase*] to be unspecified at the interfaces, its presence is not problematic but vital for the realization of a DP



resumptive DP is pronounced with accusative Case; thus, case concord fails. It is expected that the LD-ed DP lacking the overt Case-marker does not receive any specific value of [*uCase*], in light of the discussion in section 2.2. Based on the arguments put forth by Schütze (1997, 2001) and McFadden & Sundaresan (2011), I propose that [*uCase*] on the LD-ed DP in (13) is unvalued, and as a consequence, it is forced to be pronounced with default null (zero) case.

I am now aware of evidence to reveal the case realization on the Caseless objects in (1), (2), and (3). Given the proposal that the LD-ed DP in Korean has no value of [*uCase*], with such a DP being eventually pronounced with default null case, it is plausible to assume that the Caseless objects in (1), (2), and (3) are also realized with default case in a way analogous to the LD-ed DP, because [*uCase*] on them are unspecified as well, as argued in section 2.2. Following this proposal, I contend that Caseless objects in Korean in fact appear with default null case. It will be shown in the following section that the distribution of such objects is constrained by the proposed nominal licensing conditions.

#### 4. Analysis

##### 4.1. In-situ caseless objects

This section is devoted to exploring the way that Caseless objects in Korean are licensed, with two types of nominal licensing conditions proposed in section 3.1. First, consider the Caseless object in (1a), repeated here as (14a). Assuming that the Caseless object in (14a) stays in the base-generated position (Y. Kim 1998; Kwon & Zribi-Hertz 2008; Yoo 2019; among others), the rough representation of (14a) will be illustrated in (14b).

- (14) a. Enni-ka ku chayk-ul/∅ ilknun-ta.  
 sister-NOM the book-ACC/∅ read-DECL  
 ‘My sister reads the book.’ (Y. Kim 1998:186, slightly revised)
- b. ... ku chayk-∅<sub>[*uCase*]</sub> ...

Although [*uCase*] on the Caseless object in (14a) is unspecified, as shown in (14b), it meets the proposed nominal licensing condition in (7b) because it consists of a single occurrence of a DP and remains in its original position within the verb phrase. Consequently, the Caseless object in (14a) is licensed felicitously even if its [*uCase*] is unspecified, with the result that it is eventually pronounced with default null case.<sup>8</sup>

<sup>8</sup> An anonymous reviewer correctly points out that direct objects often appear without an accusative Case-marker *-o* in colloquial Japanese, as shown in (iii) (see Saito 1985 for relevant discussion; see also Moritake 2023a, b for a possible line of analysis of this issue).

- (iii) Taro-wa ringo(-o) tabe-ta.  
 Taro-TOP apple-ACC eat-PST  
 ‘Taro ate an apple.’

However, the anonymous reviewer argues that the possibility of the elimination of *-ni*, which is often taken to be a dative Case-marker, depends on a position in which it appears, as shown in (iv) and (v).

- (iv) Taro-wa Hanako\*(-ni) hon-o age-ta.  
 Taro-TOP Hanako-\*DAT book-ACC give-PST  
 ‘Taro gave Hanako a book.’
- (v) Taro-wa kouen(-ni) i-ta.  
 Taro-TOP park-DAT be-PST  
 ‘Taro was in the park.’

The anonymous reviewer also claims that a locative phrase in (vi) must occur with *de*.

As suggested in section 2.2, the distribution of Caseless objects, regardless of whether they are moved or not, cannot be explained by the Case Filter proposed by Chomsky (1981), since it never ensures the realization of DPs without Case. However, the current analysis, attributing the distribution of DPs to two types of nominal licensing conditions, guarantees the occurrence of DPs lacking Case, as demonstrated in (14). In the remainder of this section, I will analyze the remaining examples that include moved Caseless objects, arguing that in which cases these objects can appear in a sentence is explained by the proposed nominal licensing conditions.

#### 4.2. Moved caseless objects

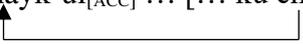
This section first considers the ungrammatical pattern of (1b), repeated here as (15a), where the Caseless object undergoes scrambling to the sentence-initial position without any discourse interpretation. The rough representation of (15a) is shown in (15b), where [*uCase*] on *ku chayk- $\emptyset$*  ‘the book’ does not obtain the value, and this object is pronounced with default null case.

- (15) a. Ku chayk-ul/\* $\emptyset_i$  enni-ka  $t_i$  ilknun-ta.  
           the book-ACC/\* $\emptyset$  sister-NOM read-DECL  
           ‘My sister reads the book.’ (Y. Kim 1998:186, slightly revised)
- b. [ku chayk- $\emptyset_{[uCase]}$  ... [... ku chayk- $\emptyset_{[uCase]}$  ...]]
- ↑  
 └──────────────────────────┘  
 movement

The only difference between the grammatical case and the ungrammatical one in (15a) is whether or not the objects are marked with accusative Case. Thus, I will try to elucidate this difference in terms of nominal licensing. I first discuss the ungrammatical pattern observed in (15a). Movement of the Caseless object, *ku chayk- $\emptyset$*  ‘the book’, in (15a) yields its two occurrences, as shown in (15b); however, no [*uCase*] on these two occurrences is valued because they are not Case-marked. Therefore, they cannot be identified as a series of proper copies, nor are they licensed under two types of nominal licensing conditions proposed in this paper. The reason for the ungrammaticality of (15a) is thus reducible to the failure of nominal licensing. In contrast, the sentence in (15a) becomes completely grammatical if the moved object is marked with accusative Case. This fact is also accounted for by the proposed nominal licensing conditions: [*uCase*] on the scrambled object obtains a value, as shown in (16), and as a consequence, the object undergoing scrambling is licensed under the nominal licensing condition in (7a).

- 
- (vi) Taro-wa kouen\*(-de) ason-da.  
       Taro-TOP park-LOC play-PST  
       ‘Taro played in the park.’

The anonymous reviewer wonders why the DP in (v) can optionally appear with default case, whereas the DPs in (iv) and (vi) must be realized with *-ni* and *-de*. The category of *-ni* has been controversial, and it has been assumed that *-ni* is divided into a true dative Case-marker and a preposition (Shibatani 1978; Saito 1985; Takezawa 1987; Ura 1999; among others). It is expected that a prepositional *-ni* cannot be deleted due to the selectional properties of verbs. Thus, it is necessary to identify the property of *-ni* before I discuss the (im)possibility of the realization of objects with default case in (iv) and (v). The unavailability of the deletion of *-de* in (vi) may be attributed to the category of *-de*; it is a preposition, so that it cannot be deleted. Additionally, in the case of (iv), I must clarify the derivation of double object construction to discuss the impossibility of default case realization of the object in question (see Larson 1988; Miyagawa & Tsujioka 2004 for relevant discussion). However, further investigation of these issues would be beyond the central scope of this paper, and thus it is left for future research.

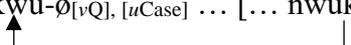
- (16) [ku chayk-ul]<sub>[ACC]</sub> ... [... ku chayk-ul]<sub>[ACC]</sub> ... ]  
  
 movement

Notice here that the sentences are completely acceptable in some cases in spite of the Caseless objects being moved, as shown in (2) and (3), repeated here as (17). The Caseless object undergoes *wh*-movement in (17a), topicalization in (17b), and focalization in (17c), which sharply contrasts with the Caseless object in (15a) with respect to the availability of movement.

- (17) a. Nwukwu-lul/ $\emptyset$ <sub>i</sub> Yenghi-ka  $t_i$  manna-ss-ni?  
 who-ACC/ $\emptyset$  Yenghi-NOM meet-PST-Q  
 ‘Who did Yenghi meet?/Who is such that Yenghi meet (him/her)?’  
 (Ahn & Cho 2009:115)
- b. Chelswu-lul/ $\emptyset$ <sub>i</sub> Mary-ka  $t_i$  manna-ss-e.  
 Chelswu-ACC/ $\emptyset$  Mary-NOM meet-PST-DECL  
 ‘Chelswu, Mary met.’ (*Chelswu* is interpreted as a topic) (Ahn & Cho 2007:54)
- c. Cha-man-ul/ $\emptyset$ <sub>i</sub> Sue-ka ecey  $t_i$  po-ass-ta.  
 car-only-ACC/ $\emptyset$  Sue-NOM yesterday see-PST-DECL  
 ‘It is only a car that Sue saw yesterday.’

On the basis of the assumption that movement of Caseless objects in Korean is uniformly prohibited, it would not be possible to accommodate the grammaticality of the examples in (17). Thus, it is necessary to offer a principled account of why the Caseless objects in (17) can undergo displacement, in contrast to the one in (15a).

As explored in section 3.1, a moved DP is licensed if and only if one of its [*uF*]s is valued within the syntactic component, and it is argued that [*uQ*], [*uTop*], and [*uFoc*], as well as [*uCase*], are in fact able to play a decisive role in the licensing of the DP. In light of this assumption, the Caseless object in (17a) is eventually licensed even if it is raised to the sentence-initial position without obtaining a value of [*uCase*], because the moved Caseless *wh*-expression has its [*uQ*] valued as [*vQ*] at Spec-C in (17a), a rough representation of which is illustrated in (18).

- (18) [nwukwu- $\emptyset$ ]<sub>[vQ], [uCase]</sub> ... [... nwukwu- $\emptyset$ ]<sub>[uQ], [uCase]</sub> ... ]  
  
 movement

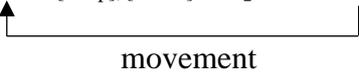
As demonstrated in (18), [*uCase*] on the fronted *wh*-expression has no value since it is not assigned Case. On the other hand, [*uQ*] becomes [*vQ*] at Spec-C, and as a result, the two occurrences of the Caseless *wh*-expression are regarded as proper copies, with *nwukwu- $\emptyset$*  ‘who’, the Caseless object, being simultaneously licensed under the current analysis. Therefore, (17a) becomes grammatical, in contrast to (15a).<sup>9</sup>

<sup>9</sup> In German, default case is considered to be nominative case since the LD-ed DP is realized with nominative case when case concord fails, as shown in (vii) (e.g. van Riemsdijk and Zwarts 1997; Schütze 2001; Frey 2004).

(vii) Die/\*Der Anna<sub>i</sub>, ich habe lange nicht mit ihr<sub>i</sub> gesprochen.  
 the.NOM/\*DAT Anna I have a.long.time not with her.DAT spoken  
 ‘Anna, I haven’t spoken with her in a long time.’ (van Riemsdijk & Zwarts 1997:28, fn. 4)

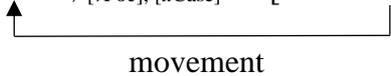
It would be expected that nominal interrogatives in German can always appear with nominative case in addition to proper case in line with the analysis of (17a), where *wh*-phrases in Korean can undergo two different

Let us turn to the discussion of the grammaticality of (17b) and (17c), in which the Caseless objects undergo movement with their [*uCase*] unspecified; however, both of the sentences are acceptable. What is important to notice is that the sentence in (17b) is grammatical if and only if the fronted Caseless object is interpreted as a topic, as suggested by Ahn & Cho (2007, 2009). Given that the Caseless object raised to the sentence-initial position in (17b) receives the topic interpretation (Ahn & Cho 2007, 2009), its [*uTop*] will finally be valued as [*vTop*] after topicalization, as shown in (19).

- (19) [Chelswu- $\emptyset$ <sub>[*vTop*], [*uCase*] ... [... Chelswu- $\emptyset$ <sub>[*uTop*], [*uCase*] ...]]</sub></sub>
- 

The Caseless object displaced to Spec-C lacks the value of [*uCase*]; however, [*uTop*] obtains a value as a result of topicalization. Therefore, it is licensed under the proposed nominal licensing condition in (7a) even in the absence of the value of [*uCase*].

Finally, let us consider the sentence in (17c), in which the Caseless object lacks Case, but it undergoes movement with the focus interpretation. Suppose that [*uFoc*] on the fronted Caseless object becomes [*vFoc*] after it is moved to Spec-C, and hence the representation of (17c) is roughly shown in (20).

- (20) [cha-man- $\emptyset$ <sub>[*vFoc*], [*uCase*] ... [... cha-man- $\emptyset$ <sub>[*uFoc*], [*uCase*] ...]]</sub></sub>
- 

Although [*uCase*] never receives a value since accusative Case is not assigned to the fronted Caseless object, [*uFoc*] gets a value. Based on two types of nominal licensing conditions proposed in section 3.1, the licensing of the object in question succeeds due to the valuation of [*uFoc*].

The current analysis has further consequence in support of the analysis suggested by Belletti (2001, 2004). As argued by Belletti (2001, 2004), there is a possibility that a vP projection, as well as a CP projection, licenses a focus in its peripheral position. The current analysis expects that if the Caseless object with the focus interpretation is moved to the vP periphery, and if the sentence is taken to be acceptable, then it is suggested that the Caseless object that undergoes displacement to the vP periphery is licensed because of the valuation of its [*uFoc*]. As pointed out by Haewon Jeon (p.c.), this expectation is in fact borne out by the examples in (21). It can be concluded that the focused Caseless objects, *cha-man- $\emptyset$*  ‘only a car’ in (21a) and *ku cha-man- $\emptyset$*  ‘only the car’ in (21b), undergo movement to the position preceding the vP adverb, *ppalli* ‘quickly’, and finally occupy the vP periphery. The sentences in (21) become grammatical, with the Caseless objects in question being licensed correctly via the valuation of [*uFoc*] at the vP

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morphological realizations. However, as pointed out by an anonymous reviewer, this expectation does not hold of *wh*-phrases in German, as shown in (viii), in which the realization of *wh*-phrase with default case is impossible.

- (viii) Wen/\*Wer hast du eingeladen?  
 who.ACC/\*who.NOM have you.NOM invited  
 ‘Who did you invite?’

One possibility is that a valuation of [*uQ*] is sufficient to license the *wh*-expression in (viii), but a specific morphological restriction might affect their case realization in German, independently of nominal licensing. At this point, however, I have no answer to the impossibility of the realization of *wh*-phrases with default case in German, and I have to leave this issue for future research.

peripheral focus projection.

- (21) a. Sue-ka [<sub>FocP</sub> cha-man-ul/ø<sub>i</sub> [<sub>VP</sub> ppalli t<sub>i</sub> po-ass-ta]].  
 Sue-NOM car-only-ACC/ø quickly see-PST-DECL  
 ‘Sue quickly saw only a car.’
- b. Sue-ka [<sub>FocP</sub> ku cha-man-ul/ø<sub>i</sub> [<sub>VP</sub> ppalli t<sub>i</sub> po-ass-ta]].  
 Sue-NOM the car-only-ACC/ø quickly see-PST-DECL  
 ‘Sue quickly saw only the car.’

These examples in (21) not only show that even if Caseless objects in Korean move to the vP peripheral position, they can be licensed at this position by virtue of the valuation of [*uFoc*] in a way analogous to the sentence in (17c), but also present further evidence in favor of Belletti’s (2001, 2004) analysis that (some) languages can utilize the focus projection even in the vP periphery.

Summarizing, a clear contrast between illicit movement in (15) and licit movement in (17) is attributed to whether or not Caseless objects undergoing movement fulfill two types of proposed nominal licensing conditions developed in this paper. Of importance here is that nominal licensing is achieved by the valuation of [*uF*], including Case and discourse-related features, in the current analysis, which differs significantly from the classical Case-based nominal licensing requiring all the DPs to be assigned Case to be licensed (Chomsky 1981).

## 5. Extension to Turkish

### 5.1. Data

In the rest of this paper, I will extend the analysis proposed in this paper to Turkish to account for the distribution of DPs with or without Case. It is well-known that in Turkish, as shown in (22), an object can be realized with an overt accusative Case-marker, or it may occur Caseless (Knecht 1986; Enç 1991; Keleşir 2001; Kornfilt 1990, 2003a,b; Kılıçaslan 2004; among others).

- (22) Ahmet dün akşam pasta-yı/ø ye-di.<sup>10</sup>  
 Ahmet yesterday evening cake-ACC/ø eat-PST  
 ‘Yesterday evening, Ahmet ate cake.’ (Kornfilt 2003a:127, slightly revised)

As with Korean, I assume that Caseless objects in Turkish do not obtain a value of [*uCase*] because no overt Case-marker is realized on them, in contrast to those marked with accusative Case. It is argued in the prior literature that direct objects marked with accusative Case can freely move, as shown in (23a), while Caseless objects in Turkish are unable to move away from the position immediately adjacent to the verb, as evidenced by (23b) (e.g. Enç 1991; Keleşir 2001; Kornfilt 2003a; Aygen 2007; among others).

<sup>10</sup> It should be noted that subjects in Turkish lack an overt nominative Case-marker; however, it is commonly held that they are in fact assigned abstract nominative Case, which undergoes morphologically zero realization (e.g. Kornfilt 2003b, 2006).

- (23) a. Ahmet şahane (bir) pasta-y<sub>i</sub> dün akşam t<sub>i</sub> ye-di.  
 Ahmet fantastic (a) cake-ACC yesterday evening eat-PST  
 ‘Ahmet ate the/a fantastic cake[+specific] yesterday evening.’  
 b. \*Ahmet (bir) pasta-ø<sub>i</sub> dün akşam t<sub>i</sub> ye-di.  
 Ahmet (a) cake-Ø yesterday evening eat-PST  
 Intended meaning: ‘Ahmet ate (a) cake[-specific] yesterday evening.’  
 (Kornfilt 2003a:128)

However, it is sometimes pointed out that Caseless objects in Turkish are in fact able to be raised to the sentence-initial position when they obtain a topic or focus interpretation, as shown in (24), in which *çay-ø* ‘tea’ is assumed to be topicalized, while it is not marked with accusative Case (Öztürk 2009; Gračanin-Yüksek & İşsever 2011; Kamali 2015; Jo & Palaz 2018; Driemel 2020a,b).

- (24) Çay-ø<sub>i</sub>, ben t<sub>i</sub> iç-me-di-m.  
 tea-Ø, I drink-NEG-PST-1SG  
 ‘Tea, I did not have any.’  
 (Öztürk 2009:339)

This fact suggests that when some factors, such as discourse-oriented ones, come into play, Caseless objects in Turkish can be moved. As discussed above, this observation also holds of Korean to the extent that Caseless objects in Korean can be raised to a higher position where they are assigned discourse-related interpretations. It thus seems promising to explain the (un)availability of movement of the Caseless objects in (23) and (24) in terms of the proposed nominal licensing conditions.

## 5.2. Default case in Turkish

Recall from section 3.2.3 that a left-dislocated (LD-ed) DP tends to be pronounced with default case when a corresponding resumptive differs in Case-marking from the LD-ed DP (Schütze 1997, 2001; McFadden & Sundaresan 2011). To take (25) as an example of the left-dislocation in Turkish, the LD-ed DP, which is *Ali*, must show up with null case when the corresponding DP, which is *kendisin-den* ‘himself’, appears with ablative case.

- (25) Ali(\*-y<sub>1</sub>) mi? Ben kendisin-den çok kork-ar-ım.  
 Ali(\*-ACC) Q I himself-ABL very fear-AOR-1SG  
 ‘(About) Ali, I am very much afraid of him.’  
 (Kornfilt 2003b:173)

As demonstrated in (25), case concord does not take place; thus, based on McFadden and Sundaresan’s (2011) argument, it can be concluded that morphologically null case serves as default case in Turkish, as evidenced by the morphological realization of the LD-ed DP in (25). This conclusion further implies that the Caseless objects in (22-24) end up being pronounced with default null case.

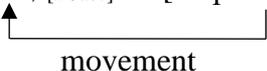
## 5.3. Discussion

First of all, consider the presence of the Caseless object in the sentence in (22). Following Enç (1991), Kelepir (2001), Kornfilt (2003a), Aygen (2007), and others, I assume that the Caseless object in (22) occupies the complement position of the verb, i.e. the base-generated position. A rough representation of (22) is illustrated in (26).

(26) ... pasta- $\emptyset$ <sub>[uCase]</sub> ...

As shown in (26), [uCase] on the Caseless object does not obtain a value; however, it stays in its original position without any occurrence that must be identified as its copy, thus fulfilling the proposed nominal licensing condition in (7b).<sup>11</sup>

Let us turn to the discussion of the ungrammatical pattern shown in (23b), in which the Caseless object moves away from its base-generated position with no discourse-related interpretation. In the case of the ungrammatical sentence in (23b), the Caseless object creates the two occurrences of its copy. These two occurrences of the Caseless object are not assigned accusative Case, thereby lacking the value of [uCase]. Furthermore, the Caseless object undergoing movement has neither a topic nor a focus interpretation, whereby it also lacks the value of discourse-oriented features, such as [uTop] or [uFoc]. Consequently, the Caseless object in question results in the violation of the proposed nominal licensing conditions developed in section 3.1, because there is no [uF] that gets valued within the syntactic component. A representation of (23b) is roughly shown in (27).

(27) [... pasta- $\emptyset$ <sub>[uCase]</sub> ... [... pasta- $\emptyset$ <sub>[uCase]</sub> ...]]  
  
 movement

Therefore, the Caseless object cannot be licensed, which renders the sentence in (23b) ungrammatical. The grammatical pattern of (23a) is also readily captured by the current analysis

<sup>11</sup> According to Bošković (2006), in Serbo-Croatian, the verb *ovladati* ‘conquer’ takes a DP with instrumental Case, as in (ixa), whereas the same verb requires the preposition *s(a)* ‘with’ to check its instrumental Case against a PP headed by *s(a)* ‘with’ when a sentence contains a higher numeral like *pet zemalja* ‘five countries’, as in (ixb).

(ix) a. On je ovladao zemljom.  
 he is conquered country.INSTR.SG  
 ‘He conquered that country.’

b. On je ovladao \*(s(a)) pet zemalja.  
 he is conquered with five countries.GEN.PL  
 ‘He conquered five countries.’

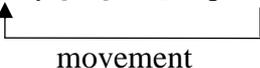
(Bošković 2006:525)

An anonymous reviewer argues that the current analysis would predict that *ovladati* ‘conquer’ can directly select *pet zemalja* ‘five countries’, since it remains in its base-generated position; in fact, it can be expected to appear with default case. However, it is not the case, and *ovladati* ‘conquer’ must select a PP headed by *s(a)* ‘with’ in (ixb). The anonymous reviewer then wonders why *ovladati* ‘conquer’ must select the PP in (ixb). A plausible answer to this question is that the obligatory insertion of *s(a)* is associated not with nominal licensing but with what Bošković (2006) calls genitive of negation (see section 2.2 for relevant discussion). Since a lower numeral like *zemljom* ‘country’ is incompatible with *s(a)* ‘with’, as in (x), the obligatory insertion of *s(a)* ‘with’ in (ixa) would be deduced from a morphological restriction concerning genitive of negation.

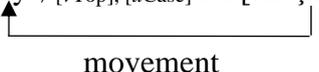
(x) \*On je ovladao s(a) zemljom.  
 he is conquered with country.INSTR.SG  
 ‘He conquered that country.’

(Bošković 2006:525)

because the moved object obtains accusative Case, in contrast to (23b). Consequently, [*uCase*] on the moved Caseless object turns into [ACC], as shown in (28), satisfying the nominal licensing condition in (7a).

- (28) [... pasta-y<sub>1</sub>[ACC] ... [... pasta-y<sub>1</sub>[ACC] ...]]  


In contrast, the sentence in (24) is acceptable in spite of the Caseless object being displaced from the immediately preverbal position to the sentence-initial position. According to Öztürk (2009) and Kamali (2015), the relevant Caseless object is raised by virtue of topicalization. On the basis of the analyses in Öztürk (2009) and Kamali (2015), I argue that the moved Caseless object in (24) is in fact licensed via the mediation of the valuation of [*uTop*], which takes place at Spec-C. A rough representation of (24) is illustrated in (29).

- (29) [Çay-∅<sub>[vTop], [uCase]</sub> ... [... Çay-∅<sub>[uTop], [uCase]</sub> ...]]  


As shown in (29), [*uCase*] remains unspecified, whereas [*uTop*] gets valued as [*vTop*] due to topicalization. Therefore, the valuation of [*uTop*] is key to licensing the moved Caseless object in (24); as a consequence, the sentence becomes grammatical.

As discussed in this subsection, the grammaticality of the sentences with Caseless objects in Turkish is also reducible to whether or not they are licensed by the proposed nominal licensing conditions.<sup>12</sup>

## 6. Conclusion

As noted at the outset of this paper, I have pointed out that Korean allows Caseless objects to appear in a sentence, a realization of which goes against the tenet of the classical Case Filter

<sup>12</sup> An anonymous reviewer points out that German bare DP-adverbs (e.g. Larson 1985), which are italicized in (xi)–(xiii), fall into three types: accusative and genitive DPs and DPs without Case, and that *Weihnachten* ‘Christmas’ in (xiii) is expected to be licensed in its base-generated position under the current analysis. The anonymous reviewer then wonders what assigns genitive and accusative Case to bare DP-adverbs in (xi) and (xii).

(xi) Morgen bin ich *den ganzen Tag* zu Hause.  
 tomorrow be I.NOM the.ACC whole.ACC day.ACC to house.DAT  
 ‘Tomorrow, I’m home all day.’

(xii) Deine Gemeinheiten werden *eines Tages* auf dich selbst zurückfallen.  
 your.NOM meanness.NOM become a.GEN day.GEN on you.ACC oneself back.fall  
 ‘Your meanness will recoil on you one day.’

(xiii) Komm doch *Weihnachten-∅* zu uns!  
 come MP Christmas-∅ to us.DAT  
 ‘Come to us on Christmas!’

McFadden (2004) proposes that bare DP-adverbs in fact consist of PPs headed by null P, arguing that they involve different null Ps, each with a different semantic contribution, and that each null P assigns its own inherent Case to its DP complements in accordance with its meaning. Following McFadden’s (2004) analysis, it is likely that null Ps are responsible for the difference in morphological shape of the case-marker inserted in (xi)–(xiii).

proposed by Chomsky (1981), since Chomsky's Case Filter never allows for the presence of DPs lacking a specific Case value. To resolve this issue, I have proposed two types of nominal licensing conditions from the viewpoint of whether or not a proper copy relation should be established for DPs to be interpreted at the interfaces, suggesting that DPs can in fact be licensed in two ways: (i) an in-situ DP is licensed, regardless of identifying the copy relation, but (ii) a moved DP can be licensed only when it forms the proper copy relation. Furthermore, I have clarified the theoretical status of default case in terms of the minimalist framework, arguing that a realization of default case is derived from the presence of [*u*Case] on the DP at the SM interface. It has been shown that these two proposals are inseparably intertwined; it is not possible to account for the distribution of DPs until the theoretical implementation of default case is formalized. I have emphasized that the distribution of Caseless objects in Korean is successfully captured by appeal to the proposed analysis regarding nominal licensing. Finally, I have introduced the facts observed in Turkish, in which the appearance of Caseless objects is also admitted in some cases. What I have revealed is that the proposed nominal licensing conditions can also succinctly accommodate the intriguing facts concerning the distribution of DPs observed in Turkish in a principled way.

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#### *Abbreviations*

1	first person	MP	modal particle
ABL	ablative	NEG	negation
ACC	accusative	NOM	nominative
AOR	aorist	PL	plural
DAT	dative	PST	past
DECL	declarative	Q	question
GEN	genitive	SG	singular
INSTR	instrumental	TOP	topic
LOC	locative		

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# Examining learnability of grammar

A view from Kashmiri loanwords

Sneha Ray Barman

In this paper, I address the issue of phonological learnability with a focus on Kashmiri loanwords. The variation of Kashmiri recorded in this paper exhibits two repair strategies while borrowing words from Hindi-Urdu, English, and Persian; namely, aspiration of voiceless stops at the coda position and epenthesis of a vowel in onset consonant clusters. I have attempted to analyze these issues using Optimality Theory. Checking the learnability of the proposed grammar, I show that it is possible to learn the grammar but the ranking differs when the model is examined using the Recursive Constraint Demotion and Maximum Entropy Grammar.

## *1. Introduction*

Computational models of language learning are used to comprehend how linguistic knowledge is present in the human brain, how it is learned, and the constraints of learning and variation. The central concept of the phonotactic model centers around sound rather than words, in contrast to conventional language models. In an effort to match gradient phonotactic knowledge, computational representations of phonotactic information are created. Tessier (2017) examined the formal properties of phonological languages and grammar in relation to algorithms that seek to learn the language-specific elements of grammar. The computer-simulated models thus try to mimic human learning ability (Albright & Hayes 2011). In this paper, I have addressed the case of Kashmiri loanwords and how phonological alternations make them stand out from other Indo-Aryan languages. Ramadoss & Vijayakrishnan (2006) thoroughly studied the role of epenthesis in Kashmiri English. The data recorded in this paper reflects /i/ as the epenthetic segment, while Ramadoss and Vijayakrishnan referred to /ə/ as the epenthetic vowel. Due to the lack of acoustic data, I have treated this as a dialectal difference. By doing a learnability experiment, I hope to shed light on the fact that probabilistic models like Maximum Entropy Grammar present with more authentic constraint ranking than the universal approach of Optimality Theory.

Section 2 is a brief introduction to Kashmiri phonology and its basis within the OT frame-

work. Section 2.1 explains the treatment of the Kashmiri syllable structure within the OT framework. Section 3 analyses the loanwords in Kashmiri with the help of OT. It is divided into two sub-sections to treat the cases of aspiration and epenthesis separately. Sections 4 and 4.1 examine the learnability of the proposed grammar using Recursive Constraint Demotion. Section 5 gives a brief background on Maximum Entropy Grammar and Section 5.2 checks the constraints using Maximum Entropy Grammar. I conclude in Section 6.

## 2. Kashmiri phonology: an overview

Kashmiri, locally called Koshur (/kə:ʃur/), is spoken across the valley of Kashmir in India and Pakistan. Kashmiri differs from other Indo-Aryan languages in certain phonological, morphological, and syntactic aspects. Grierson (1919) pointed out a few cases that make Kashmiri stand out from the Indo-Aryan crowd. Some of them are:

- Kashmiri is the only SVO language in the Indo-Aryan language family.
- It does not have a four-way contrast of plosives, that is, Kashmiri lacks voiced aspirated plosives but preserves the voiceless ones. The four-way contrast of stops is a very common feature of Indo-Aryan languages.
- Apart from these, the existence of central vowels like /i, i:, ə, ə:/ is also unique to Kashmiri (Koul 2005).
- It is a V2 language [(O)V(C)] like German, Dutch, Icelandic, and a few other languages while also showing some strikingly unique features. Another interesting fact is that all the oral vowels in Kashmiri can be nasalized. It is denoted by the nasal (~) sign over the vowels.

Vowel	Front	Central	Back
<i>High</i>	i i:	ɨ ɨ:	u u:
<i>Mid</i>	e e:	ə ə:	o o:
<i>Low</i>		ɑ ɑ:	ɔ ɔ:

Table 1. Vowel inventory of Kashmiri

**Aspiration:** Aspiration is phonemic in Kashmiri. The phonemic inventory contains voiceless aspirated stops only; voiced stops cannot be aspirated in the language. They can occur in all three positions in a word. The examples have been laid out in Table 3.

**Consonant clusters:** Consonant clusters are common in the language. Although it comes with a few restrictions, the clusters can occur in all three-word positions, i.e., initial, medial, as well as final positions. The current paper focuses on word-initial and word-final clusters and discusses them in detail.

**Word-initial consonant clusters:** Kashmiri allows complex onset clusters. The maximum number of segments in Kashmiri complex onset is two (CCV... ). However, the sequence is not abrupt. The word-initial consonant clusters, although not very frequent, follow a pattern. In the

Consonants	Bilabial	Alveolar	Retroflex	Palatal	Velar	Glottal
<i>Stops</i>	p b	t d	ʈ ɖ		k g	
<i>aspirated stops</i>	p <sup>h</sup>	t <sup>h</sup>	ʈ <sup>h</sup>		k <sup>h</sup>	
<i>Affricates</i>		ts	ʈʂ	ç		
<i>aspirated affricates</i>		ts <sup>h</sup>		ç <sup>h</sup>		
<i>Nasals</i>	m	n				
<i>Fricatives</i>		s z		š		h
<i>Laterals</i>		l				
<i>Trills</i>		r				
<i>Semi-vowels</i>	v	y				

Table 2. Consonant inventory of Kashmiri (Koul 2005)

Kashmiri	Gloss	Kashmiri	Gloss
[p <sup>h</sup> al]	fruit	[pa:p <sup>h</sup> ]	sin
[sap <sup>h</sup> e:d]	white	[t <sup>h</sup> od]	tall
[t <sup>h</sup> ul]	egg	[zu:t <sup>h</sup> ]	tall
[mit <sup>h</sup> ə:y]	sweets	[k <sup>h</sup> ɔk <sup>h</sup> ur]	hollow
[mat <sup>h</sup> un]	rub	[k <sup>h</sup> anun]	dig
[sat <sup>h</sup> ]	seven	krak <sup>h</sup>	cry

Table 3. Aspiration in Kashmiri (Koul 2005)

following examples, we can see that the first segment of the consonant cluster is less sonorous than the second one. Therefore, the onset cluster follows the Sonority Sequencing Principle (henceforth, SSP).

Kashmiri	Gloss	Kashmiri	Gloss
[pro:n]	old	[p <sup>h</sup> ras]	poplar tree
[bro:]	cat	[tre]	three
[drog]	expensive	tro:t <sup>h</sup>	trout(fish)
[dram]	drum	[krāz]	skeleton
[k <sup>h</sup> ra:v]	footwear	[srog]	cheap
[ts <sup>h</sup> rat <sup>h</sup> ]	mischievous	[šra:n]	brathroom

Table 4. Onset clusters in Kashmiri (Koul 2005)

The most salient feature of Kashmiri word-initial consonant clusters, as evident in the above examples, is that the second member of the cluster is always /r/, and the preceding member is a stop /p, p<sup>h</sup>, b, t, t<sup>h</sup>, ʈ, ɖ, k, k<sup>h</sup>, g/, affricate /ts<sup>h</sup>/ or a fricative /s, š/. Therefore, the sequence goes from less sonorous (stops/affricates/fricatives) to more sonorous (/r/), resulting in a sonority increment.

**Word-final consonant clusters:** Word-final clusters in Kashmiri are evident. The maximum number of segments is two (...CC). It also follows a pattern where the first member of the cluster is always a nasal (/m/, /n/) or a fricative (/s/, /š/), and the second member is always a stop /p, p<sup>h</sup>, b, t, k, etc/. Therefore, the coda clusters decrease in sonority [nasal/fricative (more sonorous) → stops (less sonorous)]. This means the Kashmiri word-final consonant clusters

follow the SSP.

Kashmiri	Gloss	Kashmiri	Gloss
[laemp]	lamp	[ʃank <sup>h</sup> ]	conch
[amb]	mango	[kaʃt]	trouble
[dand]	teeth	[mast]	carefree
[k <sup>h</sup> and]	sugar	[gaʃt]	round

Table 5. Coda clusters in Kashmiri (Koul 2005)

### 2.1. Treatment of Kashmiri syllable structure in OT

The Optimality Theory grammar was developed by Prince & Smolensky (2004) and it gives language learners the responsibility of identifying a grammar that is consistent with the target language. Through the lens of constraints, this grammar examines phonological interactions. It adopts constraint-based phonology in place of the rule-based phonology used in generative grammar. It is assumed that every linguistic output form satisfies the set of ranked constraints in the best possible way or in the "most harmonic" way. According to Kager (2004), a candidate is said to be optimal if it incurs the fewest significant violations of a group of conflicting constraints. Therefore, OT evaluates a single input given a set of constraints and generates an infinite set of output candidates. The OT grammar is conceptually more universal in that it discusses grammar more frequently than phonology unique to a particular language.

Onsets and codas are optional in Kashmiri, and the native grammar allows consonant clusters in all three positions. Thus, well-formedness constraints ONSET (a syllable must have onset), NO-CODA (syllables are open) (Itô 1989; Prince & Smolensky 2004) and \*COMPLEX (complex onset and coda are not allowed) are dominated.

Koul (2005) explained that the word-initial consonant clusters in Kashmiri are grammatical only if a stop/affricate/fricative is followed by /r/, while word-final clusters are acceptable only if a nasal/fricative is followed by a stop. However, the existence of loanwords like /kla:b/ 'club' or /ple:n/ 'aeroplane' suggests that the clusters follow the SSP (initial clusters should rise in sonority while the final clusters should fall). I use the constraint SONORITY as a markedness constraint. SONORITY assigns a violation to the syllable that does not follow the SSP. I use IDENT-IO (the output must have correspondent segments in the input) as the faithfulness constraint. Since a consonant cluster is ungrammatical when Sonority is violated, it is the highest-ranked constraint in the grammar followed by IDENT-IO. \*Complex, NO-Coda, and Onset are already dominated owing to the reasons cited above. Violating the highest-ranked constraint discards the representation in grammar. In other words, the grammar does not allow initial clusters that do not abide by SSP.

Therefore, constraint ranking: Sonority » Faithfulness » \*Complex, No-Coda, Onset (see Table 6).

In this section, I have shown how the case of consonant clusters in Kashmiri can be handled with OT constraints. Since aspiration is phonemic in the language and has no effect on the syllable structure, I have not delved into that aspect in this paper. As the paper proceeds, I have shown how aspiration plays a significant role in the loanword phonology of Kashmiri and propose the OT constraints to account for the same.

Input:/dɾog/	SONORITY	IDENT-IO	*COMPLEX	NO-CODA	ONSET
⇒ a. <i>dɾog</i>			*	*	*
b. <i>dɾo</i>		!*	*		*
c. <i>dɾiog</i>		!*		*	*

Table 6. OT analysis of general syllable structure in Kashmiri

### 3. Kashmiri loanwords

Just like the other Indo-Aryan languages, Kashmiri borrowed largely from Sanskrit, Hindi-Urdu, Persian, Perso-Arabic, and recently English. Koul (2005), however, doubted whether Arabic borrowings took place only through Persian or directly. In the current section, I will discuss the Persian (including Perso-Arabic), Hindi-Urdu, and English lexical borrowings in light of their phonological alternations. Several phonological and morpho-phonological changes take place during the borrowing phase. There are cases of vowel harmony, sound change, elision, and many more Koul (2005), however, I will focus mainly on:

- The aspiration of the voiceless stops at the coda position. I make a brief comment on the repair strategy adopted by other languages like Korean and propose how OT constraints can handle the factor (section 3.1).
- In section 3.2, I discuss the epenthesis of a vowel in word-initial consonant clusters with reference to Bangla, Turkish, Korean, etc. I also analyze the syllable structure alternated in the loanwords with the help of OT.

#### 3.1. OT analysis of aspiration in Kashmiri loans

The data from Table 7 exhibits a set of clear examples of aspiration in borrowed words in Kashmiri. It can be noticed that voiceless unaspirated plosives (/k/, /p/, /t/) are aspirated (/k<sup>h</sup>/, /p<sup>h</sup>/, /t<sup>h</sup>/) in the syllable-final or coda (/pa:k<sup>h</sup>/, /pa:p<sup>h</sup>/, /minat<sup>h</sup>/ etc.) position.

Persian	Kashmiri	Gloss	Hindi-Urdu	Kashmiri	Gloss	English	Kashmiri
/pa:k/	/pa:k <sup>h</sup> /	<i>pure</i>	/mulk/	/muluk <sup>h</sup> /	<i>country</i>	doctor	/da:k <sup>h</sup> tar/
/ca:la:k/	/ca:la:k <sup>h</sup> /	<i>clever</i>	/pa:p/	/pa:p <sup>h</sup> /	<i>sin</i>	minute	/minat <sup>h</sup> /
/na:zuk/	/no:zuk <sup>h</sup> /	<i>delicate</i>	/ra:t/	/ra:t <sup>h</sup> /	<i>night</i>	rate	/re:t <sup>h</sup> /
/po:ša:k/	/po:ša:k <sup>h</sup> /	<i>dress</i>	/dava:t/	/dava:t <sup>h</sup> /	<i>inkpot</i>	paper	/pe:par/

Table 7. A partial list of loanwords in Kashmiri

A similar case occurs in Korean where the voiceless unaspirated stops become aspirated in English loanwords (e.g. [strɛs] > ‘stress’ > [sithiresi]). Kang (1996) attributed this instance to perceptual level matching, that is, the voiceless unaspirated stop /t/ is matched with the voiceless aspirated stop /t<sup>h</sup>/ in Korean at the perceptual level. In response to this assertion, Lee (2000) argued that the realization of laryngeal features [voices, aspiration, and glottalization] of English obstruents in Korean is captured by the interaction of markedness constraints, prohibiting elements that require articulatory effort and faithfulness constraints requiring to preserve the input

forms. To minimize disparities between the phonetic output of English and its corresponding loanword form in Korean, he proposed that a faithfulness constraint MAX [+long VOT] plays a significant role. This constraint captures similarities in the release importance of English and Korean stops.

I propose the constraint \*T[-vce,-sg]syll that assigns violation to voiceless unaspirated plosives at the syllable-final position. Interestingly, Kashmiri allows a voiceless stop in the coda position when it is a member of a cluster (e.g., /mast/ or /læmp/). The data presented in this paper does not exhibit a case where the voiceless stop is generally allowed in the coda position. Therefore, it is a marked situation in the language violation which renders ungrammaticality. \*[+spread glottis] is a context-free markedness constraint that disallows aspiration, and IDENT-IO is a faithfulness constraint in that correspondents in input and output have identical features. Since aspiration of voiceless stops is a marked feature of Kashmiri, it is ranked as the highest constraint that violates the faithfulness constraint IDENT-IO as well as \*[+spread glottis], and yet outputs a grammatical element. Constraint ranking: \*T[-vce,-sg]syll » IDENT-IO » \*[+spread glottis].

Input:[ča:la:k]	*T[-vce,-sg]syll	IDENT-IO	*[+spread glottis]
a./ča:la:k/	*!		
⇒b./ča:la:k <sup>h</sup> /		*	*

Table 8. OT analysis of aspiration in Kashmiri loanwords

### 3.2. OT analysis of epenthesis in Kashmiri loans

The data in Table 9 illustrates a case of epenthesis in onset and coda clusters in Kashmiri. /i/ is inserted when consonant clusters violate the Sonority Sequencing Principle. Lombardi (2003) proposed that the epenthetic vowel is the least marked vowel possible given the contents of the language's vowel system. She further argued that a language will use the least marked vowel as an epenthetic vowel. When there are vowels like /i/ or /ə/ in a language, it will always choose /i/ as it is the least marked vowel. In the absence of /i/, the language will choose /i/ as the epenthetic vowel. Korean loanwords show a preference for /i/ (e.g., pat → p<sup>h</sup>æti; tube → t<sup>h</sup>jupi) (Kang 2003); Tamil also prefers /i/ as an epenthetic vowel after word-final liquids ([vali] 'tail'), Bangla has chosen /i/ owing to the lack of both /i/ and /ə/ in the inventory. However, Turkish shows an exception. It prefers /i/ as an epenthetic vowel despite having /i/ and /ə/ in the grammar. According to a 2009 acoustic phonetic study by Gouskova and Hall, for some speakers, epenthetic [i] has a lower second formant value and is much shorter in duration than lexical [i]. Because of the low F2, which suggests that the articulation is relatively back, [i] would be a more accurate transcription.

In Indo-Aryan languages like Bangla (Kar 2013; Nagarajan 2014) and Punjabi (Mahmood et al. 2011), initial clusters are not allowed. They have adopted inserting /i/ and /ə/, respectively, to avoid the clusters. Kar (2013) stressed examining the epenthesis in clusters consisting of coronal [/s/+stop] (e.g., /sku:l/– /iskul/). A repair strategy similar to Kashmiri is seen in Lenakel (/t-n-ak-ol/>/ti.na.gol/) (Kager 2004). The general well-formedness constraints I propose are SONORITY and DEP-IO (no epenthesis allowed) (Kager 2004).

**Why not (iskul or skulī)?**- Alignment constraints are introduced to avoid initial or final

English	Kashmiri	Gloss
/eɜplem/	/ple:n/	aeroplane
/kɪɜk/	/klɔrik/	clerk
/isku:tə/	/siku:tar/	scooter
/steɪʃən/	/sɪtesa:n/	station
/spi:d/	/sɪpi:d/	speed
/sku:l/	/siku:l/	school
/nɜ:s/	/narəs/	nurse
/ɪpstɪk/	/ɪpsɪtɪk/	lipstick

Table 9. A partial list of epenthesis in Kashmiri

Input: /spi:d/	Dep (MF)	Align-L	Sonority	Dep-IO	Ident-IO	Align-R
a. spi:d			*!			
⇒ b. sɪ.pi:d				*	*	*
c. sə.pi:d	*!			*	*	*
d. is.pi:d		!*	*	*	*	

Table 10. OT analysis of epenthesis in Kashmiri loanwords

epenthesis. ALIGN-L restricts epenthesis on the left edge of the prosodic word, and ALIGN-R restricts epenthesis on the right edge.

**Why /siku:l/ and not /səku:l/?** - /i/ appears to be the epenthetic vowel with features [+HIGH,-BACK,-LOW,-ROUND]. We can count these as the four features as marked in the language. According to Shademan (2002) DEP(MF), a surface instance of [+LOW], [+HIGH], [+ROUND], or [+BACK] must have an identical underlying correspondent. In the example of /spi:d/ > /sɪ.pi:d/, we can see that the input vowel segment /i/ has the features [+high,-back,-round]. According to Dep (MF), it is suggested that the surface representation must have an identical underlying correspondent. Therefore, the output vowel must have at least one feature similar to the input. /ə/ is a [+mid] vowel, immediately losing the opportunity to surface as an epenthetic segment, while /i/ bears [+high, -round] features identical to the input /i/. Similarly, for /sku:l/ > /siku:l/, /i/ shares [+high] feature with the input segment /u/ with features [+high, +back, +round] while /ə/ shares none. This makes /i/ the most preferred epenthetic segment in Kashmiri.

Proposed constraint ranking: Dep (MF) » Align-L, Sonority » Dep-IO, Ident-IO, Align-R (see Table 10).

#### 4. Checking learnability of the proposed grammar

Tesar & Smolensky (1995) developed a learnability algorithm named Recursive Constraint Demotion (RCD) following the OT concepts. The central questions of this learnability model were:

1. Given a set of surface forms of the target language and a set of universal constraints, is it possible for the learner to discover the correct constraint ranking?
2. What strategies do the learners use to converge into the proper ranking?

The basic idea of this learnability algorithm is that the information about constraint ranking can be extracted from the violation of constraints rather than satisfaction with the optimal candidate. The learner is fed with the input, assuming that a child learning their native language has access to positive evidence or the grammatical form only. The grammar is deduced by ranking the constraints into a hierarchy under which the input is the most harmonic output form out of all other generated forms. The algorithm is rather simple, following the steps below:

- Initially, all the constraints are unranked and all winner-loser pairs are unexplained. It is referred to as the linear stratum.  $C_1, C_2, C_3, \dots, C_n$
- Next, each suboptimal candidate is compared against the optimal candidate (subopt < opt) to deduce the winner and loser marks. These are called Mark-data pairs.
- The learner then demotes all of the constraints that prefer losing candidates so that they are overpowered by constraints that prefer the winning candidates at each stage. In other words,  $*C_{winner}$  (constraints violated in optimal candidates) is demoted to a stratum immediately below  $*C_{loser}$  (constraints violated in suboptimal candidates).
- It then checks to see which winner/loser pairs have been successfully explained by having a winner-preferring constraint ranked above all loser-preferring constraints because a constraint that is violated in the optimal output must be dominated by some other constraint.
- Once a pair has been explained, it may be removed from consideration. This reduces the set of unexplained losers and (ideally) also reduces the set of loser-preferring constraints, freeing up some constraints for ranking in the subsequent stage. This demotion is recursive, that is, it is repeated until no further demotions occur.

Tesar & Smolensky (1995) prove that this learning algorithm from a single input can converge to a state in which all information from this output has been put to maximal use. However, the demotion must be minimal because maximal demotion is unable to converge into the target grammar due to its ever-changing nature.

#### *4.1. Implementing recursive constraint demotion*

**Assumptions:** A child only has access to the optimal candidates (positive evidence) of the grammar in their linguistic environment.

- Constraint reranking strictly adheres to the violation of constraints instead of satisfaction. A top-ranked constraint can be violated by an optimal candidate as long as it is violated at least as many times as it is violated by other outputs.
- The algorithm demotes constraints in winner-marks immediately below the constraints in loser-marks. The demotion must be minimal, hence reverse ranking is suggested (Kager 1999).

	Subopt	<	Opt
<b>a&lt;b</b>	spi:d	<	si.pi:d
<b>c&lt;b</b>	sə.pi:d	<	si.pi:d
<b>d&lt;b</b>	is.pi:d	<	si.pi:d

Table 11. Comparison table of subopt&lt;opt

**Step 1: Linear stratum (for candidates in Table 11):** All the constraints are unranked. It is called the mother stratum or the linear stratum.

$H_0$ : {AlignL, AlignR, Contiguity, Dep-IO, Dep (MF), Sonority}

**Step 2: Comparing subopt<opt:** In the OT analysis shown in Table 10, the output candidate [si.pi:d] is optimal, while the other ungrammatical candidates are called suboptimal with respect to [si.pi:d]. A table comparing the suboptimal and optimal candidates is given in Table 11.

**Step 3: Mark-data pairs table:** Each suboptimal candidate is compared (based on harmony < opt) against the optimal candidate to deduce the loser and winner marks. For each pair in Table 11, the learning algorithm first builds an overview of the constraints that have been violated. The outcome is summarized in Table 12.

The marks for one pair in (11), are represented by each row. Each candidate pair has two cells, one in the column winner-marks that lists all violations for the ideal candidate, and one in the column loser-marks that shows all violations for the suboptimal candidate. Before the name of the violated constraint, an asterisk is used to denote violations. Candidates who cause several violations of one restriction are given a second mark for that constraint.

Mark-data pairs(subopt<opt)	Loser-marks	Winner-marks
a<b:spi:d<si.pi:d	*Sonority	*Ident-IO,*Dep-IO,*Align-R
c<b:sə.pi:d<si.pi:d	*Dep(MF),*Ident-IO,*Dep-IO,*Align-R	*Ident-IO,*Dep-IO,*Align-R
d<b:is.pi:d<si.pi:d	*Sonority,*Align-L,*Ident-IO,*Dep-IO	*Ident-IO,*Dep-IO,*Align-R

Table 12. Mark-data pairs

**Step 4: Mark-data cancellation:** Prior to "purifying" the information, the algorithm must first eliminate marks from the table that have no information value. The first thing to do is remove any scores that the winner and loser have in common from this table. Shared violations can never produce harmony discrepancies between two candidates; hence, they cannot reveal information regarding constraint ranking according to OT logic. The elimination of violation marks that have no informational value, as we already indicated, "purifies" the raw data in Table 12. Before we dive into how the algorithm accomplishes this task, let's have a look at the updated mark-data pairs in Table 13, where canceled marks have been removed.

Mark-data pairs(subopt<opt)	Loser-marks	Winner-marks
a<b:spi:d<si.pi:d	*Sonority	*Ident-IO,*Align-R,*Dep-IO
c<b:sə.pi:d<si.pi:d	*Dep(MF), *Ident-IO *Align-R,*Dep-IO	*Ident-IO,*Align-R,*Dep-IO
d<b:is.pi:d<si.pi:d	*Sonority, *Align-L,*Ident-IO,*Dep-IO	*Ident-IO,*Align-R,*Dep-IO

Table 13. Mark-data pair cancellation

Mark-data pairs (subopt < opt)	Loser-marks	Winner-marks
a < b : spi:d < si.pi:d	*Sonority	*Ident-IO, *Align-R, *Dep-IO
c < b: sə.pi:d < si.pi:d	*Dep (MF)	–
d < b: is.pi:d < si.pi:d	*Sonority, *Align-L	*Align-R

Table 14. Mark data-pair after cancellation

**Step 5: Constraint Demotion:**  $H_0$  is the initial strata where the constraints remain unranked.

{Align-L, Align-R, Contiguity, Dep-IO, Dep (MF), Sonority}

In the following steps, the constraints in the winner-marks are demoted immediately below the loser marks denoting domination of higher-ranked constraints over others.

- At  $H_1$ , the suboptimal candidate (a) [spi:d] is less harmonious than the optimal candidate (b) [si.pi:d]. The suboptimal candidate violates the constraint \*Sonority, while the optimal candidate violates \*Ident-IO, Align-R, \*Dep-IO, \*Contiguity. Following the rules of constraint demotion, the winner-marks constraints are demoted immediately below the  $H_0$  stratum.

Align-L, Dep (MF), Sonority

»

Align-R, Ident-IO, Dep-IO

In the first step itself, the algorithm has already specified two distinct strata of dominated and undominated constraints. Since the target grammar is yet to be reached, the learner keeps going back to the first pair of Table 15 and rewinds the process and it continues till the target grammar is achieved. This is why this algorithm is called Recursive Constraint Demotion.

- At  $H_2$ , candidate (c) [sə.pi:d] is compared against the optimal candidate (c) [si.pi:d]. The highest loser-mark is \*Dep (MF) but there is no loser-mark. Hence, it remains the highest dominating constraint. This pair is not taken into account in this phase.

- At  $H_3$ , candidate (d) [is.pi:d] is compared against the optimal candidate. At this stage, \*Sonority and \*Align-L are the highest-ranking constraint dominating \*Align-R. Since \*Align-R was already demoted in  $H_1$ , no further demotion is required.

- At  $H_4$ , the learner again compares the first pair of mark-data pairs a < c. \*Sonority is the highest-ranked loser-marks constraint in the hierarchy, while \*Ident-IO, \*Dep-IO, and \*Align-R are winner-marks. They are all dominated by \*Sonority, therefore, no changes are made. So,  $H_4 = H_1$ .

Align-L, Align-R, Dep (MF), Sonority

»

Ident-IO, Dep-IO, Align-R

- At  $H_5$ , b < c is assessed. Dep (MF) is still the undominated loser-mark. The algorithm demotes the other two undominated constraints immediately below Dep (MF) so that the target grammar can be achieved. Therefore, a new stratum is created with this demotion.

Dep (MF)

»

Align-L, Sonority

»

Ident-IO, Dep-IO, Align-R

- At H6,  $d < c$  is assessed again. The highest constraints are the loser-marks, dominating the winner-mark \*Align-R which is already at the bottom stratum. Therefore, no further demotion is performed. The learner has already achieved the target grammar. No recursive demotion is performed anymore.

**Step 6: Ranking the constraints** : According to RCD, the constraints should be ranked as: Dep(MF) » Align-L, Sonority » Align-R, Dep-IO, Ident-IO.

Therefore, the algorithm appears to converge into the grammar posited by OT. However, Tesar & Smolensky (1995) algorithm is proved to converge even if any one of the constraints leads to the actual ranking of the dataset, therefore, I examine them using MaxEnt grammar.

## 5. Maximum Entropy Grammar

### 5.1. Background

Though RCD appeared to converge into a target grammar, it had some limitations that led researchers to develop stochastic models of OT. The key assumption of RCD that the learner is presented with only the positive evidence of a language is an oversimplification (Kager 2004). The expectation of input grammar to be free of errors or variation makes it too unreal to be learned in a real-life situation (Albright & Hayes 2011). The claim that the total rank of constraints is available to the child is understandably controversial as well. Moreover, this OT model fails to work with real-world data that can be noisy and can contain free variations. To overcome these issues and the restrictiveness of OT, Boersma (1997) proposed Gradual Learning Algorithm (GLA), a stochastic model, which could learn from noisy training data and could generate free variation in the grammar. Discarding a set of discrete rankings, the GLA assumes a continuous scale of constraint strictness (Boersma & Hayes 2001). Constraints are arranged in ranking values on a numeric scale. The ranking values define the means of Gaussian probability distributions, from which sampling takes place when grammar is applied (Hayes 2007). However, GLA was unable to account for the effects of cumulative constraint interactions. Maximum Entropy grammar, proposed by Goldwater and Johnson in 2003, is a probabilistic framework that does away with OT notions. MaxEnt grammar is driven to use as much data from the training set as possible without assuming any additional information. In contrast to OT, it uses a weighted approach rather than ranking the constraints. Each constraint carries a weight, which is a non-zero real integer. A constraint's weight indicates the probability reduction for the candidate who deviates from it. The model has two steps that incorporate math:

1. finding the best weight for the constraints from the training data
2. observing what the resulting model is predicting for both the training data and the potential new testing data

Every candidate  $x$  has a score or harmony value ( $h$ ), where that score is the sum of weighted constraint violations:

$$h(x) = \sum_{i=1}^N \omega_i C_i(x)$$

Here,  $h(x)$  is the overall harmony value of a candidate  $x$  which is determined by the summation of the numerical weights multiplied by the constraint violations incurred by each candidate. The idea is that higher-ranked constraints have greater weights than any lower-ranked constraints. The harmony values are then converted into MaxEnt score where the highest MaxEnt score incurs the lowest harmony value, thereby leading it to the optimal candidate. The maxEnt score is a negative exponential of harmony value:

$$P \cdot (x) = e^{-h(x)}$$

MaxEnt harmony defines conditional probability  $P(x|y)$  of an output  $y$  given an input  $x$  (Jarosz 2019).

$$P_{x|y} = \frac{P * x}{Z}$$

, where  $Z$  is a normalizing constant to ensure the conditional probabilities sum to 1 for each input.

$$Z = \sum_{y \in \Omega} P * (y)$$

, where  $\Omega$  is every possible form of a candidate (Hayes & Wilson 2008; Jarosz 2019).

Because of its gradient accountability and capacity for handling noisy data, the MaxEnt grammar gets preference over all other stochastic versions of OT. The learner can converge into the target grammar thanks to its weight-assigning feature. The grammar does not assume the target grammar has any constraint ranking because it evaluates potential words based on the weighted total of the violations of the constraints. Following the tenets of MaxEnt grammar, Hayes & Wilson (2008) created a learnability model known as the MaxEnt grammar tool. The method creates constraints and weights based on the sources provided by the incoming data, rather than being provided with constraints in advance. The calculation of  $Z$  is a concurrent issue since the set of potential candidates in OT is infinite, and it is difficult to calculate  $Z$  for an infinite set. The constraints are not given arbitrary weights in the learnability model of the MaxEnt grammar. Hayes & Wilson (2008) suggested that in order to learn the weights, the probabilities of the unobserved forms should be minimized while maximizing the probability of the observed data ( $P(D)$ ). This ensures that all candidates carry a greater probability than all candidates who do not occur. It is also called Maximum Likelihood Estimation. Thus,  $P(D)$  is the product of the probabilities of each observed datum.

$$P(D) = \prod_{x \in \Omega} P * (x)$$

The machine-implemented learning method developed by Hayes & Wilson (2008) demonstrated how it is more straightforward than the majority of other phonological learning models now in use and can learn gradient phonotactics in a way that can be proven. In addition to better modeling phonotactic well-formedness than any other method, it handles important features of learning including hidden structure (structural ambiguity), free variation, etc. Using the current machine learning techniques, modeling the acquisition of grammar is made easier by its minimal requirement for data sampling.

Input	Output	Count	*T[-vce,-sg]syll IDENT-IO * [+spread glottis]		
			cA	cB	cC
pap	paph	8	0	1	1
	pap	2	1	0	0
	phap	0	1	1	1
	phaph	0	0	3	1
calak	calak	2	1	0	0
	calakh	0	1	1	1

Table 15. Input data for aspiration

### 5.2. Implementing the Hayes and Wilson MaxEnt learner tool(2008)

The MaxEnt tool developed by Hayes and Wilson (2008) has mainly two functions as detailed below. The model is fed text data with the elaborated constraints. 1 stands for violation of certain constraints while 0 stands for satisfaction. Since the model cannot read the standard IPA transcription, they are written in English alphabetical form with vowels being specified differently.

The algorithm mainly –

1. Finds n possible phonotactic constraints for some corpus
2. Assigns weights for the constraints

#### Case 1: Aspiration

- Input data: Table 15

- Weights after optimization:

1. \*T[-vce,-sg]syll - 10.74109
2. IDENT-IO - 6.23888
3. \* [+spread glottis]- 3.323561

- Ranking based on probability: \*T[-vce,-sg]syll » IDENT-IO » \* [+spread glottis]

#### Case 2: Epenthesis

- Input data: Table 16

- Weights after optimization:

1. SONORITY- 4.436297962383264
2. ALIGN-L- 4.436297962383264
3. DEP-MF- 9.940723045863058

Input	Output	SONORITY	ALIGN-L	DEP-MF	ALIGN-R	DEP-IO	IDENT-IO
		cA	cB	cC	cD	cE	cF
skuTar	skuTar	4	1	0	0	0	0
	iskuTar	0	1	1	0	0	1
	sIkuTar	9	0	0	0	1	1
	sakuTar	1	0	0	1	0	0
spId	spId	5	1	0	0	0	0
	ispId	0	0	1	1	0	1
	sipId	8	0	0	0	1	1
	sApId	0	0	0	1	1	1

Table 16. Input data for epenthesis

4. IDENT-IO-0.31224672988385754

5. DEP-IO- 0.31224672988385754

6. ALIGN-L- 0.31224672988385754

Ranking based on probability: Dep (MF) » Align-L, Sonority » Ident-IO, DEP-IO, Align-R.

## 6. Conclusion

We can see that there are some issues while checking the learnability of phonological grammar. It is important to conduct an acoustic analysis of aspiration and epenthesis in Kashmiri loan-words, which is beyond the scope of the current study. Acoustic analysis is expected to provide more authentic and reliable data regarding the changes.

However, it is observed that Sonority occupies an impactful role in the acquisition of syllable structure in Kashmiri. The epenthesis, although handled differently in different languages, is crucial evidence of SSP as a vital principle of syllable formation. In terms of using models of learnability, we can see that RCD can converge into target grammar when presented with full structures, without any hidden representation. The ranking differs when the constraints are assigned numerical weights. This observation makes RCD less reliable. MaxEnt grammar appears to be more effective in considering gradient convergence.

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## Subject sharing in Samoan

An investigation of structural properties and missing subjects

Maximilian Wiesner

This paper investigates the structural peculiarities of subject sharing constructions in Samoan (Polynesian). The puzzle is the absence of the subject in the second conjunct which cannot be c-commanded by the subject in the first conjunct. Therefore, a scope relationship cannot be established. I present novel data which show that Samoan subject sharing constructions structurally differ from clausal coordination in that they involve coordination at FP-level (Collins 2017) rather than at the clausal level. I propose that a promising approach are deletion-based accounts and that an exclusively syntactic analysis cannot derive the construction's properties.

### 1. Introduction

This paper investigates the structure and properties of subject sharing constructions in Samoan. Subject sharing constructions consist of two conjoined clauses.<sup>1</sup> However, in contrast to clausal coordination (1), only one of the conjuncts contains the subject. Still, the subject is interpreted in both conjuncts. In the English example in (2), the subject in the second conjunct can be omitted if the same coreferential subject is present in the first conjunct.

- (1) [The man saw the woman] and [the child dropped a plate].
- (2) The man [[saw the woman] and [ran away]].  
= The man<sub>i</sub> saw the woman and the man<sub>i</sub> ran away.  
≠ The man<sub>i</sub> saw the woman and the woman<sub>j</sub> ran away.

In terms of the underlying structure, a straightforward analysis for English subject sharing usually base-generating the subject in a position c-commanding a VP-coordination and, thus, taking

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<sup>1</sup> I use the terms *subject sharing* for conjunction reduction with a coreferential pivot/agent and *object sharing* for cases with a coreferential object/patient. Further, I will use the term *subject* which, for the remainder of this paper, is reduced to its syntactic function (= pivot).

scope over both conjuncts as in the schema in (6-a). The subject does not occur within one of the conjuncts but precedes both of them. An alternative could be a coordination of two conjuncts with a subject each and to move the subject to a c-commanding position via *across-the-board* (ATB) movement. By assuming that the subject scopes over both conjuncts, it can straightforwardly be derived that the subject is interpreted in both conjuncts. Additionally, this is in line with the word order of SVO&VO as in (2).

However, this analysis is not compatible with the word order of Samoan subject sharing constructions. Samoan is a verb-initial language which dominantly displays VSO order in transitive clauses as in (3).<sup>2</sup> Consequently, clausal coordination of two transitive clauses yields VSO&VSO word order, cf. (4).

(3) Lena sa tā e le teine le la'au.  
 PST hit ERG ART girl ART tree.ABS  
 'The girl hit a tree.'

(4) Lena sa tā e le teine le la'au ma lena sa si-'ia lugā e le faiaoga le laulau.  
 PST hit ERG ART girl ART tree.ABS and PST lift-LD up ERG ART teacher ART table.ABS  
 'The girl hit a tree and the teacher lifted a table.'

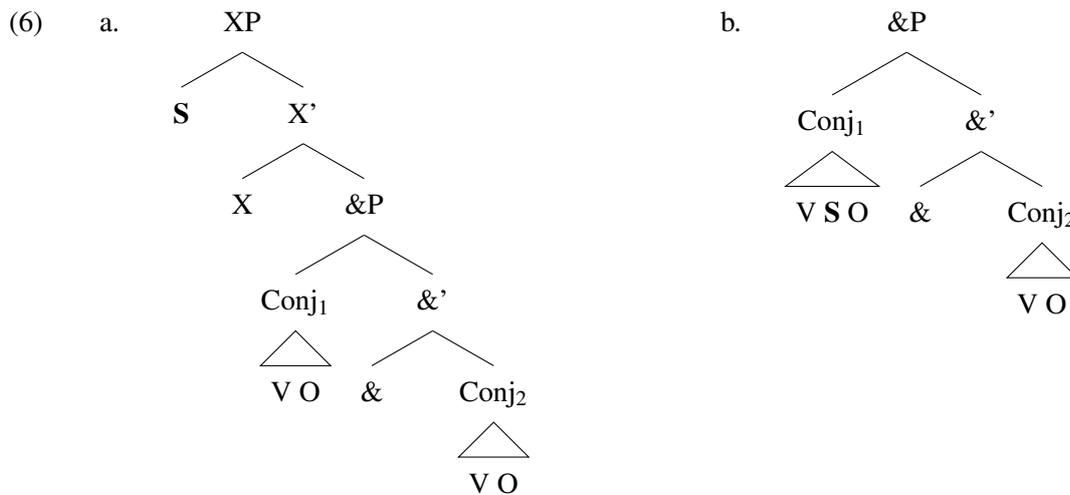
Subject sharing constructions in Samoan now display an interesting structural puzzle. While there are two verb-initial conjuncts, the subject's position appears to differ from the English examples above. That is, in the Samoan subject sharing construction (5), the subject appears to be deeply embedded in the first conjunct.<sup>3</sup>

(5) Lena sa [[tā e le teine le la'au] ma [si-'ia lugā le laulau]].  
 PST hit ERG ART girl ART tree and lift-LD up ART table  
 'The girl hit a tree and lifted a table.'

In contrast to English, the subject does not seem to c-command any of the conjuncts. However, as can be seen from the interpretation of (5), the subject *e le teine* 'the girl' serves as the subject of both predicates in both conjuncts. This appears to be at odds with the surface structure of VSO&VO which suggests a structure schematised in (6-b).

<sup>2</sup> Unless indicated otherwise, the data in this paper comes from elicitations with two native speakers of Samoan.

<sup>3</sup> Constructions with an identical surface structure are to be found in several other Austronesian languages; i.e. Chamorro (Chung, 1998, p. 134), Niuean (Clemens & Tollan, 2021, p. 106), Tongan (Polinsky & Potsdam, 2021a, p. 78) and Tagalog (Maclachlan, 1997, p. 452).



The structure in (6-b) shows that the subject in the indicated position cannot c-command the second conjunct. Furthermore, the structure suggested for English cannot be applied to the Samoan subject sharing constructions due to the word order. This gives rise to the question of how to derive subject sharing in Samoan and what the underlying structure of these constructions is.

In this paper, I investigate the structure and syntactic properties of Samoan subject sharing constructions and argue, that they cannot be derived by purely syntactic operations. I present data which suggest that Samoan subject sharing constructions are underlyingly coordinative and involve coordination on a structural level below TP. Moreover, following the predicate fronting approach as by Collins (2017), I show that predicate fronting applies in both conjuncts of subject sharing constructions as well as clausal coordination. I also present data providing evidence and argue against the availability of *pro*-drop in Samoan. Finally, I show that *predicate coordination* (cf. Wunderlich 1988; Höhle 2019; Heycock & Kroch 1993; Johnson 2002; Kathol 1999, 1995) can derive most but not all of the structural properties of Samoan subject sharing constructions and, thus, may constitute as a starting point for further research.

## 2. Background on Samoan

Samoan is an Austronesian language (Polynesian subbranch). It is spoken by over 400,000 people (as by Collins 2017; Hopperdietzel 2020) not only in Samoa and American Samoa, but also in communities in New Zealand as well as Australia, and the United States. The morphological case marking system in Samoan follows the Ergative-Absolutive alignment while the Samoan syntax displays a neither ergative nor accusative organisation (Mosel & Hovdhaugen 1992:717). It generally displays head-orientation to the left with modifiers (nominal and verbal) following their heads (Collins 2017). In terms of morphosyntactic marking, Samoan displays a rather weak distinction between the major word classes (Mosel & Hovdhaugen 1992:75-83; Rijkhoff 2003). That is, whether an element is for instance a noun or a verb is contextually determined (Mosel & Hovdhaugen 1992:77). This is also the case for other languages of the Polynesian family like Tongan (Broschart 1997) and Niuean (Massam 2005).

The dominant word order in Samoan transitive clauses is VSO, as displayed in example (7-a). Some speakers additionally accept VOS order as in (7-b). As shown in (8), the morphological case marking is usually restricted to Ergative marking *e* on the subject of transitive verbs and

indirect objects which display Locative-directional case marking *ia*. Subjects of intransitive verbs, and direct object are not morphologically marked for Absolutive case.

- (7) a. *sā tuli e le tamāloa lona atali'i*  
 PST chase ERG ART man his son  
 'The man chased his son.' (Collins 2017:6)
- b. *sā tuli lona atali'i e le tamāloa*  
 PST chase his son ERG ART man  
 'The man chased his son.' (Collins 2017:6)
- (8) *Lena sa ave e Ari le polo i le tametiti.*  
 PST give ERG Ari ART ball LD ART boy  
 'Ari gave a ball to the boy.'

### 3. Deriving verb-initiality: Predicate fronting

Samoan word order prominently displays verb-initiality (V1). In the literature, there exist several accounts concerning the structural derivation of V1 languages. In terms of VP-constituency preserving approaches the best-known approaches include verb-raising (McCloskey (1991) and subsequent work for Irish), predicate fronting (Massam (2000) and subsequent work for Niuean, Pearson (2001) and subsequent work for Malagasy, Rackowski (1998) for Tagalog, Cole et al. (2002) for Javanese, among many others), subject-lowering (Chung 1990; Sabbagh 2005), and rightward-specifier-approaches (Chung 1998; Paul 2000). In the following, I will present a brief sketch Collins' (2017) analysis of VP fronting to SpecFP in Samoan which I adopt for the current investigation.

The VP fronting approach assumes movement of the predicate to a position preceding the subject. Collins (2017) argues for raising the entire verb phrase based on evidence from Samoan resultatives as well as VP-adjoined manner adverbs. The resultatives are positioned left of the subject in the Samoan example in (9-a), and manner adverbs are positioned right of the verb as can be seen in example (9-b).

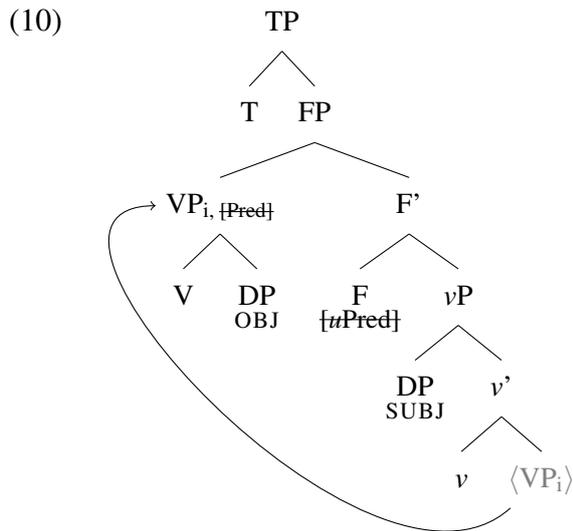
- (9) a. *'ua [efu'efu fa'asamasama] lona fatafata ma lona ua*  
 PRF fade CAUS.yellow his chest and his neck  
 'His chest and neck [faded yellow].' (Powell 1886:157 in Collins 2017:18)
- b. *sā [moe 'umi] le tama*  
 PST sleep long ART boy  
 'The boy slept for a long time.' (Mosel 2004:278)

Based on these examples, Collins (2017) concludes that it is, in fact, the entire VP including potential adjuncts which moves. This rules out the movement of only the V-head.

Regarding the underlying mechanism, Collins (2017) suggests moving the entire, least embedded VP to the specifier of a functional, theory-neutral head he labels *F*.<sup>4</sup> The F head and its projections are positioned below T, but above *vP*, cf. (10). The movement of VP is motivated by

<sup>4</sup> I will not discuss the exact nature of the F-head. For the remainder of this paper, I will follow Collins' (2017) assumptions. Likewise, I will assume the TAM maker to reside in TP. However, I do not intend to negate the existence of Mood, Aspect or Voice.

an uninterpretable predicate feature [*u*Pred] on the F head. The complement of *v* (in the current case VP) is assumed to bear a [Pred] feature and thus moves to SpecFP in order to check the [*u*Pred] feature on F.<sup>5</sup> This is visualised in the following structure in (10). By raising the entire VP to SpecFP, the complement of V is also moved to a position preceding the subject. Therefore, VOS word order is derived. Note that the movement to a position below TP is crucial to comply with the word order, since TAM markers generally precede the verb.

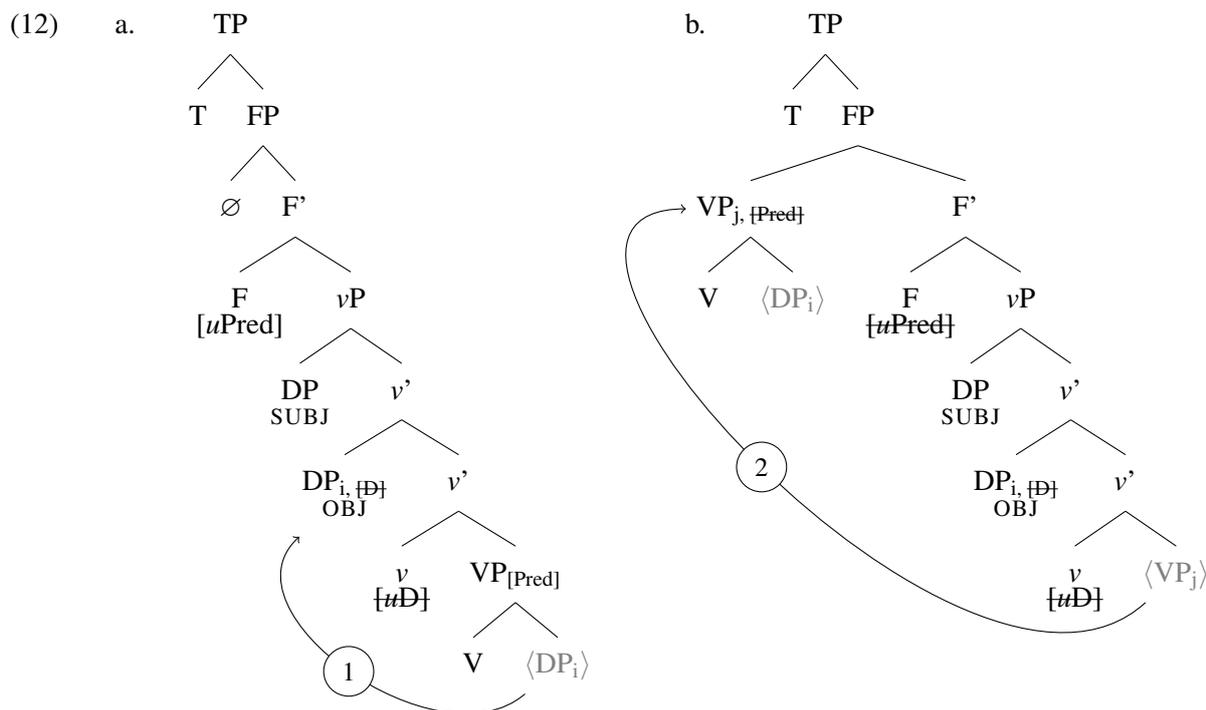


In order to derive VSO order in Samoan, Collins (2017) posits movement of the complement of V out of the VP and to an intermediate projection of *v*. The movement is triggered by an uninterpretable feature [*u*D] on *v* which is checked by the object DP. Consequently, the remnant VP raises to SpecFP deriving V1 order while the object stays in a lower position following the subject. The mechanism is visualised in (12-a) and (12-b). A corresponding sentence is given in example (11).

- (11) s̄a tausi e le teine le pepe  
 PST care ERG ART girl ART baby  
 ‘The girl took care of the baby.’

(Collins 2017:12)

<sup>5</sup> According to Collins (2017:10) “VP, NP, DP, AP, and PP may optionally bear the feature [Pred]”.



#### 4. Subject sharing in Samoan

In order to get an overview of the phenomenon of subject sharing, the following section will briefly present and describe the main properties and observations. To be more detailed about the term 'subject' in connection to verbs of different transitivity, I will adopt Dixon's (1994) notion of S (argument of intransitive verbs), A (external argument of transitive verbs), and O (internal argument of transitive verbs).

As the following examples show, A is not obligatorily present in the second conjunct in a coordination of two transitive verbs (13) as well as of two ditransitive coordination (14). In both examples, A appears to be embedded in the first conjunct.

- (13) Lena sa tā le teine le la'au ma si'ia lugā le laulau.  
 PST hit ART girl ART tree and lift up ART table  
 'The girl hit a tree and lifted a table.'

- (14) Lena sa ave e Jon le polo i le tametiti ma lafoā se tusi i le faia'oga.  
 PST give ERG Jon ART ball LD ART boy and send ART letter LD ART teacher  
 'Jon gave the ball to the boy and sent a letter to the teacher.'

The translation of the two examples indicates that *le teine* 'the girl' and *Jon* are shared by both conjuncts. This is the same for coordinations of an intransitive and a transitive verb, as the following examples (15) and (16) show. While the sentences (15-a) and (16-a) display the first conjunct in an isolated main clause, and the sentences in (15-b) and (16-b) display the second conjunct in an isolated main clause, the subject sharing construction is presented in (15-c) and (16-c), respectively.

- (15) a. Lena sa fasi e le faiaoga le tama.  
 PST beat ERG ART teacher ART boy  
 ‘The teacher hit the boy.’
- b. Lena sa siva (\*e) le faiaoga.  
 PST dance ERG ART teacher  
 ‘The teacher danced.’
- c. Lena sa fasi e le faiaoga le tama ma siva.  
 PST beat ERG ART teacher ART boy and dance  
 ‘The teacher hit the boy and danced.’
- (16) a. Lena sa taalo (\*e) le fafine.  
 PST play ERG ART woman  
 ‘The woman played.’
- b. Lena sa lafo e le fafine se tusi.  
 PST send ERG ART woman ART letter  
 ‘The woman sent a letter.’
- c. Lena sa taalo (\*e) le fafine ma lafo se tusi.  
 PST play ERG ART woman and send ART letter.  
 ‘The woman played and sent a letter.’

Both conjuncts in (16-c) and (15-c) share the subject in the first conjunct. In contrast to intransitive coordination as presented above, the word order in these cases is VSO&V for (15-c) and VS&VO for (16-c). That is, the subject follows the verb in the first conjunct and both conjuncts are verb-initial. Further, note that in both examples the A DP of the transitive verb receives Ergative case while the S DP of the intransitive verb receives Absolutive case. Despite being shared by both verbs which evidentially constitute distinct case requirements, the subject is obligatorily marked for Ergative case in example (15-c) and cannot be marked for Ergative in (16-c). This can also be seen in the following example (17) where *sii i luga* ‘(to) lift up’ requires Ergative marking, and *alu i ese* ‘(to) leave’ requires Absolutive case.

- (17) Lena sa sii i luga \*(e) Arina se laulau ma alu i ese.  
 PST lift LD up ERG Arina the table and go LD away  
 ‘Arina lifted a table and left.’

In summary, subject sharing is possible in Samoan in coordinations of two transitive verbs, two ditransitive verbs, as well as of one transitive and one intransitive verb.<sup>6</sup> Concerning the case marking requirements in the latter configuration, the subject receives the case which is required by the verb in the same conjunct.

### 5. Structural issues and the Double-Duty-Problem

In order to clearly present the issues which arise regarding the word order in Samoan subject sharing constructions, reconsider the example in (18).

- (18) Lena sa tā e le teine le la’au ma si’ia lugā le laulau.  
 PST hit ERG ART girl ART tree and lift up ART table

<sup>6</sup> According to my informants, sharing objects in an identical construction is not possible.

‘The girl hit a tree and lifted a table.’

The TAMVS(O)&V(O) order indicates that (i) both conjuncts are verb-initial and (ii) the entire construction is headed by a single TAM marker. Since the TAM marker apparently takes scope over both conjuncts (both verbs are interpreted in past tense), it can straightforwardly be assumed that the two conjuncts must be c-commanded by T, cf. (6-b). The subject in (18), however, should not be able to take wide scope over both conjuncts, since it superficially appears in a position (potentially *in-situ*) where it cannot c-command the second conjunct. Nevertheless, the interpretation of the examples above clearly indicate a contradiction for the prediction of narrow scope of the subject. I will refer to this issue as the *Subject-Scope-Issue*.

(19) *The Subject-Scope-Issue:*

In a subject sharing construction of two verb-initial conjuncts, the subject does not c-command and, thus, does not take scope over the second conjunct, despite being interpreted there.

Another related concern simply is the absence of the subject in the second conjunct. Under the assumption that the conjuncts of a coordination are parallel in several regards (such as structure or case, Grosu (1985); Franks (1993); Fox (1999), among many others), it follows that if a subject position exists in the syntactic structure of the first conjunct, this must also hold for the second conjunct. In such a case, the ‘absence’ of the subject in the second conjunct must be assumed to be the result of other post-syntactic processes. I further elaborate on this issue in section 7. This rationale is generalised as *Subject-Absence-Issue* in (20). An analysis of subject sharing constructions must, therefore, not only account for the scope of the subject but also its absence in the second conjunct.

(20) *The Subject-Absence-Issue:*

In a coordination construction, the subject in the second conjunct does not appear in surface structure.

In the case of Samoan subject sharing, both, the *Subject-Scope-Issue* and the *Subject-Absence-Issue* are at play and partly give rise to each other. The underlying problem in this regard is that the subject must function for two verbs simultaneously. This is referred to as *Double-Duty-Problem* for SLF-constructions in Barnickel (2017:68).

(21) *The Double-Duty-Problem:*

A single subject is supposed to serve as the subject of two different predicates at the same time.

In the following, I will apply several diagnostics to gather information regarding the structure of subject sharing constructions in Samoan and, further, of the two conjuncts.

## 6. Deriving the Double-Duty-Problem

### 6.1. *pro-drop* in Samoan

Among the possibilities to solve the *Subject-Absence-Issue*, subject *pro-drop* appears to be the most straightforward option. That is, if *pro-drop* is generally possible in Samoan, one could

simply assume that the subject in the second conjunct of subject sharing constructions has been dropped. The *Subject-Scope-Issue* would not arise in such a scenario, since the *pro* in the second conjunct would appear in the subject position of that conjunct and take narrow scope from there. In the following, I present an example sentence and corresponding context which, altogether, indicates that *pro*-drop is not possible in Samoan for subjects. Furthermore, I will argue against other sources which claim that *pro*-drop is available in Samoan.

Consider examples (22) and (23). Both consist of a context in (22-a) and (23-a) in which the crucial argument is already given. If *pro*-drop is available in Samoan, it should be possible in (22-b) and (23-b) to drop the respective argument while preserving the same interpretation.

- (22) a. Agagafi, lena sa fo'i mai Melanie i le fale.  
yesterday PST come to Melanie LD ART home  
'Yesterday, Melanie came home.'  
b. Lena sa siva \*(gaia).  
PST dance 3SG  
'She danced.'
- (23) a. Agagei i le ao, lena sa alu Jeanne i le aoga.  
today LD ART morning, PST go Jeanne LD ART school  
'This morning, Jeanne went to school.'  
b. Lena sa fasi \*(gaia) le faiaoga.  
PST beat 3SG ART teacher  
'She beat the teacher.'

However, as can be seen in the examples in (22) and (23), it is not possible to drop the subject in Samoan, neither for intransitive nor for transitive verbs. The pronoun *gaia* '3SG' is obligatory.<sup>7</sup>

This result, however, does not match the general view on Samoan *pro*-drop as presented in the literature. Usually, Samoan is regarded as a *pro*-drop language. There are several accounts on what exactly can be dropped (only 3SG subjects following Koopman 2012; 3SG subjects and 3SG direct objects following Homer 2009; any argument can drop if it can be reconstructed from the context following Muāgututi'a 2017). In the following, I will present two examples from the literature and point out why they do not present instances of *pro*-drop in Samoan.

An alleged example given for Samoan subject *pro*-drop in Homer (2009) is the sentence in (24-b). Example (24-a) displays the same sentence without *pro*-drop.

- (24) a. Na sasa e Seu ∅ l-a-na maile.  
PST beat ERG Seu ABS DET.SG-POSS-3SG dog  
'Seu<sub>i</sub> beat his<sub>i,j</sub> dog.'  
(Homer 2009:43)

<sup>7</sup> Note that dropping the subject in analogous examples is possible in a *pro*-drop language like Italian as presented in (i) and (ii). Neither the subject nor a replacing pronoun is required in (i-b) and (ii-b).

- |     |   |      |   |
|-----|---|------|---|
| (i) | a. Melanie è tornata a casa ieri.<br>Melanie is came to home yesterday<br>'Yesterday, Melanie came home.' | (ii) | a. Questa mattina, Jeanne è andata a scuola.<br>this morning Jeanne is went to school<br>'This morning, Jeanne went to school.' |
|     | b. Ha ballato.<br>has danced<br>'She danced.'   |      | b. Ha picchiato l'insegnante.<br>has beaten the teacher<br>'She beat the teacher.'  |

- b. Na sasa  $\emptyset$  le maile a Seu.  
 PST beat ABS DET.SG dog POSS Seu  
 ‘Seu’s dog was beaten.’ Or: ‘S/he<sub>i</sub> beat Seu<sub>j</sub>’s dog.’  
 Or: ‘Seu beat his own dog.’ (Homer 2009:43)

Overall, there are three possible interpretations of the sentence given in (24-b), out of which only one suggests *pro*-drop (‘S/he<sub>i</sub> beat Seu<sub>j</sub>’s dog’).<sup>8</sup> Another interpretation of the same sentence is a passive interpretation which is well-known to be difficult to tell apart in Samoan. Overall, there has been a lot of discussion in the literature concerning the distinction between passive and *pro*-drop (Churchward; Churchward; Churchward 1928; 1951; 1926; Lafeber 1928; Williams; Williams 1928; 1927; for an overview and further discussion, the reader is referred to Milner 1962). In general, it is not clear from the sentence in (24-b) what the unmarked or ‘correct’ interpretation is. Without a context, the information in the sentence apparently does not suffice to distinguish between the three possible interpretations. As long as a passive interpretation is possible, the sentence in (24-b) does not provide much evidence for the possibility of *pro*-drop. Especially, since the main syntactic characteristic of passives is valency reduction. Therefore, following the rationale of Homer (2009), all passive construction basically involve *pro*-drop. This, however, is an unwarranted consequence which is not in line with the general idea of impoverishment in passives.

Moreover, the absence of an agent, and the resulting non-specificity are not necessarily translatable to ‘he/she’. A more appropriate translation would probably be ‘someone’, enforcing the unspecific reading. However, I claim that the interpretation ‘Someone beat Seu’s dog’ is significantly closer to the passive interpretation ‘Seu’s dog was beaten’ than it is to the interpretation involving pronouns ‘S/he<sub>i</sub> beat Seu<sub>j</sub>’s dog’. Further evidence for these arguments comes from the fact that the native speakers in my elicitations did not agree with the last two translations provided in (24-b). According to them, only the first translation ‘Seu’s dog was beaten’ is appropriate.

Another alleged example of Samoan object *pro*-drop is given in Muāgututi’a (2017:12). According to him, the example in (25-b) is an instance of dropping the direct object *le talo* ‘the taro’ which is present in (25-a).<sup>9</sup> Note that the glosses provided below are taken from the original source.

- (25) a. ‘Olo’o ‘ai e le tama le talo.  
 PROG eat ERG the boy the taro  
 ‘The boy is eating the taro.’ (Muāgututi’a 2017:12)
- b. ‘Olo’o ‘ai le tama.  
 PROG eat the boy  
 ‘The boy is eating.’ (Muāgututi’a 2017:12)

Again, the author leaves aside effects of reduced valency of the predicate. Analogous to English, the verb ‘ai ‘to eat’ appears to have an intransitive as well as a transitive form. This, however, is different from *pro*-drop. Furthermore, the Ergative marker in (25-a) is not present in (25-b). Thus, the question arises: if there is no Ergative in (25-b), how can one distinguish the two pos-

<sup>8</sup> For the moment, I will leave aside the last interpretation ‘Seu beat his own dog’. However, as will be described below, this interpretation has not been attested by my informants.

<sup>9</sup> Muāgututi’a (2017) states that *pro*-drop is available in Samoan if the dropped argument is retrievable from the context. However, he does not provide a context for these examples.

sibilities, namely *pro*-drop and the intransitive version of the verb ‘to eat’. That is, an Ergative marker in (25-b) would indicate that the verb actually is transitive (since the subject receives Ergative case only from transitive and ditransitive verbs). Since the subject is not morphologically marked for case, the example in (25-b) suggests that the verb is intransitive, thus, assigning Absolutive case to the subject. I take this as evidence that (25-b) is not an instance of *pro*-drop, but simply the intransitive version of the verb ‘ai ‘to eat’.

The significance of the examples in (24) and (25) further diminishes, if we take a look at a clear case of *pro*-drop in Tagalog (Austronesian). In example (26), two independent sentences are presented. The second sentence which only consists of the verb *umiak* ‘cried’ displays a clear case of *pro*-drop.<sup>10</sup>

- (26) Binaril ng tao ang aso. Umiak.  
 PT.shot A man P dog cried  
 ‘A man shot the dog. *pro* cried.’  
 = dog cried (P)  
 = man cried (A) (Maclachlan 1997:449)

This example clearly shows that *pro*-drop is available in Tagalog. The *pro* can be coreferential with either the object or the subject. A reason for the two possibilities might be that the verb shows no agreement. Note that this example is syntactically analogous to the Samoan examples presented in (22). If *pro*-drop of this kind is generally available in other Austronesian languages like Tagalog, I therefore conclude that Samoan does not allow for *pro*-drop.

In summary, the data presented in this section does not appear to support the claim that Samoan is a *pro*-drop language. Alleged evidence for this claim does not provide clear-cut contexts and do not exclude other possible interpretations. Further, any effect regarding the valency of verbs is not taken into account. Based on this result, Samoan subject sharing constructions cannot be explained by *pro*-drop.

## 6.2. Coordination versus subordination

Since *pro*-drop is not available in Samoan, a subsequent question is whether Samoan subject sharing constructions could perhaps be subordinative rather than coordinative. In the case of subordination, the *Subject-Scope-Issue* and *Subject-Absence-Issue* could be solved by i.e. subject control. Thus, a subordinative structure of Samoan subject sharing constructions would possibly simplify the derivation of the *Double-Duty-Problem*, since a c-commanding relationship of the subject and the second conjunct could be established more easily. In the following, I will apply two diagnostics to find out whether subject sharing constructions display characteristics of coordination or subordination. Each of the diagnostics will be applied, firstly, to clausal coordination with two distinct subjects, secondly, to embedded object-clauses and, lastly, to subject sharing constructions. Therefore, it will be possible to draw direct comparisons between subject sharing on the one hand, and either clausal coordination or subordination on the other hand.

Both diagnostics base on the *coordinate structure constraint* (CSC) which, as by Ross

<sup>10</sup> Maclachlan (1997:449) refers to this example as being “two conjuncts in a conjunction reduction construction [that] are [...] independent sentences”. However, it is not clear how two independent sentences which are not conjoined can constitute as conjunction reduction.

(1967:161), states that a coordinate structure does not allow for the extraction (i) of an element out of only one of the two conjuncts and (ii) of only one of the two conjuncts. Regarding the first aspect, this means that if the extraction out of only one conjunct is possible, the two conjuncts cannot be coordinated but must be in a subordinative relationship. Concerning clausal coordination, the test yields the following result.

- (27) \*O leā le mea sa ta e Peter ma sa ai e Jeanne se apu?  
 PRES what ART thing PST hit ERG Peter and PST eat ERG Jeanne ART apple  
 \*‘What did Peter hit and Jeanne ate an apple?’
- (28) \*O ai sa sasaina le tama ma Jeanne la e taalo ma le maile.  
 PRES who PST hit ART boy and Jeanne GENR play with ART dog  
 \*‘Who hit the child and Jeanne plays with the dog.’ (*not interpreted as a question*)

Since these constructions are clearly coordinative, the ungrammaticality of the preceding examples is not surprising. Further, this shows that the CSC generally applies to Samoan coordination constructions.

In contrast to coordination, asymmetric extraction is expected to be unproblematic in subordination constructions, since the CSC does not apply in this case. Indeed, as the examples below show, extraction out of only the matrix clauses is grammatical.

- (29) O ai sa mauaina le apu a’o la e ‘ai e James le apu?  
 PRES who PST find ART apple but-PRES GENR eat ERG James ART apple  
 ‘Who found an apple while James eats an apple?’
- (30) O ai sa fa’apea, sa ta e Peter le maile?  
 PRES who PST think PST hit ERG Peter ART dog  
 ‘Who thought that Peter hit the dog?’

Given these results, a clear-cut distinction can be established regarding asymmetric extraction in Samoan. While subordination constructions allow for asymmetric extraction, coordination constructions do not. Thus, the result for the subject sharing construction in (31) is rather robust: asymmetric extraction is not possible.

- (31) \*O lea le mea sa ta e Peter ma ai se apu?  
 PRES what ART thing PST hit ERG Peter and eat ART apple  
 \*‘What did Peter hit and ate an apple?’

The ungrammaticality of the example suggests that subject sharing constructions in Samoan are coordinative.

The second diagnostic builds on the same premise as the preceding diagnostic. Following Ross (1967:176 f.), extraction out of the conjuncts can be achieved via *across-the-board* (ATB) movement. As established above, subordination constructions are not subject to the CSC and they should, therefore, not allow for ATB extraction. The coordination construction in (32) displays the expected result. The lines represent the extraction site.

- (32) O le a le mea sa ta e Melanie \_\_\_ ma lafo e Mira \_\_\_?  
 PRES what ART thing PST hit ERG Melanie and send ERG Mira  
 ‘What did Melanie hit and Mira send?’

In the sentence in example (32), the direct object has been extracted from both sentences and has been moved to the front. The grammaticality of this example suggests that, in fact, the object was present in both conjuncts and has been moved to a sentence-initial position. In contrast, subordination constructions display the following results.

(33) \*O lea le mea sa maua e Melanie a'o sa ta e James?  
 PRES what ART thing PST find ERG Melanie but-PRES PST hit ERG James  
 'What did Melanie find while James hit?'

(34) \*O ai sa fa'apea, sa ta le maile?  
 PRES who PST think PST hit ART dog  
 'Who thought that hit the dog?'

As can be observed in these examples, ATB extraction leads to ungrammaticality in subordination constructions. This is expected, especially since the results from the preceding test show that subordination constructions allow for asymmetric extraction. The pattern here is, again, clear-cut and so is the possibility to differentiate between coordination and subordination constructions. The result for the subject sharing constructions should, thus, be robust. However, it is not possible to test for subject ATB movement in subject sharing constructions, since their main characteristic is the missing subject in the second conjunct. In that case, the surface structure would possibly be identical to that of a coordination construction. It would, thus, be impossible to identify whether the original sentence without extraction is a coordination construction with two subjects or a subject sharing construction with only one subject. Therefore, only object ATB movement can be reliably tested here. The following sentence in example (35) displays the result for object ATB movement in a subject sharing construction.

(35) O leā le mea sa maua e Peter ma gaoi?  
 PRES what ART thing PST find ERG Peter and steal  
 'What did Peter find and steal?'

The grammaticality of the construction suggests that subject sharing is coordinative and not subordinative. Given the clear pattern for coordination and subordination constructions, this result is in line with the result of the preceding test. Overall, both diagnostics indicate a coordinative structure in Samoan subject sharing constructions.<sup>11</sup>

### 6.3. Evidence against clausal coordination

Having presented the structural characteristics of coordination, subordination and subject sharing constructions, I will now turn to the question of whether clausal coordination and subject sharing can be considered to involve the same structure. That is, whether both constructions are coordinations of full VSO clauses which are subject to further deletion processes in the case of subject sharing. In the following, I will compare the maximum size of the conjuncts in each of the constructions. If the diagnostic indicates a different size of the conjuncts in one of the two constructions, they cannot be assumed to involve the same coordination structure.

In order to investigate the size of the conjuncts, I will focus on the number of TAM (Tense,

<sup>11</sup> Note, that this result also rules out the possibility to explain the *Double-Duty-Problem* via *Equi-NP-deletion* (Chung 1978:106), since this mechanism applies only in subordination/control configurations.

Aspect, Mood) markers in each of the constructions. In the following, I take a TAM marker to indicate that a TP, AspectP, or a MoodP is present in a given structure and that the particular element resides in the respective phrase's head. Since the TAM marker in Samoan usually precedes the verb, the TP can be assumed to be structurally higher than the FP, cf. Collins (2017). Consequently, the following two predictions can be formulated. Firstly, if only one TAM marker is allowed in a construction and all verbs are interpreted according to the one TAM marker, the conjuncts can be assumed to be smaller than a TP and, thus, are dominated by the sole TP. Secondly, if two TAM markers can be present, one can assume two TPs in the structure. This would suggest that the conjuncts appear with an initial TAM marker and, thus, are at least the size of TP. This test, therefore, indicates whether the conjuncts in clausal coordination and in subject sharing constructions are at least the size of TP or rather smaller than TP. Additionally, this implies whether the coordination is situated at the structural level of TP or below TP.

For clausal coordination, the presence of two TAM markers is not problematic as the following examples in (36) display. This holds for the same TAM marker as well as for different TAM markers. That is, the TAM markers in the second conjunct in (36-b) and (36-c) differ from the preceding TAM marker.

- (36) a. Na maua e Petelo se ta'avale ma na gaoui e Malia le uila.  
 PST find ERG Peter ART car and PST steal ERG Mary ART bike  
 'Peter found a car and Mary stole a bike.'
- b. Sa sasa e le faiaoga le tama ma la e taalo e J. ma le maile.  
 PST hit ERG ART teacher ART boy and GENR play ERG J. with ART dog  
 'The teacher hit the boy and Jeanne plays with the dog.'
- c. Sa gaoui e Peter se ta'avale ma la'a maua e Maria se uila.  
 PST steal ERG Peter ART car and FUT find ERG Mary ART bike  
 'Peter stole a car and Mary will find a bike.'

In accordance with the rationale put forward above, it can be assumed that a TP is present in each conjunct of the sentences in (36). The size of the conjuncts in clausal coordination must at least have the size of a TP.

For subordination constructions the same is true, as shown in the following example (37) where an overt TAM marker is present in the fronted subordinate clause as well as in the matrix clause. Moreover, (38) displays the possibility to have two differing tense values in one sentence. The verb is interpreted in present tense in the matrix clause and the overt TAM marker in the subordinate clause constitutes past tense.

- (37) Sa ta e Peter le maile, na fa'apea ai Robert.  
 PST hit ERG Peter ART dog PST think REFL Robert  
 'That Peter hit the dog Robert thought.'
- (38) Fa'apea Robert, sa ta e Peter le maile.  
 think Robert PST hit ERG Peter ART dog  
 'Robert thinks that Peter hit the dog.'

Again, this indicates that a TP must be present in each of the clauses. Therefore, constructions which involve subordination overall include two TPs in their structure.

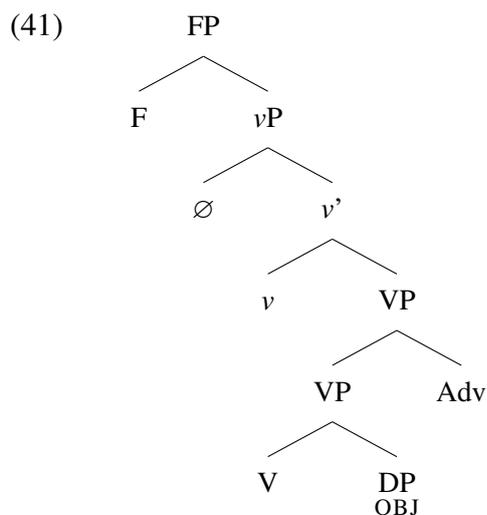
Turning to subject sharing constructions, however, one can observe a different pattern as shown in (39) and (40).

- (39) a. Sa ta le faia'oga<sub>i</sub> le tama ma sa siva \*(gaia<sub>i</sub>).  
 PST hit ART teacher ART boy and PST dance 3SG  
 'The teacher hit the boy and danced.'
- b. Sa ta le faia'oga<sub>i</sub> le tama ma la'a siva \*(gaia<sub>i</sub>).  
 PST hit ART teacher ART boy and FUT dance 3SG  
 'The teacher hit the boy and will dance.'
- c. Sa faatau le fafine<sub>i</sub> le taaloga ma la'a taalo (iai) \*(gaia<sub>i</sub>).  
 PST purchase ART woman ART game and FUT play it 3SG  
 'The woman bought the game and will play.'
- (40) Sa gaoui e Peter<sub>i</sub> se ta'avale ma la'a maua \*(gaia<sub>i</sub>) se uila.  
 PST steal ERG Peter ART car and FUT find 3SG ART bike  
 'Peter stole a car and will find a bike.'

Importantly, the presence of a TAM marker in the first as well as in the second conjunct obligatorily requires the presence of a subject in the second conjunct. This holds for coordinations of an intransitive verb and a transitive verb (39), but also for coordinations of two transitive verbs (40). Since the presence of two TAM markers and, thus, two TPs requires a subject in both conjuncts, it can consequently be assumed that only one TP and only one TAM marker can be present in Samoan subject sharing constructions. Therefore, the conjuncts in these constructions must be smaller than TP and, furthermore, they must be dominated by a single TP.

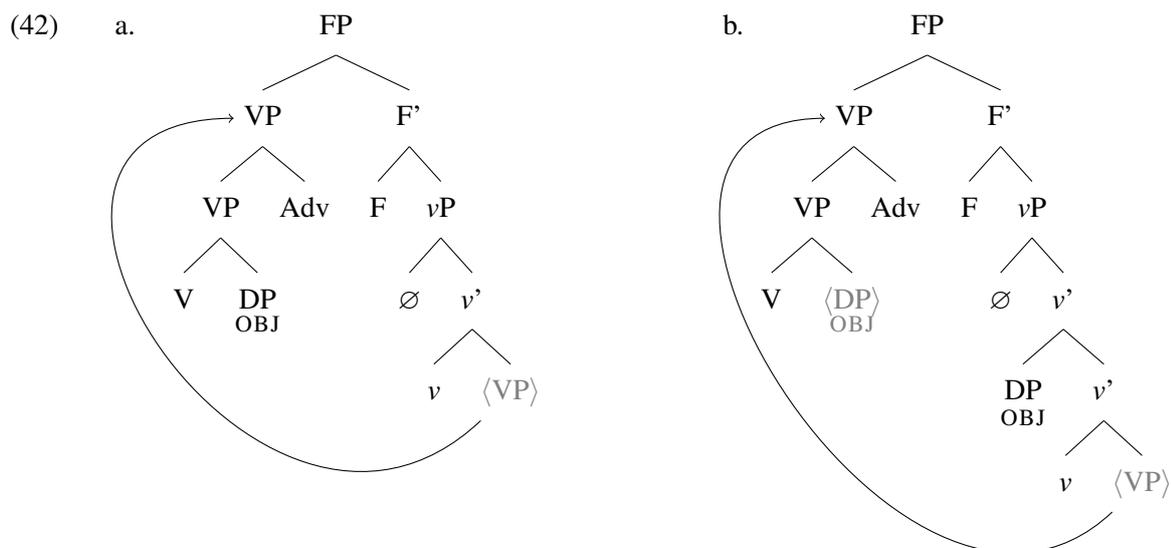
#### 6.4. Predicate fronting in coordinative constructions

Having established that the conjuncts in Samoan subject sharing constructions must be smaller than TP, the question arises what the minimal size of the conjuncts can be. Collins' (2017) account of predicate fronting constitutes a diagnostic which can be used to further examine the size of the second conjunct. In detail, the predicate fronting approach predicts that any material within or adjoined to VP is raised to a position higher than the subject (SpecFP, Collins (2017)). As long as the object is shifted prior to the remnant-movement of the VP, the VP also passes the object. Since objects can occur in the second conjunct of Samoan subject sharing constructions, one can potentially observe whether or not the predicate fronts in the second conjunct. That is, in the base-generated structure in (41), the VP with an adverbial adjunct displays VOADV order. That is, prior to predicate fronting the adverb precedes neither the subject nor the object but follows both (Collins 2017).



Thus, if the observed word order in the second conjunct corresponds to the structure in (41), the adjunct must follow the object. In that case the size of the second conjunct could be considered smaller than FP.

If, however, predicate fronting takes place in the second conjunct, there are two possibilities. First, if the object does not move out of the VP, the base-generated VOADV order remains (42-a). Since there is no (overt) subject present in the second conjunct, the surface structure is identical to the base-generated word order. Thus, there would be no difference between the *in-situ*-configuration and predicate fronting. Second, if the object does move out of the VP, a new word order of VADV O should arise (42-b). Since the entire remnant-VP is fronted without the object, the adverb should precede the object in this case. This would be a clear indication that the predicate is fronted in the second conjunct as well. Further, the second conjunct would be expected to have at least the size of FP, since the specifier of FP provides the landing site for the fronted VP.



To put this to a test, I will present data of clausal coordination and subject sharing which involves a VP adjunct which comes in the form of an adverb. According to Collins (2017), the adverb *vave* ‘quickly’ attaches to VPs. Two main clauses from Milner (1966:315, cited in Collins 2017, p. 20) which include *vave* are given in (43).

- (43) a. 'ua sau vave le teine.  
 PERF come quickly ART girl  
 ‘The girl came quickly.’  
 (The action of *arriving* was completed in a quick manner.)
- b. 'ua vave sau le teine.  
 PERF quickly come ART girl  
 ‘The girl came quickly.’  
 (The action of *arriving* began quickly.)

The adverb can occur in two positions. Firstly, *vave* ‘quickly’ can follow the verb. In this case, it modifies the verb as indicated by the semantic interpretation in (43-a). Secondly, the adverb can also precede the verb which leads to the interpretation that the action started ‘earlier than expected’, cf. (43-b). This shows that position of the adverb is closely related to the level of adjunction and, thus, to the semantic interpretation. The following data will be only of the type displayed in (43-a).

As displayed in the following examples of clausal coordination, the position of the adverb is highly restricted. This is expected, since predicate fronting must take place in both conjuncts of a clausal coordination. Therefore, *vave* ‘quickly’ precedes the subject. Furthermore, it follows the verb as in (44) and cannot appear conjunct-finally as in (45).

- (44) Na maua vave e P. se ta'avale ma na gaoi vave e M. le uila.  
 PST find quickly ERG P. ART car and PST steal quickly ERG M. ART bike  
 ‘Peter quickly found a car and Mary quickly stole a bike.’
- (45) \*Na maua e P. se ta'avale vave ma na gaoi e M. le uila vave.  
 PST find ERG P. ART car quickly and PST steal ERG M. ART bike quickly  
 ‘Peter quickly found a car and Mary quickly stole a bike.’

This must be the case in both conjuncts. In (46), the adverb is in the correct position in the first conjunct, but not in the second. Again, the ungrammaticality of example (46) is expected, since a subject is present in both conjuncts which must be preceded by the adverb.

- (46) \*Na maua vave e P. se ta'avale ma na gaoi e M. le uila vave.  
 PST find quickly ERG P. ART car and PST steal ERG M. ART bike quickly  
 ‘Peter quickly found a car and Mary quickly stole a bike.’

Note, that the word order indicates remnant-movement of the VP in both conjuncts. The fact that the adverb appears to the left of the subject shows that the entire VP including the adjoined adverb is fronted while the object stays in the lower position.

Interestingly, subject sharing constructions behave similarly regarding the position of the adverb. Without a subject in the second conjunct, the indication of whether or not predicate fronting takes place depends on the order of the object and the adverb. If the order is ADV+O, this would hint at predicate fronting in the second conjunct. As the examples in (47) and (48) display, the adverb must precede the object.

- (47) \*Lena sa fasi vave e le fafine le tama ma lafo se tusi vave.  
 PST beat quickly ERG ART woman ART boy and send ART letter quickly  
 ‘The woman quickly hit the boy and and quickly sent a letter.’
- (48) Lena sa fasi vave e le fafine le tama ma lafo vave se tusi.  
 PST beat quickly ERG ART woman ART boy and send quickly ART letter  
 ‘The woman quickly hit the boy and quickly sent a letter.’

As can be seen in example (47), it is not possible for the adverb in the second conjunct to follow the object, but it must precede the object instead, cf. (48). Based on this observation and the assumption that the object appears in the lower position as well, the order of the adverb and the object suggests that the predicate fronts in the second conjunct. The same holds for the first conjunct.<sup>12</sup> Consequently, it can be assumed that both conjuncts are larger than VP and have the structure presented in (42-b).

Overall, the data show that predicate fronting applies in the first and second conjunct in clausal coordination. For subject sharing constructions, the same holds. Based on this result, the conjuncts must be at least the size of FP and the coordination in subject sharing constructions cannot apply lower than on FP-level.

#### 6.5. Cases of case mismatch

By assuming FP-coordination for Samoan subject sharing constructions, one also predicts two subject positions in the structure. This prediction falls out naturally from the fact that each FP includes a *vP*. With the *Double-Duty-Problem* in mind, the interesting question arises whether one can find evidence for two subject positions in the structure. In the following, I will argue that this indeed is the case. However, the argument will not be based on empirical observations but rather on theoretical implications.

Reconsider the subject sharing constructions (15-c) and (16-c), repeated below as (49) and (50), respectively. As already described earlier, the two examples display a peculiar pattern concerning the case marking of their only subject.

- (49) Lena sa fasi e le faiaoga le tama ma siva.  
 PST beat ERG ART teacher ART boy and dance  
 ‘The teacher hit the boy and danced.’
- (50) Lena sa taalo (\*e) le fafine ma lafo se tusi.  
 PST play ERG ART woman and send ART letter.  
 ‘The woman played and sent a letter.’

Both constructions consist of an unergative verb *siva/taalo* and a transitive verb *fasi/lafo*. As briefly pointed out earlier, S and O bear Absolutive case without overt morphological marking while A is overtly marked for Ergative case. Consequently, both examples do not only require an S as well as an A, but both of these elements are assigned a different case. In detail, *fasi* ‘(to) beat’ in the first conjunct in (49) is transitive and, therefore, requires Ergative case on A. In the second conjunct, *siva* ‘(to) dance’ is unergative and requires Absolutive marking on S. The

<sup>12</sup> This is in line with *parallelism requirements* in coordinative structures, cf. Grosu (1985); Franks (1993); Fox (1999), among many others.

mirror image can be seen in (50) where *taalo* ‘(to) play’ in the first conjunct requires Absolutive on S, and *lafo* ‘(to) send’ requires Ergative on A in the second conjunct.

Since both examples display sharing constructions, however, there is only one overt subject in the structure. That is, in (49) the A of *fasi* ‘(to) beat’ is present but the S of *siva* ‘(to) dance’ is not. The only subject, namely the A, is correctly marked for Ergative case. However, there is no Absolutive S in the structure which is affiliated with the unergative verb in the second conjunct. Overall, this shows that the Ergative marked A is interpreted as the S of the unergative verb in the second conjunct. The grammaticality of example (49) is surprising since previous examples clearly indicated that Ergative marking on S results in ungrammaticality, cf. (15-b) and (16-a). In (50), a similar pattern arises. Here, the S of *taalo* ‘(to) play’ cannot be marked for Ergative. However, there is no Ergative-marked A for *lafo* ‘(to) send’. Since the clearly Absolutive-marked S in the first conjunct is interpreted as the subject of the second conjunct, the result is a case-mismatch. However, as already noted for the preceding example, the sentence is grammatical.

The issue in this regard only arises if one assumes only one subject position. That is, a sole subject cannot be marked for two cases simultaneously (leaving aside the possibility of *case stacking* (cf. Richards 2013) which has not been attested in Samoan). Even if this was the case, the subject would always be overtly marked for Ergative, since the Absolutive is not morphologically marked. This, however, is not the case, cf. (50). Furthermore, it is equally unlikely to assume the case feature in the second conjunct to disappear or that a single subject position can accommodate multiple subjects. Overall, one would expect a pattern regarding the subject different from the current one.

The assumption that there are, in fact, two subject positions in Samoan subject sharing constructions receives more support by the assignment of Ergative and Absolutive case. While the Ergative is commonly assumed to be inherently assigned by  $v$  to the DP in SpecvP (Spec-Head Ergative, Tollan 2018), Absolutive case is assigned by T (see Aldridge 2004 for an overview and alternative accounts). A subject position in each conjunct would simplify the issue described above. In the case of (49), this would mean that  $v$  assigns Ergative case to the DP in its specifier in the first conjunct, and T assigns Absolutive case to the DP in SpecvP in the second conjunct.<sup>13</sup> Consequently, only the Ergative-marked subject in the first conjunct is spelt out. In the case of (50), the Absolutive in the first conjunct would be assigned by T and the Ergative by  $v$  in the second conjunct. Again, only the first subject bearing Absolutive case is spelt out. Therefore, one can derive the observed pattern. Overall, such an account which assumes two subject positions and two TPs would be able to derive the issues concerning case assignment. However, without any additional assumptions, it cannot explain the fact that Samoan subject sharing constructions appear to have only one TP.<sup>14</sup>

Note, further, that a derivation as sketched above does not explain why the subject in the second conjunct is not spelled out in both constructions. That is, the reason for the *Subject-Absence-Issue* is to be found elsewhere. Based on the idea that both conjuncts are parallel in structure, two possible solutions might be that (i) the absence of the case marked subject in the second conjunct is either due to an additional, possibly post-syntactic mechanism (i.e. deletion or ellipsis) or (ii) the subject in the second conjunct is an empty element or a null argument. In

<sup>13</sup> Note, that this would not only predict a subject position in the second conjunct, but potentially also a TP since Absolutive case in the second conjunct is assigned by T. This prediction shall be ignored for now, but should be taken up again in future research.

<sup>14</sup> I thank an anonymous reviewer for pointing this out to me.

this case, the underlying reason for the *Subject-Absence-Issue* would be non-structural. Further enquiries regarding this matter, however, will be left open for future research.

### 7. Structural analysis: Predicate coordination

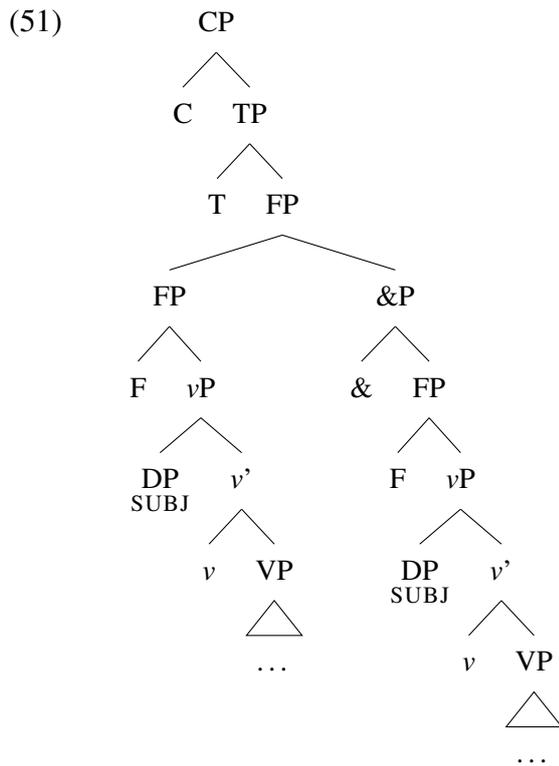
In the past sections, the following results were obtained. Firstly, subject sharing constructions display coordinative properties, but their structural characteristics apparently differ from clausal coordination. That is, the data suggest that they include only one MoodP/AspectP/TP overall while clausal coordination includes one per conjunct. Secondly and consequently, the conjuncts in subject sharing constructions can be assumed to be smaller than MoodP/AspectP/TP but must have at least the size of FP. Lastly, coordinations of a transitive and an unaccusative verb is grammatical which led to the observation that there are grammatical cases of case mismatch in subject sharing constructions. This implies that there must be two subject positions in the structure. In order to account for the *Double-Duty-Problem*, however, *pro*-drop cannot be assumed based on the data presented above.

This data provides two possible options in terms of how to proceed. First, one can come up with a particular (post-syntactic) deletion mechanism or empty/null element to explain the *Subject-Absence-Issue*. Second, one can try to find a structure which can derive the remaining facts without (post-syntactic) deletion or empty/null element. In order to show that the first option is to be preferred over the second one, I will showcase the second option in the following and point out the advantages as well as the disadvantages.

The results presented above paint the following picture. Samoan subject sharing are coordinations of two FP-sized conjuncts which (i) include a subject position, (ii) include a landing site for predicate fronting and (iii) are dominated by a single TP.<sup>15</sup> Furthermore, a CP layer can be added in order to represent the clause. This gives us the structure displayed in (51).

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<sup>15</sup> For the sake of simplicity, I follow Collins (2017) in assuming coordination with an adjunction structure.



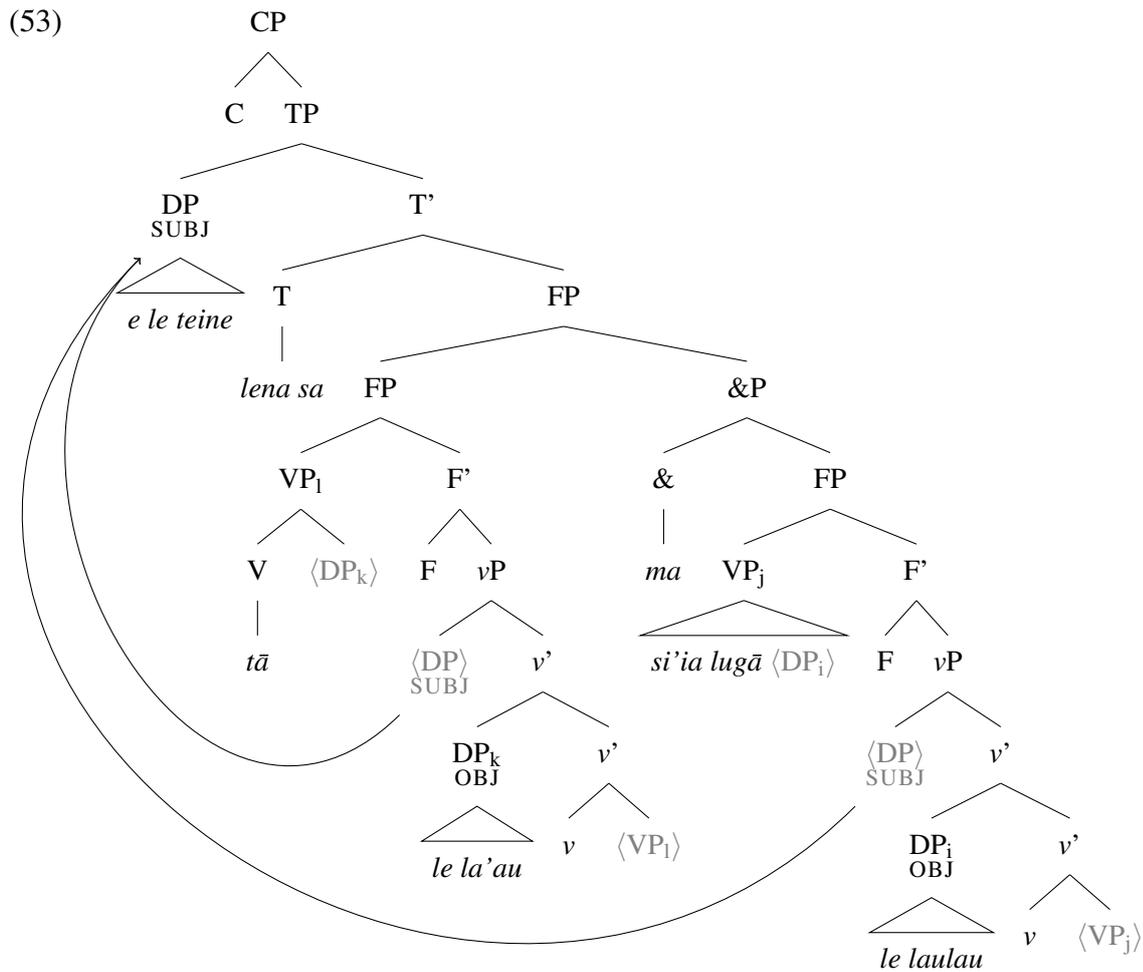
In order to solve the structural issues of the *Double-Duty-Problem* in a purely structural way, one has to assume mechanisms which do not involve deletion or null elements. That is, to comply with the currently assumed second option stated above, assuming deletion or a null element in SpecvP in the second conjunct is ‘not allowed’, since this solution is not a structural one.

One possibility to reduce two identical elements in a coordination to only one element is ATB movement.<sup>16</sup> In the following, I will transfer this to the structure presented in (51).

Since a prominent characteristic of ATB movement is movement out of the coordination, the landing site for this movement must be situated in a position which dominates the coordination phrase. A possible candidate regarding the structure in (51) is SpecTP. As displayed in the following structure (53), the two subjects are moved via ATB movement from both conjuncts to SpecTP. The corresponding sentence is given in (52). Note, that the verbs in (52) are both transitive, so case-mismatch does not arise.

- (52) Lena sa tā le teine le la’au ma si’ia lugā le laulau.  
 PST hit ART girl ART tree and lift up ART table  
 ‘The girl hit a tree and lifted a table.’

<sup>16</sup> I do not assume any particular theoretical account concerning the mechanism underlying ATB movement. The application of ATB movement regarding the matter in hand bases on the observation that two identical and co-referent elements can be moved and represented by one instance of the same form in a higher position.



The advantages of this approach are that, firstly, the *Double-Duty-Problem* can be solved via ATB movement. Positioning the coreferential subject in SpecTP can derive the scope of the subject over both conjuncts and, thus, solves the *Subject-Scope-Issue*. Further, since there is only one subject present, it appears in surface structure as if the subject is absent in the second conjunct, explaining the *Subject-Absence-Issue*. Second, there is only one TAM-marker and, thus, one TP in the structure. The TAM-marker in T takes scope over both conjuncts. Third, the coordination of two FPs is capable of explaining the evidence for two subject positions.

A major disadvantage of this approach, however, is that it derives the incorrect word order of S TAM [VO]&[VO]. The ATB movement in this case leads to the subject being positioned sentence-initially which renders impossible the expected predicate-initial word order. This issue also cannot be solved by further movement operations. For instance, head movement of V from the first conjunct to C is not possible, since (i) the VP is a frozen category after it has been moved to SpecFP (Corver 2017), and (ii) the movement would violate the CSC, since the V would asymmetrically move out of the first conjunct. Additionally, this would not solve the word order issues, but rather produce VS TAM [O]&[VO] word order.<sup>17</sup>

Overall, this shows that the second option, namely a non-deletion approach to Samoan sub-

<sup>17</sup> However, one could also assume ATB movement to an additional abstract, functional projection above FP, but below TP. Although there is no independent evidence for this, it remains a technical possibility.

ject sharing constructions, cannot derive the results without creating new issues. Deriving the structure via a mechanism which involves deletion appears to be a more effective and applicable approach. In such a case, one would simply impose a coordination-specific deletion rule which targets subjects under certain circumstances (possibly along the lines of *gapping*). Moreover, such a rule could not only target subjects but could be extended to TAM markers which in turn would eliminate the distinction between subject sharing and clausal coordination. In other words, the currently rather stipulative mechanism could apply in a certain context and delete the TAM marker as well as the subject. When this mechanism is set to apply and what the motivation as well as consequences are, I will leave for future research. A starting point should be to gather more information about the conjunct-internal structure. Diagnostics for testing whether or not a TP is present in both conjuncts of Samoan subject sharing constructions as well should include tests for the assignment of Absolutive case in the second conjunct. An additional idea to put forward is to analyse subject sharing as serial verb constructions which are known to exist in Samoan (Hopperdietzel 2020). Generally, mechanisms like *deletion under identity* or *Equi-NP-deletion* are not suited since both require c-command of the higher element over the lower one (Chung 1978; Citko 2001). Potentially, an account along the lines of *distributed deletion* (Fanselow & Ćavar 2002) could be a possible derivation, if sufficiently constrained. Another possibility in this regard might be V-stranding clausal ellipsis. Inquiries concerning the application and nature of such a deletion approach will be left for future research.

### 8. Conclusion

In this paper, I investigated the structure, the properties of subject sharing constructions in Samoan and the challenges they pose. The main observations include the intriguing position of the subject in the surface structure and grammatical cases of case mismatch in coordinations of an ergative and an unergative verb. By analysing these constructions, I presented evidence (i) against the availability of *pro*-drop in Samoan, (ii) for the coordinative nature of subject sharing constructions, (iii) for the distinctiveness of subject sharing constructions and clausal coordination, and (iv) for the application of predicate fronting in the first and second conjunct in both of these constructions. I reasoned that the individual conjuncts must be smaller than TP, but have to be at least the size of FP in the sense of Collins (2017). Subsequently, the coordination must occur below TP. Furthermore, I reinforced the idea predicted by FP-coordination that there must be two subject position in Samoan subject sharing constructions.

With these results at hand, it seems likely that the *Double-Duty-Problem* in Samoan subject sharing constructions arises due to certain, possibly context-specific deletion rules. These rules could either take the form of PF-deletion (cf. Chung 1978), V-stranding clausal ellipsis or distributed deletion, or they could be based on semantic principles (cf. Mosel 1987). The exact nature of the rules as well as their domain of application will be left open for future research. Overall, the phenomenon at hand constitute an intriguing puzzle which requires more elaborate research and data.

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## Abbreviations

A	Agent	LD	Locative-directional	PT	Patient topic
ABS	Absolutive	O	object	REFL	reflexive
ART	article	P	Patient	S	subject
CAUS	causative	PRES	present	TAM	Tense, Aspect, Mood
ERG	Ergative	PRF	perfect	V	verb
FUT	future	PST	past		

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# On verbal compounds in Japanese

Jun Kawamitsu

The lexical V-V complex is productive and well-documented in Japanese. This paper aims to capture the parametric variation of lexical V-V compounds in terms of the labeling theory proposed by Chomsky (2013, 2015). Focusing on the structure formed by two heads {H1, H2}, I argue that while lexical V-V compounds are not allowed in languages like English due to labeling failure, Japanese verbal property can avoid labeling conflict. Furthermore, some syntactic and morphological criteria of Japanese lexical V-V compounds are deduced from the labeling mechanism.

## 1. Introduction

One of the parametric differences between Japanese and English is the productivity of V-V compounds. It has been well-documented in the previous literature that Japanese abounds with this type of compound verb (e.g. Kageyama 1993, 1999; Yumoto 2005; Kishimoto 2009, 2021).<sup>1</sup>

- (1) a. John-ga hon-o [yomi-[hazime]]-ta.  
John-NOM book-ACC read-start-PST  
'John started reading a book.'
- b. John-ga angou-o [yomi-toi]-ta.  
John-NOM code-ACC read-solve-PST  
'John deciphered a code.'

There are two types of verbal compounds in Japanese. One is syntactic V-V compounds, as in (1a), which combines two verbs in syntax. The other is lexical V-V compounds, as in (1b). It is argued that the latter type of compound is derived by forming the verbal complex in the lexicon. The following facts show that Japanese syntactic V-V compounds (JSVC) are subject to syntactic transformations on the one hand. However, these operations are not applicable to Japanese lexical V-V compounds (JLVC), on the other hand.

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<sup>1</sup> If not indicated otherwise, the Japanese examples in this article are constructed by myself.

(2) *Soo s* ‘do so’ substitution

## a. JLVC:

naki-sakebu	→	*soo	si-sakebu
cry-shout		so	do-shout
kaki-komu	→	*soo	si-komu
write-insert		so	do-insert

## b. JSVC:

tabe-tsuzukeru	→	soo	si-tuzukeru
love-continue		so	do-continue
tasuke-au	→	soo	si-au
help-RECIPR		so	do-RECIPR

(adapted from Kageyama 1999:302, slightly modified)

As Kageyama points out, the first verb projects an independent VP in JSVC in (2b), so a pro-VP form *soo s* ‘do so’ can substitute for V1. On the other hand, JLVC projects a single VP so that it cannot replace V1 with the pro-VP form *soo s*, as in (2a).

Subject honorification found in Japanese also indicates the asymmetry between JLVC and JSVC. In Japanese, when the subject in a sentence is socially superior to the speaker, the subject honorification is optionally available. In this case, the verbal morphology is marked as an “*honorific prefix + V + ni nar*” sequence. This sequence is found in V1 of JSVC in (3b). Given that the subject honorification is a syntactic operation, V1 and V2 of JLVC cannot be separated since they project a single VP.

## (3) Subject honorification of V1

## a. JLVC:

kaki-komu	→	*o-kaki-ni	nari-komu
write-insert		HON-write-DAT	become-insert
(tegami-o) uke-toru	→	*(tegami-o)	o-uke-ni nari-toru
(letter-ACC) get-take		(letter-ACC)	HON-get-DAT become-take

## b. JSVC:

utai-hazimeru	→	o-utai-ni	nari-hazimeru
sing-begin		HON-sing-DAT	become-begin
(densya-ni) nori-sokoneru	→	(densya-ni) o-nori-ni	nari-sokoneru
(train-on) ride-miss		(train-on)	HON-ride-DAT become-miss

(adapted from Kageyama 1999:302, slightly modified)

Note that, as Kageyama (1993:84) points out, the entire lexical V1-V2 complex can undergo the subject honorification as follows:

(4) a. Tanaka-sensei-ga tegami-o o-uke-tori-ni naru.  
 Prof.Tanaka-NOM letter-ACC HON-get-take-DAT become  
 ‘Professor Tanaka will get<sub>SH</sub> a letter.’

b. Butyoo-wa noto-ni memo-wo o-kaki-komi-ni nat-ta.  
 manager-TOP note-DAT memo-ACC HON-kaki-komi-DAT become-PST  
 ‘The manager wrote down<sub>SH</sub> a memo into the note.’

Another asymmetry for syntactic transformations between JSVC and JLVC comes from the following passivization examples. As expected, passivizing V1 of JLVC is not available due to its amalgamated property, as in (5a). The opposite result is obtained in JSVC, as in (5b).

(5) Passivization of V1

a. JLVC:

kaki-komu	→	*kak-are-komu
write-insert		write-PASS-insert
osi-akeru	→	*os-are-akeru
push-open		open-PASS-open

b. JSVC:

aisi-tuzukeru	→	ais-are-tuzukeru
love-continue		love-PASS-continue
korosi-kakeru	→	koros-are-kakeru
kill-be about to		kill-PASS-be about to

(adapted from Kageyama 1999:302, slightly modified)

A crucial property of lexical V-V compounds observed in a series of studies by Kageyama (1993, 1999) is subject to the Transitivity Harmony Principle (THP). The THP requires the verbal complex of V1 and V2 to be the same type of verb.

(5) The Transitivity Harmony Principle

Given the three argument structures below, lexical compound verbs are built by combining two verbs of the same type of argument structure.

(a) transitive verbs: (x <y>)

(b) unergative verbs: (x <>)

(c) unaccusative verbs: <y>

(Kageyama 1999:309)

(6) a. transitive + transitive:

hiki-nuku (pull-pull.out), nigiri-tubusu (grasp-crash), tataki-otosu (hit-make.drop), kiri-toru (cut-remove)

b. unergative + unergative:

hasiri-yoru (run-go close), tobi-oriru (jump-go down), aruki-mawaru (walk-go.around)

c. unaccusative + unaccusative:

suberi-otiru (slip-fall), ukabi-agaru (float-rise), umare-kawaru (be.born-change)

(adapted from Saito 2014:283, slightly modified)

The THP in (5) properly expects the verbal combination in (6). Also, transitive and unergative verbs share the same property in that they have an external argument, so the following verbal complexes in (7) are also possible.

(7) a. transitive + unergative:

moti-aruku (carry-walk), sagasi-mawaru (look.for-go.around), mati-kamaeru (wait.for-hold)

b. unergative + transitive:

naki-harasu (cry-make swollen), nori-kaeru (ride.on-change), nomi-tubusu (drink-waste)

(adapted from Saito 2014:283, slightly modified)



the parametric distinction between English and Japanese for lexical V-V compounds is deduced from Chomsky's (2013, 2015) labeling theory.

This paper is organized as follows: Section 2 begins by outlining the framework of labeling. Section 3 briefly reviews the previous studies tackling the parametric distinction for V-V compounds between languages. Section 4 illustrates how the proposed analysis based on the labeling theory works. Section 5 concludes the paper.

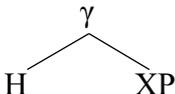
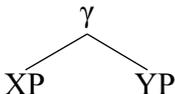
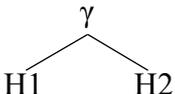
## 2. Framework

Chomsky (2013, 2015) proposes the Labeling Algorithm (LA), under which a set created by Merge is labeled with a certain algorithm. Labels of the structure are needed for interpretation at the interfaces (i.e. the Conceptual-Intentional (C-I) and Sensorimotor (SM) interfaces), and Chomsky (2013) mentions their necessity as the following:

- (13) For a syntactic object SO to be interpreted, some information is necessary about it: what kind of object is it? Labeling is the process of providing that information.

(Chomsky 2013:43)

There are at least three structural possibilities to be labeled:

- (14) a.  b.  c. 

As for the structure {H, XP} in (14a), LA, based on Minimal Search, detects the closest head, which is H, and this set is labeled as H. On the other hand, the set {XP, YP} in (14b) and {H1, H2} in (14c) cannot be labeled since LA cannot identify the closest head. As for the so-called XP-YP configuration in (14b), Chomsky provides two-way solutions: (i) structure modification and (ii) prominent feature sharing. The former strategy results in the labeled structure when either XP or YP moves out of this set. For instance, the XP's movement out of this set renders the  $\gamma$  to be identified as YP. The latter strategy is that if both XP and YP share prominent features in common (e.g.  $\phi$ -feature, Q-feature), they function as the label. The suggestions that the XP-YP configuration causes problems of projection have been scrutinized. These have provided the theoretical explanation for long-standing mysteries, such as successive cyclic A- or A'-movement, EPP-phenomena, and so on. On the other hand, detailed analyses of the structure for (14c) have not been presented thus far. I mention this structure as the Head-Head (H-H) configuration and suggest that this structure causes labeling failure.

- (15) The Head-Head configuration cannot be labeled without shared features.

Additionally, I suggest that the H-H configuration can be found in lexical V-V compounds. Hence, the following structure is not allowed in some languages like English since LA cannot detect the label of the set {V1, V2}.

- (16)  $\gamma = \{V1, V2\}$

Here, a question arises. How does Japanese allow the productive lexical V-V compounds? In the following section, I discuss the validity of some previous studies and propose an analysis dealing with the parametric distinction of lexical V-V compounds.

### 3. Remarks on previous studies

This section overviews the previous studies that have tried to capture the parametric distinction for lexical V-V compounds between languages.

#### 3.1. An account in terms of $\phi$ -feature agreement

Kobayashi (2022) explains the productivity of lexical V-V compounds appealing to the presence or absence of  $\phi$ -feature agreement. He proposes the following generalization:

- (17) If a language has object-verb  $\phi$ -agreement, then it cannot have productive lexical V-V compounds. (Kobayashi 2022:40)

The generalization above can predict the abundant lexical V-V compounds in languages with no  $\phi$ -feature agreement. Japanese, Korean, Mongolian, and Malayalam are the ones that lack this type of agreement.

- (18) Watashi-wa eki-de anata/kare/karera/John-o mi-ta.  
I-TOP station-at you/him/them/John-ACC see-PST  
'I saw you/him/them/John at the station.' (Japanese)

- (19) John-i Mary/Nay/Ai-lul kkwulh-e anc-hi-ess-ta.  
John-NOM Mary/I/children-ACC kneel-LK sit-CAUS-PST-DECL  
'John made Mary/I/children kneel down.' (Korean; Ko and Sohn 2015)

- (20) Bat- $\emptyset$  nama-ig/chama-ig/ter-ig/bid-nig/tanar-ig/ted-nig har-san.  
Bat-NOM me/you/him/us/you/them-ACC see-PERF  
'Bat saw me/you/him/us/you/them.' (Mongolian; Sakamoto 2011:33)

- (21) Siita eni/namu/niggal/raaman-e sneehikkunnnu.  
Sita I/we/you/Raman-ACC love  
'Sila loves me/us/you/Raman.' (Malayalam; Jayaseelan 1999:30-44)

The examples above show that pronominal elements do not cause object-verb  $\phi$ -agreement and that verbal morphology does not change in these languages. As expected in Kobayashi (2022), these languages have a lexical compounding system.

- (22) a. ara-tut  
know-hear  
'understand'  
b. kulm-tcuri  
hunger-starve  
'starve' (Korean; Paschen 2014)

- (23) a. dza:j-ögöx  
 teach-give  
 ‘show’  
 b. avc-irex  
 take-bring  
 ‘bring’
- (Mongolian; Khurelbat 1992)

- (24) a. pookuwaan-anuwadicc  
 go-permit  
 ‘permit leave’  
 b. ār-āy  
 become.full-search  
 ‘investigate’
- (Malayalam; Krishnamurti 2003)

These facts, including Japanese examples observed in the previous section, are correctly described by Kobayashi’s generalization. On the other hand, Welsh and Swahili do not show the productiveness of lexical V-V compounds, and  $\phi$ -feature agreement between the object and verb is attested in these languages.

- (25) Mae Steffan yn dy garu di.  
 be.PRES.3SG Steffan PROG 2SG love.INF you.2SG  
 ‘Steffan loves you.’
- (Welsh; Borsley 2007:27)

- (26) Juma a-li-mw-u-a fisi.  
 Juma 1SG-PST-3SG-kill hyena  
 ‘Juma killed a hyena.’
- (Swahili; Vitale 1981:17)

Although English does not show any overt  $\phi$ -morphology on verbs for the object-verb  $\phi$ -agreement in (27), Kobayashi assumes along the lines of Chomsky (2000, 2008) that the Case-feature of object nominal in English is licensed as a reflex of object-verb  $\phi$ -feature agreement.

- (27) a. The teacher scolded John/Mary/him/her/me/you/them/us.  
 b. The student loves John/Mary/him/her/me/you/them/us.

Therefore, lexical V-V compounds are not productive in English.

- (28) a. \*jump-drop  
 b. \*drink-walk  
 c. \*hit-kill  
 d. \*strike-smash  
 e. \*drip-pour  
 f. \*roll-fall
- (Kobayashi 2022:49)

At first sight, the generalization in (17) seems to capture the language variation for lexical V-V compounds. However, there remain some potential problems. Setting aside the suspicion of object-verb  $\phi$ -agreement in English, an internal argument of unaccusative verbs does not undergo  $\phi$ -feature agreement with the verb, at least in English. It is generally assumed that the internal argument of unaccusatives moves from the complement of VP to Spec-TP and agrees



detect the label  $\delta$  minimally finds two heads, REN and  $v_2$ , but REN has an anti-labeling property, so  $v_2$  is chosen for the label  $\delta$ .<sup>2</sup>

Sugimura & Obata's analysis captures the morphological criterion of Japanese V-V compounds by introducing a functional projection called REN. Also, this analysis is reasonable in that the parametric variation of lexical V-V compounds is deduced from the presence or absence of a particular type of functional head. However, the obvious question considers how this analysis works for another requirement of JLVC, that is, the THP. The derivation in (29) might overgenerate the unwanted outcomes since any combination of different types of verbs can be available in general. Hence, this question remains to be considered.

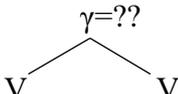
In the following section, I present a labeling analysis of V-V compounds and give an explanation for their language variation. I also show that the proposed analysis can cover the intriguing properties of JLVC.

#### 4. Proposal and analysis

This section aims to provide a possible answer to the (un)productivity of lexical V-V compounds in terms of the labeling theory. As mentioned in Section 2, given that lexical V-V compounds result in the Head-Head configuration of the  $\{V1, V2\}$  set, they are not licensed due to labeling failure.

(30) The Head-Head configuration cannot be labeled without shared features.

The problems of projection due to the Head-Head configuration can straightforwardly explain the unproductivity of lexical V-V compounds in English-type languages.

(31) 

On the other hand, how does JLVC avoid labeling failure caused by the H-H configuration? To clarify this question, I offer the following argument:

(32) Japanese verbal status (i.e. transitive, unergative, or unaccusative) is designated in the lexicon.

The proposal in (32) is related to the peculiar property of Japanese verbs, and I assume that Japanese verbal status is designated in the lexicon with  $[\pm \text{ External Argument (EA)}]$ -feature.

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<sup>2</sup> Saito (2014, 2016) also deals with verbal compounds in Japanese in terms of the labeling theory. He argues that the infinitive inflection of V1 of  $\{\alpha \text{ V1-inflection, V2}\}$  functions as an anti-labeling device, and hence, the set  $\alpha$  is correctly determined as V2. However, as I mentioned in the examples in (1) and (9)-(12), all the verbs in Japanese are conjugated (i.e. inflected) in the sentence. Hence, if the inflection of verbs functions as an anti-labeling device, LA cannot find V(P) in the first place. I am wondering if this leads to an unwanted prediction in a simple sentence. Assume, for one example, the set of  $\{\alpha \text{ V-inflection, NP}\}$ . Although the set  $\alpha$  is determined as NP with no labeling conflict, it should be labeled as VP, regarding the selectional requirement at the C-I interface (e.g. Mizuguchi 2019). Again, I agree with Saito (2016) in that some elements, such as the Case inflection, function as an anti-labeling device. However, I refrain from extending this analysis to the verbal inflection in this paper. I would like to thank an anonymous reviewer for the insightful comment on this point.

More precisely, I suggest that transitive and unergative verbs are introduced into narrow syntax with [+EA]-feature and unaccusative verbs with [-EA]-feature.

The validity of the proposal above is supported by the fact that Japanese verbs are distinguished in form between transitive and intransitive verbs. For example, in English, the verb ‘break’ has transitive and intransitive use in the same form so that you can say both ‘*I broke the window.*’ and ‘*The window broke.*’ with the same verb ‘break (broke).’ On the other hand, there is no transitive-intransitive alternation in Japanese. Let us consider the following:

- (33) a. John-ga mado-o kowasi-ta.  
 John-NOM window-ACC break-PST  
 ‘John broke the window.’  
 b. Mado-ga koware-ta.  
 window-NOM break-PST  
 ‘The window broke.’

- (34) a. Tom-ga doa-o ake-ta.  
 Tom-NOM door-ACC open-PST  
 ‘Tom opened the door.’  
 b. Doa-ga ai-ta.  
 door-NOM open-PST  
 ‘The door opened.’

As for the transitive sentence in (33a), the transitive verb *kowas* ‘break’ is used, and the intransitive counterpart *kowar*, as in (33b), cannot be appropriate in this case. Also, the different verb stems (i.e. *ake* and *ai*) are found in (34). Many kinds of verbs show the same effect. In (35), the verb on the left side is intransitive, and the verb on the right side is transitive.

- (35) simar/simer (close), toker/tokas (melt), umar/umer (bury), tomar/tomer (stop), otir/otos (fall), kawar/kaer (change), agar/ager (go.up), okir/okos (wake)

These facts indicate that the Japanese verbal form depends on the context and does not show the alternation between transitive and intransitive sentences, in contrast to English, and hence confirm that Japanese verbal status is designated in the lexicon.

Considering the proposal in (33), I give a theoretical explanation of the productivity of JLVC in terms of the labeling theory. I suggest that the derivation of JLVC is the following:

- (36) a.  $\gamma = \langle +EA \rangle$   

$$\begin{array}{c} \gamma = \langle +EA \rangle \\ \swarrow \quad \searrow \\ V_{[+EA]} \quad V_{[+EA]} \end{array}$$
 b.  $\gamma = \langle -EA \rangle$   

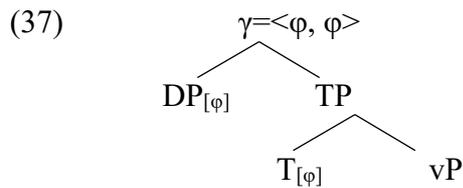
$$\begin{array}{c} \gamma = \langle -EA \rangle \\ \swarrow \quad \searrow \\ V_{[-EA]} \quad V_{[-EA]} \end{array}$$
 c.  $\gamma = ??$   

$$\begin{array}{c} \gamma = ?? \\ \swarrow \quad \searrow \\ V_{[+EA]} \quad V_{[-EA]} \end{array}$$

As shown above, the merger of two verbs results in the H-H configuration and causes labeling failure in English. However, Japanese transitive and unergative verbs are introduced into the derivation with [+EA]-feature. Hence, labeling conflict does not occur in (36a) since the shared feature between two verbs functions as the label for  $\gamma$ . In a similar vein, Japanese unaccusative verbs have [-EA]-feature, so the unaccusative+unaccusative combination also provides the correct label for  $\gamma$  in (36b). However, if two verbs do not share the same feature as in (36c), the derivation will crash at the interface due to failing in the label identification. The crucial point is that this analysis can capture the intrinsic property of JLVC subject to the THP. In a nutshell,

the V-V combination, which shares [+EA]-feature or [-EA]-feature in common, is allowed in Japanese, resulting in the productive JLVC. On the other hand, the ungrammaticality of JLVC with different types of verbs is straightforwardly explained by labeling failure of the H-H configuration without shared features. Hence, Kageyama's (1993, 1999) THP is properly deduced from the labeling theory.

Furthermore, the proposed analysis can cover the morphological property of Japanese V-V compounds. Again, V1 is required to be an infinitive form. I assume that the agreement-like relation between V1 and V2 makes V1 conjugated as infinitive. Remember that since Chomsky (2008), Case-feature of subject DP gets valued as a reflex of  $\phi$ -feature agreement with T. In the labeling framework, the XP-YP configuration of {DP, TP} is labeled with shared  $\phi$ -features.



Given that feature sharing is related to agreement, it is reasonable to suppose a similar agreement mechanism occurs in Japanese V-V compounds. I suggest that the requirement of the infinitive form of V1 is a reflex of feature sharing between {V1, V2}.<sup>3</sup> Hence, the morphological criterion of JLVC is also deduced from the proposed analysis based on the labeling theory.

### 5. Concluding Remarks

This paper investigated the parametric variation of lexical V-V compounds in some languages. After overviewing the properties of JLVC, I pointed out some inadequacies of previous studies in Section 3. In terms of the labeling theory, I tried to explain the (un)productivity of lexical V-V compounds in Section 4. The advantage of the proposed analysis is that the intriguing properties of JLVC are deduced from a single language-specific mechanism, labeling. I believe this paper contributes to the validity of the spirit of the Strong Minimalist Thesis.

### Acknowledgments

I am truly grateful to Nobuaki Nishioka and Masako Maeda for their valuable suggestions and comments. I would also like to thank the anonymous reviewers, the audience of ConSOLE 31, and the editors of this volume for constructive comments and questions. Needless to say, all remaining errors are my own.

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<sup>3</sup> Chomsky's labeling theory assumes that LA, with the feature-sharing strategy, needs a bona fide agreement relation, which requires both uninterpretable/unvalued features and interpretable/valued features. In this paper, I tentatively assume that the feature between two verbs (i.e. [+EA] or [-EA]-features) can also provide the label for  $\alpha$  in the set of  $\{\alpha V1, V2\}$ . Hence, there is a difference between Chomsky's original agreement mechanism and the proposed one in this paper. I leave this issue for future research. I am grateful to an anonymous reviewer for pressing me on this point.

## Abbreviations

1SG	first person singular	NOM	nominative
2SG	second person singular	PASS	passive
3SG	third person singular	PERF	perfective
ACC	accusative	PRES	present
CAUS	causative	PROG	progressive
DECL	declarative	PST	past
HON	honorific	SH	subject honorification
NEG	negation	TOP	topic

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# Feature-mismatches on prenominal adjectives in Standard Arabic

Feras Saeed

In this paper, I propose a new analysis that accounts for the obligatory movement of the noun in the Arabic noun phrase. The analysis is based on the assumption that adjectives in this language can absorb DP-external case and block case assignment on the following noun. To preempt this restriction, the noun must move across the adjective. Crucially though, if the noun's case is assigned in-situ by a DP-internal head, it becomes inactive for movement. I also introduce a new analysis of adjectival agreement in Standard Arabic which can account for full agreement on postnominal adjectives and the absence of agreement on prenominal ones. It also accounts for the unexpected pattern of agreement on adjectives that appear in between two nouns. The new analysis adopts the Upward Agree mechanism proposed in Zeijlstra (2012) and Bjorkman & Zeijlstra (2019).

## 1. Introduction

Adjectives in Standard Arabic (henceforth Arabic) typically follow the noun [NA]. In this position, they inflect for number, gender, definiteness and case, in agreement with the noun. However, this rich adjectival inflection can be restricted in certain contexts, giving rise to several instances of form-meaning mismatches on the adjective. For instance, adjectives in this language can precede the noun [AN]. In this position, the adjective fails to agree with the following noun in any feature, and instead appears in a default form. Adjectives can also appear in between two nouns [N1-A-N2] where they are semantically modifying the second noun [N2]. In this position, the adjective fully agrees with the first noun [N1] and fails to agree with the semantically modified noun [N2] in any feature. In other words, adjectives in Arabic appear to agree with the preceding noun, not the following one. This empirical observation seems to cut across all instances of adjectival agreement in this language, raising questions regarding the right direction and configuration for nominal agreement.

The complex distribution of adjectives in the noun phrase gives rise to the following important question: where does the adjective merge in the nominal skeleton? There is almost a consensus in the generative literature that adjectives merge above the noun (Ritter 1991, 1993; Kayne 1994; Fassi Fehri 1993, 1999; Benmamoun 2000; Cinque 2000, 2005; Bernstein 2001; Carstens 2000, 2008; Shlonsky 2004, 2012; Danon 2011; Landau 2016, a.o.). If this assumption is on the right track, which I assume to be the case, one still needs to explain how we end up with postnominal and prenominal adjectives.

In this paper, I propose a new analysis for the movement of the noun in the Arabic noun phrase which rests on the empirical observation that adjectives in this language may fail to inflect for number, gender and definiteness but not for case. In other words, adjectives must always inflect for case in this language. In addition, unlike other nominal features which appear to be controlled by the noun, case-marking on the adjective can be distinct from the one on the noun. On the basis of these empirical observations, I propose that the noun's movement across the adjective is triggered by case requirements. Also, I account for the different instances of agreement on prenominal and postnominal adjectives and investigate whether these different patterns can receive a unified analysis.

The paper is divided into five sections. In section 2, I briefly examine the distribution of adjectives in the Arabic noun phrase and show the different patterns of agreement on postnominal and prenominal adjectives. In section 3, I introduce the [N1-A-N2] structure where adjectives appear in between two nouns and review the pattern of agreement on these adjectives. I also look at the existing analyses that have been proposed in the recent literature to account for agreement in this structure. In section 4, I propose a new analysis for the movement of the noun in the Arabic noun phrase and introduce a new mechanism for agreement that can account for the different instances of adjectival agreement in this language. In section 5, I draw the main conclusions argued for in this paper.

## 2. Background: the distribution of adjectives in the Arabic noun phrase

Adjectives in Arabic can combine with the noun in different contexts. The canonical position for adjectives in this language is to follow the noun. In this position, the adjective inflects for number, gender, definiteness and case, in agreement with the noun.

- (1) al-fata-at-u                      al-thakiyy-at-u.  
DEF-girl-F.SG-NOM   DEF-smart-F.SG-NOM  
'The smart girl'
- (2) al-fata-at-aani                      al-thakiyy-at-aani.  
DEF-girl-F-DU.NOM   DEF-smart-F-DU.NOM  
'The two smart girls'
- (3) al-fatai-aat-u                      al-thakiyy-aat-u.  
DEF-girl-F.PL-NOM   DEF-smart-F.PL-NOM  
'The smart girls'

Adjectives in Arabic can also precede the noun<sup>1</sup>. In this position, the adjective typically fails to inflect for number, gender and definiteness, and instead appears in a default masculine singular form which happens to lack morphological realization<sup>2</sup>. However, the prenominal adjective must inflect for structural case whereas the following noun is invariably genitive.

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<sup>1</sup> It is argued that prenominal adjectives can trigger a partitive or pseudo-partitive reading of the noun phrase (Fassi Fehri 1999).

<sup>2</sup> The masculine singular is unrealized morphologically on nouns and adjectives in Arabic.

- (4) Saadiq-u                    al-mawadd-at-i.  
true.M.SG-NOM DEF-affection-F.SG-GEN  
'The true affection'
- (5) jadiid-u                    al-sayyaar-aat-i.  
new.M.SG-NOM DEF-car-F.PL-GEN  
'The new car'
- (6) xaaliS-u                    al-shukr-i.  
sincere.M.SG-NOM DEF-thank.M.SG-GEN  
'The sincere thanks'
- (7) qadiim-u                    al-kutub-i.  
old.M.SG-NOM DEF-book.M.PL-GEN  
'The old books'

### 3. Adjectives in between two nouns [N1-A-N2]

#### 3.1. The properties of the [N1-A-N2] structure

Adjectives in the Arabic noun phrase can appear in between two nouns [N1-A-N2]. In this position, the adjective is semantically modifying [N2].

- (8) muallem-uun                    [waasi-uu                    al-maaref-at-i].  
teacher-M.PL.NOM.INDF broad-M.PL.NOM DEF-knowledge-F.SG-GEN  
'Teachers with broad knowledge'
- (9) mujtama-u-n                    [mutaaddid-u                    al-thaqaaf-aat-i].  
society.M.SG-NOM-INDF multiple.M.SG-NOM DEF-culture-F.PL-GEN  
'A multi-cultural society.'
- (10) fatai-aat-u-n                    [hadiith-aat-u                    al-taxarruj-i].  
girl-F.PL-NOM-INDF recent-F.PL-NOM DEF-graduation.M.SG-GEN  
'Recently-graduated girls'

As one would expect, the adjective fails to agree with the following noun [N2], which is typical of prenominal adjectives in Arabic. Agreement with [N2] results in an ungrammatical structure.

- (11) \*muallem-uun                    [al-waasi-at-i                    al-maaref-at-i].  
teacher-M.PL.NOM.INDF DEF-broad-F.SG-GEN DEF-knowledge-F.SG-GEN  
Intended: 'Teachers with broad knowledge'
- (12) \*fatai-aat-u-n                    [al-hadiith-i                    al-taxarruj-i].  
girl-F.PL-NOM-INDF DEF-recent.M.SG-GEN DEF-graduation.M.SG-GEN  
Intended: 'Recently-graduated girls'

However, unexpectedly, the adjective cannot appear in the default masculine singular form which characterises pronominal adjectives.

- (13) \*muallem-uun [waasi-u al-maaref-at-i].  
 teacher-M.PL.NOM.INDF broad.M.SG-NOM DEF-knowledge-F.SG-GEN  
 Intended: ‘Teachers with broad knowledge’
- (14) \*fatai-aat-u-n [hadiith-u al-taxarruj-i].  
 girl-F.PL-NOM-INDF recent.M.SG-NOM DEF-graduation.M.SG-GEN  
 Intended: ‘Recently-graduated girls’

Instead, these adjectives must agree in number, gender, definiteness and case with [N1].

- (15) muallem-uun waasi-uu al-maaref-at-i.  
 teacher-M.PL.NOM.INDF broad-M.PL.NOM DEF-knowledge-F.SG-GEN  
 ‘Teachers with broad knowledge’
- (16) al-muallem-uun al-waasi-uu al-maaref-at-i.  
 DEF-teacher-M.PL.NOM DEF-broad-M.PL.NOM DEF-knowledge-F.SG-GEN  
 ‘The teachers with broad knowledge’
- (17) fatai-aat-u-n hadiith-aat-u al-taxarruj-i.  
 girl-F.PL-NOM-INDF recent-F.PL-NOM DEF-graduation.M.SG-GEN  
 ‘Recently-graduated girls’
- (18) al-fatai-aat-u al-hadiith-aat-u al-taxarruj-i.  
 DEF-girl-F.PL-NOM DEF-recent-F.PL-NOM DEF-graduation.M.SG-GEN  
 ‘The recently-graduated girls’

Though the adjective in this structure can inflect for most nominal markers, including the prefixal definite marker, it cannot inflect for the suffixal indefinite marker.

- (19) \*muallem-u-n waasi-u-n al-maaref-at-i.  
 teacher-M.SG.NOM-INDF broad-M.SG.NOM-INDF DEF-knowledge-F.SG-GEN  
 Intended: ‘A teacher with broad knowledge’
- (20) \*fata-at-u-n hadiith-at-u-n al-taxarruj-i.  
 girl-F.SG-NOM-INDF recent-F.SG-NOM-INDF DEF-graduation.M.SG-GEN  
 Intended: ‘A recently-graduated girl’

This restriction on the marking of the indefinite marker resembles a similar restriction on (in)definiteness on the first noun in the Construct State structure (CS) in Arabic. In CS structures, two nouns are annexed together to form a complex noun phrase that expresses a genitive relation. In this structure, the first noun can inflect for number and gender but cannot inflect for (in)definiteness.

- (21) ibn-at-u                      waziir-i-n.  
daughter-F.SG-NOM   minister.M.SG-GEN-INDF  
'A minister's daughter'
- (22) \*ibn-at-u-n                      waziir-i-n.  
daughter-F.SG-NOM-INDF   minister.M.SG-GEN-INDF  
Intended: 'A minister's daughter'
- (23) ibn-at-u                      al-waziir-i.  
daughter-F.SG-NOM   DEF-minister.M.SG-GEN  
'The minister's daughter'
- (24) \*al-ibn-at-u                      al-waziir-i.  
DEF-daughter-F.SG-NOM   DEF-minister.M.SG-GEN  
Intended: 'The minister's daughter'

Another property of the [N1-A-N2] structure is that [N2] cannot be indefinite especially when [N1] and the adjective are definite.

- (25) ?fatai-aat-u-n                      hadiith-aat-u                      taxarruj-i-n.  
girl-F.PL-NOM-INDF   recent-F.PL-NOM   graduation.M.SG-GEN-INDF  
Intended: 'Recently-graduated girls'
- (26) \*al-fatai-aat-u                      al-hadiith-aat-u                      taxarruj-i-n.  
DEF-girl-F.PL-NOM   DEF-recent-F.PL-NOM   graduation.M.SG-GEN-INDF  
Intended: 'The recently-graduated girls'

It is also to be noted that [N1] in the [N1-A-N2] structure cannot be modified by the adjective in the absence of [N2], which indicates that the adjective is semantically modifying [N2].

- (27) #al-muallem-uun                      al-waasi-uun.  
DEF-teacher-M.PL.NOM   DEF-broad-M.PL.NOM  
# 'The broad teachers'
- (28) #al-madiin-at-u                      al-mutaaddid-at-u.  
DEF-city-F.SG-NOM   DEF-multiple-F.SG-NOM  
# 'The multiple city'
- (29) #al-fatai-aat-u                      al-hadiith-aat-u.  
DEF-girl-F.PL-NOM   DEF-recent-F.PL-NOM  
# 'The recent girls'

On the other hand, [N2] can be modified by the adjective in the absence of [N1].

- (30) al-maaref-at-u                      al-waasi-at-u.  
DEF-knowledge-F.SG-NOM   DEF-broad-F.SG-NOM  
'The broad knowledge'

- (31) al-thaqaaf-aat-u                      al-mutaaddid-at-u.  
 DEF-culture-F.PL-NOM   DEF-multiple-F.SG-NOM  
 ‘The multiple cultures’
- (32) al-taxarruj-u                      al-hadiith-u.  
 DEF-graduation.M.SG-NOM   DEF-recent.M.SG-NOM  
 ‘The recent graduation’

### 3.2. Existing analyses of the [N1-A-N2] structure

Kremers (2003) examines adjectival agreement in Arabic and argues that adjectives in this language are heads that have a clause-like structure with multiple functional projections. He follows Classical Arab grammarians in assuming that adjectives do not agree with the modified noun, but with a covert pronoun ‘*pro*’ which is base-generated inside the adjectival projection and is coreferential with the modified noun (see Wright 1896, II: 284).

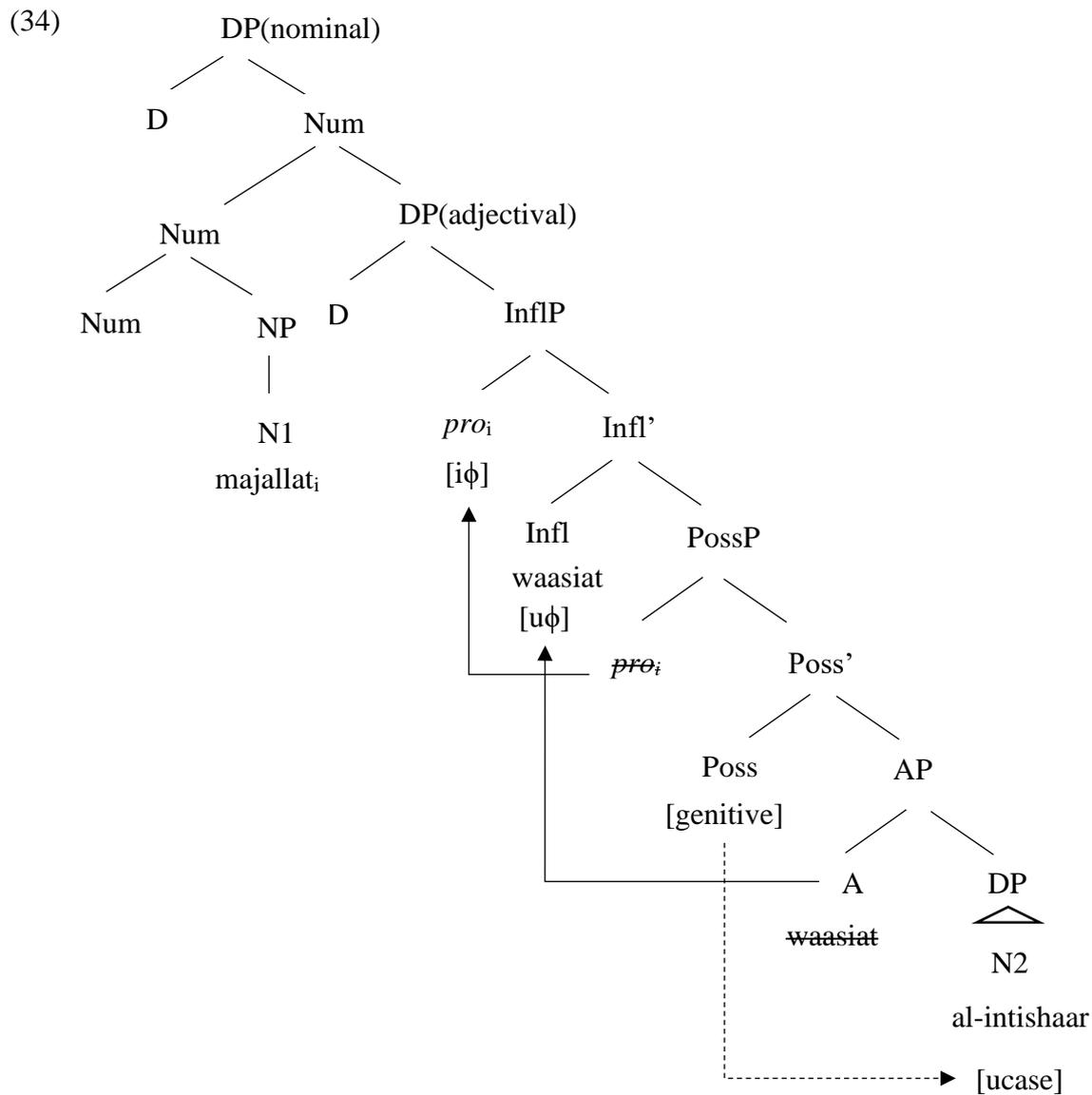
To account for the word order in the [N1-A-N2] structure, he assumes that the adjectival DP<sup>3</sup> (which houses the covert *pro*, the adjectival head and [N2]) is right-adjoined to the nominal DP (which houses [N1]).

Under this analysis, adjectival agreement in the [N1-A-N2] structure is obtained under a spec-head relation when both the covert *pro* and the adjectival head move into the specifier and head positions of a higher functional projection InflP, respectively. Genitive case on [N2] is assigned by the functional head (Poss) (Kremers 2003:117).

- (33) majall-at-u-n                      waasi-at-u                      al-intishaar-i.  
 magazine-F.SG-NOM-INDF   wide-F.SG-NOM   DEF-spreading.M.SG-GEN  
 ‘A magazine with a wide circulation’

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<sup>3</sup> Kremers takes the article on the adjective to be a D head, not an agreement feature.



The main claim in Kremers’ analysis is that the adjective in the [N1-A-N2] structure merges as a predicate head, taking [N2] as its complement. And since predicates typically agree with their subjects, the covert *pro* is assumed to be the subject of predication, hence adjectival agreement with it. Crucially though, the covert *pro* is coreferential with [N1].

However, if the adjective is a predicate, and [N2] is merely a complement of the adjective, one would expect the adjective to be able to modify [N1] in the absence of [N2], contrary to fact.

- (35) al-muallem-uun                      al-waasi-uu                      al-maaref-at-i.  
 DEF-teacher-M.PL.NOM    DEF-broad-M.PL.NOM    DEF-knowledge-F.SG-GEN  
 ‘The teachers with broad knowledge’

- (36) #al-muallem-uun                      al-waasi-uun.  
 DEF-teacher-M.PL.NOM   DEF-broad-M.PL.NOM  
 #‘The broad teachers’

In addition, while it is true that adjectives in Arabic can take complements, there are restrictions on the type of complements adjectives can take. Typically, adjectives can only take PP complements.

- (37) muallem-u-n                      faxuur-u-n                      bi    tullaab-i-hi.  
 teacher.M.SG-NOM-INDF   proud.M.SG-NOM-INDF   with   DEF-students-GEN-his  
 ‘A teacher proud of his students’
- (38) rajul-u-n                      muhttamm-u-n                      bi    al-axbaar-i.  
 man.M.SG-NOM-INDF   interested.M.SG-NOM-INDF   with   DEF-news.M.PL-GEN  
 ‘A man interested in the news’

In fact, the absence of the preposition in the examples above renders them ungrammatical, indicating that adjectives cannot take a DP complement.

- (39) \*muallem-u-n                      faxuur-u-n                      tullaab-i-hi.  
 teacher.M.SG-NOM-INDF   proud.M.SG-NOM-INDF   DEF-students-GEN-his  
 Intended: ‘A teacher proud of his students’
- (40) \*rajul-u-n                      muhttamm-u-n                      al-axbaar-i.  
 man.M.SG-NOM-INDF   interested.M.SG-NOM-INDF   DEF-news.M.PL-GEN  
 Intended: ‘A man interested in news’

It is also to be noted that while the adjective in the [N1-A-N2] structure cannot inflect for the suffixal indefinite article with [N1], adjectives that are followed by PP complements can.

- (41) muallem-u-n                      waasi-u                      al-maaref-at-i.  
 teacher.M.SG-NOM-INDF   broad.M.SG-NOM   DEF-knowledge-F.SG-GEN  
 ‘A teacher with broad knowledge’
- (42) \*muallem-u-n                      waasi-u-n                      al-maaref-at-i.  
 teacher.M.SG-NOM-INDF   broad.M.SG-NOM-INDF   DEF-knowledge-F.SG-GEN  
 Intended: ‘A teacher with broad knowledge’
- (43) muallem-u-n                      faxuur-u-n                      bi    tullaab-i-hi.  
 teacher.M.SG-NOM-INDF   proud.M.SG-NOM-INDF   with   DEF-students-GEN-his  
 ‘A teacher proud of his students’

Moreover, if [N2] were a complement of the adjective, it could in principle be modified by a postnominal adjective, contrary to fact.

- (44) sayyaar-at-u-n                      jamiil-at-u                      al-lawn-i.  
 car-F.SG-NOM-INDF   beautiful-F.SG-NOM   DEF-colour.M.SG-GEN

‘A car with a beautiful colour’

- (45) \*sayyaar-at-u-n            jamiil-at-u            al-lawn-I            al-azraq-i.  
 car-F.SG-NOM-INDF beautiful-F.SG-NOM DEF-colour.M.SG-GEN DEF-  
 blue.M.SG-GEN  
 Intended: ‘A car with a beautiful blue colour’

Thus, it appears that Kremers’ claim that [N2] is a complement of the adjective in the [N1-A-N2] structure is dubious, at best.

Even if one entertains the assumption that there is a variation among predicates where some take PP complements and others take DP complements, the claim that the adjective in the [N1-A-N2] structure is a predicate is unwarranted. First, predicative adjectives in this language do not inflect for the definite article.

- (46) al-walad-u            mariiD-u-n.  
 DEF-boy.M.SG-NOM sick.M.SG-NOM-INDF  
 ‘The boy is sick.’
- (47) \*al-walad-u            al-mariiD-u.  
 DEF-boy.M.SG-NOM DEF-sick.M.SG-NOM  
 Intended: ‘The boy is sick.’

However, the adjective in the [N1-A-N2] structure must inflect for the definite article in agreement with [N1].

- (48) al-fatai-aat-u            al-hadiith-aat-u            al-taxarruj-i.  
 DEF-girl-F.PL-NOM DEF-recent-F.PL-NOM DEF-graduation.M.SG-GEN  
 ‘The recently-graduated girls’
- (49) \*al-fatai-aat-u            hadiith-aat-u            al-taxarruj-i.  
 DEF-girl-F.PL-NOM recent-F.PL-NOM DEF-graduation.M.SG-GEN  
 Intended: ‘The recently-graduated girls’

Also, predicative adjectives inflect for the indefinite marker:

- (50) al-walad-u            mariiD-u-n.  
 DEF-boy.M.SG-NOM sick.M.SG-NOM-INDF  
 ‘The boy is sick.’
- (51) \*al-walad-u            mariiD-u.  
 DEF-boy.M.SG-NOM sick.M.SG-NOM  
 Intended: ‘The boy is sick.’

However, the adjective in the [N1-A-N2] structure cannot inflect for the indefinite marker.

- (52) fatai-aat-u-n            hadiith-aat-u            al-taxarruj-i.  
 girl-F.PL-NOM-INDF recent-F.PL-NOM DEF-graduation.M.SG-GEN

‘Recently-graduated girls’

- (53) \*fatai-aat-u-n                      hadiith-aat-u-n                      al-taxarruj-i.  
 girl-F.PL-NOM-INDF    recent-F.PL-NOM-INDF    DEF-graduation.M.SG-GEN  
 Intended: ‘Recently-graduated girls’

Moreover, predicative adjectives do not agree with the subject of predication in case.

- (54) inna            al-walad-a                      mariiD-u-n.  
 COMP    DEF-boy.M.SG-ACC    sick.M.SG-NOM-INDF  
 ‘Indeed, the boy is sick.’

- (55) \*inna            al-walad-a                      mariiD-a-n.  
 COMP    DEF-boy.M.SG-ACC    sick.M.SG-ACC-INDF  
 Intended: ‘Indeed, the boy is sick.’

- (56) kaan-a            al-walad-u                      mariiD-a-n.  
 was-3.M.SG    DEF-boy.M.SG-NOM    sick.M.SG-ACC-INDF  
 ‘The boy was sick.’

- (57) \*kaan-a            al-walad-u                      mariiD-u-n.  
 was-3.M.SG    DEF-boy.M.SG-NOM    sick.M.SG-NOM-INDF  
 Intended: ‘The boy was sick.’

However, the adjective in the [N1-A-N2] structure must agree with [N1] in case, indicating that the adjective is attributive in nature.

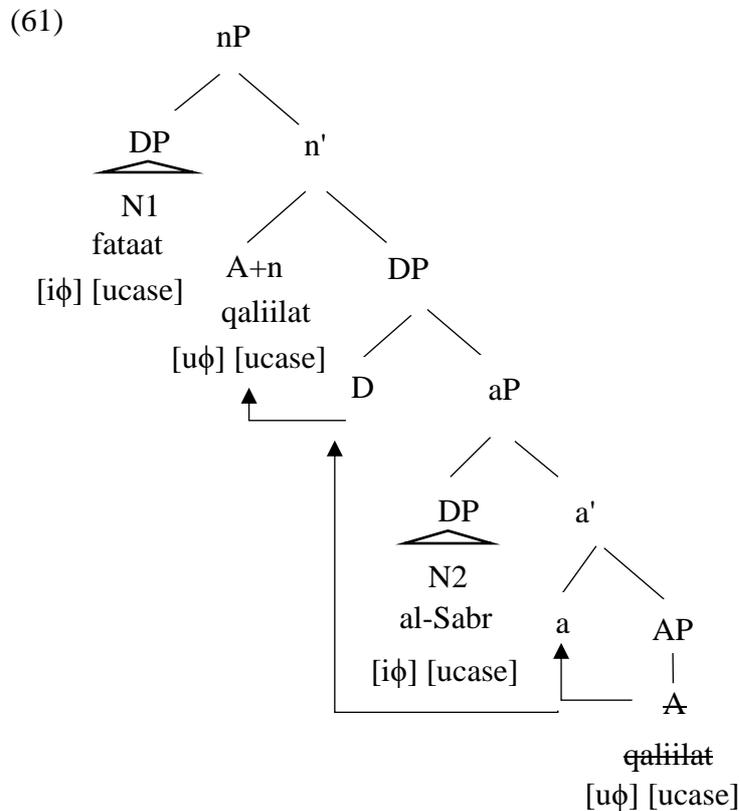
- (58) mujtama-u-n                      mutaaddid-u                      al-thaqaaf-aat-i.  
 society.M.SG-NOM-INDF    multiple.M.SG-NOM    DEF-culture-F.PL-GEN  
 ‘A multi-cultural society’

- (59) mujtama-a-n                      mutaaddid-a                      al-thaqaaf-aat-i.  
 society.M.SG-ACC-INDF    multiple.M.SG-ACC    DEF-culture-F.PL-GEN  
 ‘A multi-cultural society’

Another recent analysis of the [N1-A-N2] structure is proposed in Assiri (2011). Under this analysis, the adjective and [N2] form an adjectival Construct State (AC). This is motivated by the presence of some properties in the [N1-A-N2] structure which are similar to the ones in the nominal Construct State structure (CS). These include the inability of the first element (here the adjective) to inflect for the indefinite marker and the obligatory genitive case on the following noun [N2].

Moreover, he assumes that the structure of [N1-A-N2] involves two phasal projections: a nominal phase nP (which houses [N1]) and an adjectival phase aP (i.e. the adjectival Construct State which houses the adjective and [N2]). Under this analysis, the nominal phase takes the adjectival phase as a complement. As for the two nouns involved, he assumes that [N1] is base-generated in the specifier of the nominal phase nP and [N2] in the specifier of the adjectival phase aP (Assiri 2011:316).

- (60) fata-at-a-n                      qaliil-at-a                      al-Sabr-i.  
 girl-F.SG-ACC-INDF    little-F.SG-ACC    DEF-patience.M.SG-GEN  
 ‘A girl with little patience’



(Adapted from Assiri (2011:317))

In order to derive the right word order as well as the agreement pattern in this structure, he argues that the features on the adjective could in principle be valued, under Agree, either by the head of the adjectival phase aP or by the closest noun [N2] in spec-aP. However, he claims that the head of the adjectival phase is defective and lacks  $\phi$ -features, by sheer stipulation, therefore it cannot value the features on the adjective. As for the closest noun [N2], he claims that adjectival agreement with this noun is somehow ‘delayed’, allowing the adjective to move across [N2] without agreeing with it. Therefore, in order for the adjective to value its features, it undergoes successive movements into the nominal phase nP where its features are valued against [N1], deriving the internominal position of the adjective in the [N1-A-N2] structure. Furthermore, he assumes that genitive case on [N2] is assigned by the head of the nominal phase nP.

Assiri’s assumption that the adjective and [N2] constitute a phase, independent from [N1], rests on the observation that the adjective appears to form an adjectival Construct State (AC) with [N2], given the restriction on indefiniteness marking on the adjective and the presence of a genitive case marker on [N2], which are typical properties of nominal CS structures. However, while it is true that the [A-N2] combination (the adjective and [N2]) has some of the properties of the nominal CS structure, it is difficult to extend the structure of the nominal CS to the [A-N2] combination. First, while the first element in the nominal CS structure can never

be definite, the first element in the [A-N2] combination must be definite when preceded by a definite noun.

- (62) daar-u                      al-rajul-i.                      (CS)  
house.F.SG-NOM DEF-man.M.SG-GEN  
‘The man’s house’
- (63) \*al-daar-u                      al-rajul-i.                      (CS)  
DEF-house.F.SG-NOM DEF-man.M.SG-GEN  
Intended: ‘The man’s house’
- (64) mujtama-u-n                      [mutaaddid-u                      al-thaqaaf-aat-i].  
society.M.SG-NOM-INDF multiple.M.SG-NOM DEF-culture-F.PL-GEN  
‘A multi-cultural society’
- (65) al-mujtama-u                      [al-mutaaddid-u                      al-thaqaaf-aat-i].  
DEF-society.M.SG-NOM DEF-multiple.M.SG-NOM DEF-culture-F.PL-GEN  
‘The multi-cultural society’

In addition, while [N2] in a nominal CS structure can be indefinite, [N2] in the [N1-A-N2] structure cannot be indefinite.

- (66) daar-u                      rajul-i-n.                      (CS)  
house.F.SG-NOM man.M.SG-GEN-INDF  
‘A man’s house’
- (67) \*mujtama-u-n                      [mutaaddid-u                      thaqaaf-aat-i-n].  
society.M.SG-NOM-INDF multiple.M.SG-NOM culture-F.PL-GEN-INDF  
Intended: ‘A multi-cultural society’

Another problematic issue in Assiri’s account is the proposed agreement configuration in the [N1-A-N2] structure. First, he extends the nominal Construct State structure [N1-N2], where [N1] is merged first and then moves across [N2] to a phrase-initial position for definiteness (see Ritter 1991), to the [A-N2] combination. Therefore, he proposes that the adjective is merged first inside the adjectival phase aP and then moves across [N2] into a higher phase. In order to motivate this movement, he assumes that the head of the adjectival phase is defective and lacks  $\phi$ -features, triggering the movement of the adjective. This appears to be an ad hoc assumption and has no independent motivation.

Second, he assumes that even though the adjective can in principle value its features against [N2] in-situ, this agreement relation is ‘delayed’. Consequently, the adjective vacates its phase and moves into the higher nominal phase where it values its features against [N1]. However, no explanation is provided for why adjectival agreement with [N2] is ‘delayed’. It suffices to say that this assumption lacks any theoretical or empirical motivation.

Furthermore, he assumes that the head of the nominal phase assigns genitive case to [N2]. However, if the adjective and [N2] form an adjectival Construct State, as has been assumed by Assiri, it is not clear why genitive case is not assigned by a phase-internal head in parallel with the nominal Construct State in which it is the  $D_{gen}$  head that assigns genitive (see Ritter 1991).

To summarise, the approaches reviewed in this section appear to be incapable of capturing all the properties of the [N1-A-N2] structure. Kremers' main assumption is that the adjective in this structure is a predicate that agrees with a covert pronominal subject coreferential with [N1]. Agreement with [N2] is excluded under the assumption that [N2] is a complement of the adjective. However, it is shown here that the adjective cannot independently modify [N1] in the absence of [N2]. Moreover, the adjective appears to lack the properties of predicative adjectives. For instance, while predicative adjectives must inflect for the indefinite marker, the adjective in [N1-A-N2] can never inflect for this marker. Also, while predicative adjectives cannot inflect for the definite marker, the adjective in the [N1-A-N2] structure must inflect for this marker in agreement with [N1]. Moreover, while there is no agreement in case between the predicative adjective and its subject, the adjective in the [N1-A-N2] structure must agree in case with [N1]. It is also shown that an adjective in Arabic can take a complement but such a complement is necessarily a PP and not a DP, casting doubt on the assumption that [N2] in the [N1-A-N2] structure is a complement of the adjective.

On the other hand, Assiri's analysis is based on the assumption that the adjective and [N2] in the [N1-A-N2] structure constitute an adjectival construct state similar to the nominal construct state. He also assumes that although the adjective is structurally related to [N2], agreement with this noun is somehow 'delayed', allowing the adjective to move across [N2] into the local domain of [N1] which it agrees with. As for the first assumption, it is shown here that the [N1-A-N2] structure differs from the nominal Construct State structure (CS) in two main respects. First, while the adjective in [N1-A-N2] can inflect for the definite/indefinite marker, the first noun in a CS structure can never inflect for (in)definiteness. Second, while [N2] in the [N1-A-N2] structure is typically definite, [N2] in the CS structure can be definite or indefinite. Assiri does not provide an explanation of these main differences between the two structures. As for the second assumption, it is clear that the claim that agreement between the adjective and [N2] in the [N1-A-N2] structure is 'delayed' is dubious and lacks any independent motivation.

Finally, the agreement configurations proposed in these two approaches cannot be extended to the agreement patterns found with prenominal and postnominal adjectives. Kremers assumes that the adjective always agrees with a covert pronominal internal to the adjectival phrase, however this approach fails to account for the lack of agreement inflection on prenominal adjectives. On the other hand, Assiri assumes that agreement in the noun phrase takes place under downward Agree (Chomsky 2000), however it is not clear how the adjective (the Probe) in the [N1-A-N2] structure can value its features against [N1] (the Goal) under downward agreement. The goal [N1] is structurally higher than the adjective and the latter does not c-command [N1] in order for Agree to take place. For all these reasons, an account that can unify all instances of adjectival agreement is more desirable.

#### *4. A unified analysis of adjectival agreement*

##### *4.1. Morphological analyses of adjectival agreement*

The assumption that features in the noun phrase originate on different heads is proposed in Ritter (1991) who argues that while gender is a feature on the noun, number resides on a functional head Num above NP. Since then, different approaches have been proposed to account for the empirical fact that the noun and other modifiers end up bearing the same feature/value (Ritter 1991, 1993; Fassi Fehri 1993, 1999; Benmamoun 2000; Cinque 2000, 2005; Bernstein

2001; Carstens 2000, 2008; Kremers 2003, Shlonsky 2004, 2012; Assiri 2011, Danon 2011; Ouhalla 2013, Landau 2016, among others). At the heart of all these approaches is the premise that it is more desirable to extend the existing mechanisms and relations proposed for clausal agreement to nominal agreement. One of the recent analyses of adjectival agreement that attempt to unify both types of agreement is Danon's (2011) who extends the clausal mechanism of feature-sharing and feature-copying to the nominal domain. He argues that features in the noun phrase are instantiated on the DP node by way of Agree (more specifically, the feature-sharing version of Agree advocated by Frampton & Gutmann 2006, Pesetsky & Torrego 2007). He argues that Agree takes place between Num and N, resulting in both heads sharing the features [NUMBER] and [GENDER]. Similarly, Agree takes place between D and Num, resulting in all three heads (D/Num/N) bearing the features [NUMBER], [GENDER] and [PERSON] where the value for each feature is copied from the head which has a value for it and shared by the other heads. When the noun is modified by an adjective, it is assumed that the features on the adjective receive values in the same manner, through feature-sharing and feature-copying.

Other recent analyses of adjectival agreement, however, have argued in favour of divorcing nominal agreement (concord) from clausal agreement (see Norris 2014, Baier 2015, Winchester 2019, Ackema & Neeleman 2020, among many others). One of these analyses is Norris' (2014) who investigates nominal agreement in Estonian and argues that this type of agreement cannot be accounted for under Agree. He points out that nominal agreement is configurationally different from clausal agreement. For instance, he observes that, unlike nominal agreement, clausal agreement is only marked in one position, i.e. on the verb. Also, he notes that nominal modifiers have been argued to occupy different syntactic positions, unlike the single specifier position assumed for the subject in clausal agreement. In addition, he argues that while clausal agreement is a relationship between two extended projections, nominal agreement is realized within the same extended projection. Moreover, he points out that case assignment is associated only with clausal agreement.

Norris also notes that nominal modifiers can inflect for features that originate in multiple positions in the DP. For example, while gender is assumed to be on N, number is argued to be on a higher Num head and case is taken to be a property of the entire DP and can be assigned from outside the noun phrase. Therefore, he argues that nominal agreement is morphological, in the sense that it is not mandated by a syntactic relation between a probe and a goal.

To account for nominal agreement, he assumes that the highest functional head in the noun phrase, called K, has unvalued number, gender and case features. This head searches for values for these features from the different heads in its domain and gets values for number and gender from Num and N, respectively. Case, however, is valued from outside the noun phrase. This process of feature collection, according to Norris, occurs in narrow syntax. At PF, heads that show agreement will trigger the insertion of an Agr node and the values stored on the highest functional head are copied into these Agr nodes.

However, it is unclear how can one extend this morphological approach to adjectival agreement in Arabic. For example, this approach cannot explain why postnominal adjectives fully agree with the noun while prenominal adjectives fail to inflect for most nominal features.

- (68) al-mawadd-at-u                      al-Saadiq-at-u.    [NA]  
 DEF-affection-F.SG-NOM    DEF-true-F.SG-NOM  
 'The true affection'

- (69) Saadiq-u al-mawadd-at-i. [AN]  
 true-NOM DEF-affection-F.SG-GEN  
 ‘The true affection’

It is to be noted that prenominal adjectives must inflect for structural case while the following noun is invariably genitive. If case is valued only on one place, i.e. the highest head K as Norris suggests, it is unclear how we end up with two different case markers in the same noun phrase. Also, the morphological approach predicts that the adjective should in principle receive values for its number and gender features from the head K, contrary to fact. The morphological approach also fails to capture the obvious correlation between these feature-mismatches and the word order alternation between the noun and the adjective.

In addition, it is difficult to extend the morphological approach to more complex cases of adjectival agreement in Arabic where the adjective combines with two nouns. In the [N1-A-N2] structure, the adjective fails to agree with the semantically modified noun in any feature and instead agrees with [N1] in all features.

- (70) muallem-uun [waasi-uu al-maaref-at-i].  
 teacher-M.PL.NOM.INDF broad-M.PL.NOM DEF-knowledge-F.SG-GEN  
 ‘Teachers with broad knowledge’

Given Norris analysis, a structural relation like c-command does not play a role in nominal agreement, consequently word order alternations between the noun and the adjective should not affect the agreement relation. If this is true, one expects the adjective in the example above to agree with the semantically modified noun [N2], contrary to fact.

It is to be noted that the adjective and [N2] are structurally and semantically related. This is supported by several empirical observations. First, the adjective is semantically modifying [N2] not [N1]. In fact, the adjective in the example above cannot follow [N1] in the absence of [N2]:

- (71) #muallem-uun waasi-uun  
 teacher-M.PL.NOM.INDF broad-M.PL.NOM  
 #‘Broad teachers’

Second, [N2] is necessarily genitive and this can only be obtained when a modifier precedes the noun.

- (72) jadiid-u al-kutub-i.  
 new-NOM DEF-book.M.PL-GEN  
 ‘The new books’

- (73) xams-at-u al-kutub-i.  
 five-F-NOM DEF-book.M.PL-GEN  
 ‘The five books’

Third, the inability of the adjective to inflect for the indefinite marker indicates that it is structurally related to the following genitive noun since modifiers that precede the genitive noun in this language can never inflect for the indefinite marker.

- (74) \*jadiid-u-n            al-kutub-i.  
 new-NOM-INDF DEF-book.M.PL-GEN  
 Intended: ‘New books’
- (75) \*xams-at-u-n            al-kutub-i.  
 five-F-NOM-INDF DEF-book.M.PL-GEN  
 Intended: ‘Five books’

Now, given these empirical observations which show the structural interrelatedness between the adjective and [N2] in the [N1-A-N2] structure, one would expect that, in case there are two K heads corresponding to the presence of two nouns, the K head above [N2] should in principle be able to value the features on the Agr node that is inserted above the adjective, contrary to fact. On the other hand, if there is only one K head in the noun phrase, it is unclear why this functional head chooses to collect/copy the values on [N1] but not [N2]. Moreover, how do we account for the empirical fact that there are two different case markers in the noun phrase, nominative/accusative on [N1] and the adjective, and genitive on [N2]. Furthermore, the morphological analysis cannot explain the inability of the adjective to inflect for the indefinite marker in agreement with [N1]. It is to be noted that adjectives that are semantically modifying [N1] must inflect for the indefinite marker in agreement with it.

- (76) rajul-u-n            ajuuz-u-n            waasi-u            al-maaref-at-i  
 man-NOM-INDF old-NOM-INDF broad-NOM DEF-knowledge-F-GEN  
 ‘An old man with broad knowledge’
- (77) \*rajul-u-n            ajuuz-u-n            waasi-u-n            al-maaref-at-i  
 man-NOM-INDF old-NOM-INDF broad-NOM-INDF DEF-knowledge-F-GEN  
 ‘An old man with broad knowledge’

Thus, it appears that the different patterns of adjectival agreement in Arabic are hard to explain under the morphological analysis. In the next section, I introduce an analysis that can account for the different instances of adjectival agreement in this language and unifies this type of agreement with clausal agreement.

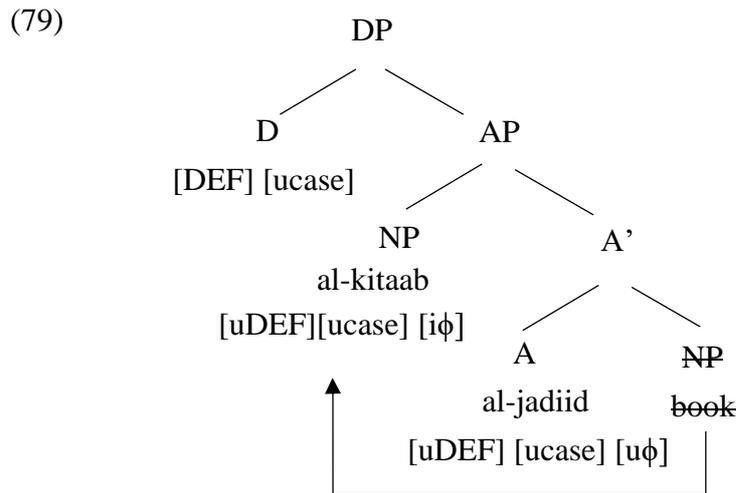
#### 4.2. Deriving postnominal adjectives

The analysis I develop in this section is based on the empirical observation that while adjectives may fail to inflect for number, gender and definiteness, depending on their distribution vis-à-vis the noun, they invariably inflect for case whether they appear postnominally, prenominally or internominally.

On this basis, and given the assumption that adjectives in Semitic are base-generated to the left of the noun (see Ritter 1991, Borer 1999, Fassi Fehri 1999, Benmamoun 2000, Shlonsky 2004, among others), I argue that the movement of the noun across the adjective, in order to derive the canonical postnominal position of the adjective in the Arabic noun phrase, is triggered by case requirement on the noun. In particular, I argue that since adjectives always carry an unvalued case feature [ucase], they can absorb DP-external case and block case assignment on the noun. In order to preempt this restriction, the noun must move across the

adjective into a higher position where it can receive DP-external case. I follow the standard assumption that it is the head D which is assigned external case and subsequently the noun checks its case against D (Danon 2011).

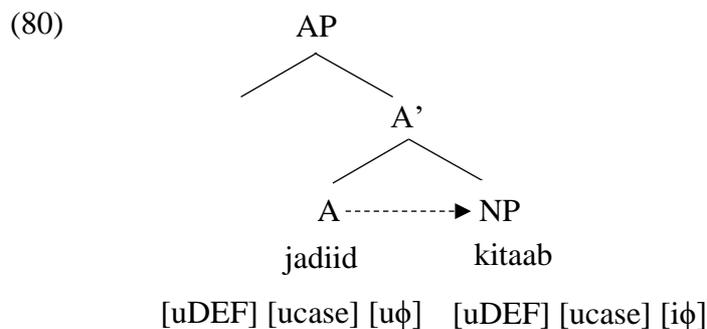
- (78) al-kitaab-u                      al-jadiid-u.  
 DEF-book.M.SG-NOM   DEF-new.M.SG-NOM  
 ‘The new book’



I also follow the assumption that the (in)definiteness marker in Semitic is not a D head but rather a formal feature on the noun (Borer 1999). Crucially, the noun receives value for its (in)definiteness feature from the head D which is specified for this feature. At this point, the unvalued features on the adjective, i.e.  $\phi$ -features, (in)definiteness and case, can receive values through agreement with the noun.

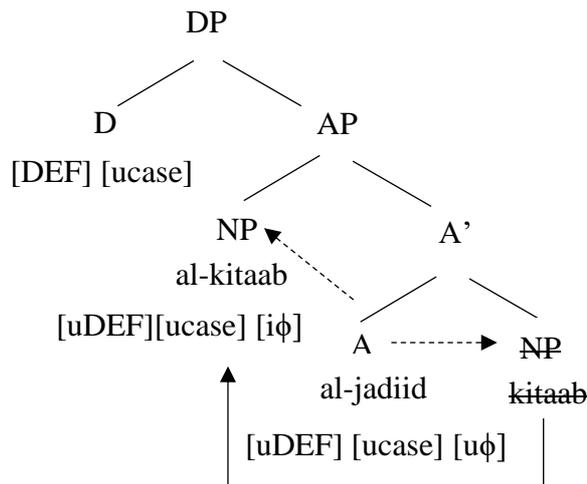
If this assumption is on the right track, one needs to address the issue of the direction of agreement in the noun phrase. In the structure above, it is not clear whether adjectival agreement takes place prior to or after the movement of the noun.

If full agreement on the adjective takes place in-situ prior to the movement of the noun into spec-AP and the subsequent merge of the head D, one needs to explain how the adjective can value its definiteness [uDEF] & case [ucase] features against the noun, given that the values for these two features will be introduced later in the derivation by the head D and are not valued yet on the noun in-situ.



On the other hand, if one assumes that in-situ agreement with the noun can only value [ $\phi$ -features] on the adjective, while [uDEF] & [ucase] features are valued through a second application of Agree after the movement of the noun across the adjective, we would end up with two agreement mechanisms: downward Agree for [ $\phi$ -features] and upward Agree for [uDEF] & [ucase] features. If this is the case, one wonders why prenominal adjectives cannot agree in [ $\phi$ -features] with the noun through downward Agree. Nevertheless, this configuration is still in line with my assumption that the noun needs to move across the adjective for case.

(81)



Alternatively, if one assumes that [ $\phi$ -features] are valued against the noun in-situ and [uDEF] & [ucase] features are valued against a higher head, e.g. the head D, this again would result in two agreement mechanisms, downward probe to the noun for [ $\phi$ -features] and upward probe to D for [uDEF] & [ucase] features.

This shows that adjectival agreement in Arabic is hard to explain in a unified fashion unless further stipulations are made in order to account for the variations in adjectival inflection in the different contexts we have reviewed so far. In sub-section 4.4, I introduce a new mechanism for adjectival agreement in Arabic which can successfully account for all variations.

Now, if the analysis proposed for the derivation of postnominal adjectives is on the right track, it would predict that in contexts where the noun's case is assigned in-situ, the noun should become inactive for movement. It would also predict that in the absence of the noun's movement across the adjective, the latter should be able to absorb DP-external case. In fact, both predictions are borne out in the context of prenominal adjectives, to which I turn next.

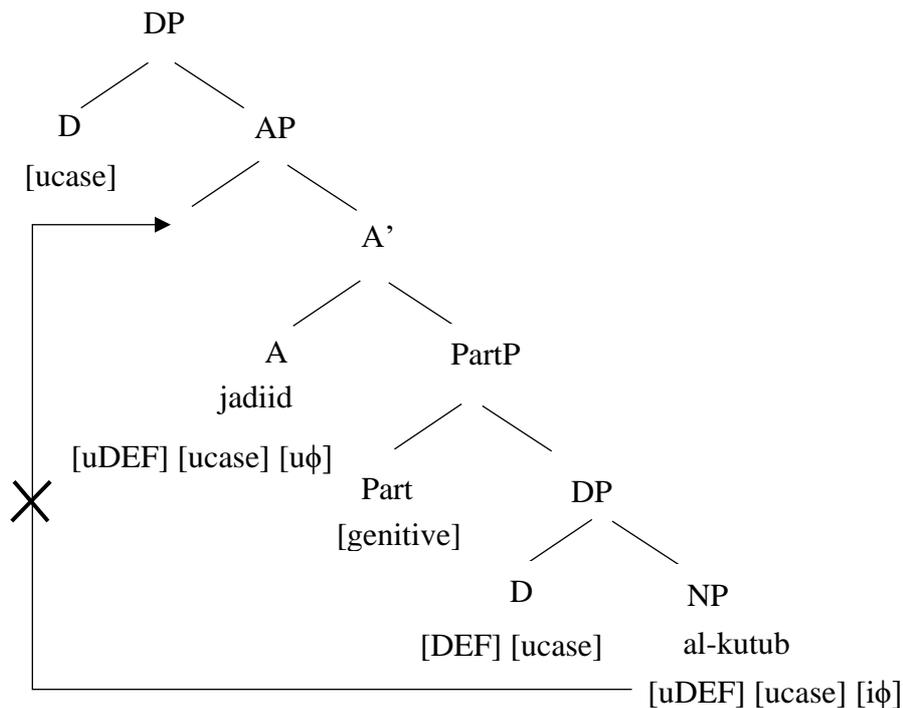
### 4.3. Deriving prenominal adjectives

The most distinctive property of prenominal adjectives is that they obligatorily inflect for DP-external case while the following noun is invariably case-marked genitive.

- (82) *jadiid-u*                      *al-kutub-i*.  
 new.M.SG-NOM              DEF-book.M.PL-GEN  
 'The new books'

Therefore, I argue that in the context of prenominal adjectives the noun becomes inactive and cannot move across the adjective as a result of the assignment of its case in-situ. I claim that genitive is a lexical case assigned on the noun by a partitive head ‘Part’. It has been argued that genitive case can signal a partitive relation in the Arabic noun phrase and that the prenominal adjective and the following noun can express such a relation (see Fassi Fehri 1999). It has also been argued that the partitive relation is a semantic value of genitive case (Tanase-Dogaru 2007).

(83)



As predicted, the assignment of the noun’s case in-situ makes it inactive for further movement. I assume that the embedded D is assigned genitive by Part and subsequently the noun values its case against D. The (in)definiteness feature on the noun is also valued in-situ against the embedded D which is specified for this feature.

Another prediction that is borne out is the empirical fact that the prenominal adjectives can absorb structural case. The adjective in the structure above appears with a structural case while the following noun is genitive. I assume that the prenominal adjective values its case feature against matrix D.

Given that prenominal adjectives cannot inflect for (in)definiteness, I follow the standard assumption that matrix D in genitive phrases in Semitic is unspecified for (in)definiteness (Ritter 1991, Borer 1999, Fassi Fehri 1999, Shlonsky 2004, among others). However, one still needs to explain how this feature is valued on the prenominal adjective. I assume that in this case the adjective receives a default value, which I take to be the suffixal indefinite marker. But the problematic issue here is why the indefinite marker doesn’t appear on the adjective.

- (84) \*jadiid-u-n                                      al-kutub-i.  
           new.M.SG-NOM-INDF      DEF-book.M.PL-GEN  
           Intended: ‘The new books’

It is to be noted that the failure to inflect for the indefinite marker is not an anomaly exclusive to prenominal adjectives. In fact, the (in)definite marker can never appear on any lexical element that precedes a genitive noun in this language.

- (85) xams-at-u            al-kutub-i.  
 five-F-NOM    DEF-book.M.PL-GEN  
 ‘The five books’
- (86) \*xams-at-u-n            al-kutub-i.  
 five-F-NOM-INDF    DEF-book.M.PL-GEN  
 Intended: ‘The five books’
- (87) siir-u                    al-kutub-i.  
 price.M.SG-NOM    DEF-book.M.PL-GEN  
 ‘The price of the books’
- (88) \*siir-u-n                    al-kutub-i.  
 price.M.SG-NOM-INDF    DEF-book.M.PL-GEN  
 Intended: ‘The price of the books’

There have been some attempts in the literature to account for this phenomenon which mainly involve word/phrase boundary rules pertaining to the prosodic structure of the genitive phrase (see Borer 1999, Siloni 2003, Benmamoun & Lorimor 2006, Ouhalla 2019). The proposed accounts, however, are not conclusive and the issue remains an open question in need of further investigation.

Another anomaly with the prenominal adjective in the structure above is that it fails to agree with the following noun in any feature. Given that postnominal adjectives always agree with the noun, one can assume that the failure of the prenominal adjective to agree with the noun is a consequence of the absence of the noun’s movement, and this in turn may indicate that the adjective can only agree with a preceding noun.

Hence, in the absence of the right configuration for adjectival agreement, I assume that the adjective receives default masculine singular value for its  $\phi$ -features, as a last resort. It is to be noted that the masculine singular feature lacks morphological realisation in this language.

It remains, however, to address the issue of whether adjectival agreement takes place under downward Agree, upward Agree or both. In the next sub-section, I examine the agreement pattern on adjectives that appear in between two nouns and introduce an agreement mechanism that accounts for these variations.

#### 4.4. Deriving the [N1-A-N2] structure

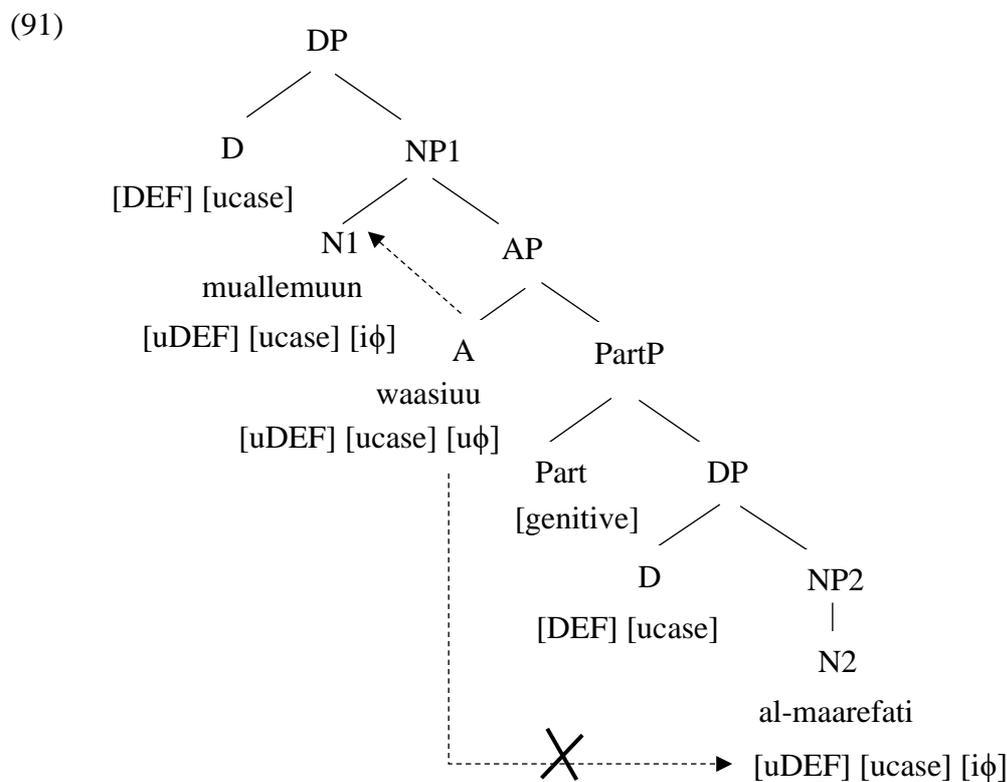
When adjectives appear in between two nouns [N1-A-N2], they agree with [N1] in all features and fail to agree with the semantically modified noun [N2] in any feature.

- (89) muallem-uun                    waasi-uu                    al-maaref-at-i.  
 teacher-M.PL.NOM.INDF    broad-M.PL.NOM    DEF-knowledge-F.SG-GEN  
 ‘Teachers with broad knowledge’

- (90) \*muallem-uun                      al-waasi-at-i                      al-maaref-at-i.  
 teacher-M.PL.NOM.INDF    DEF-broad-F.SG-GEN    DEF-knowledge-F.SG-GEN  
 Intended: ‘Teachers with broad knowledge’

In the grammatical example above, the adjective ‘broad’ is prenominal to the semantically modified noun [N2]. As has already been argued, I assume that the failure of [N2] to move across the adjective is a consequence of the assignment of the noun’s case in-situ by the genitive head (Part).

In the typical case, as with prenominal adjectives, the adjective ends up receiving a DP-external (structural) case and its  $\phi$ -features receive default values, as a last resort. However, I argue that if a higher nominal [N1] merges in the structure, as in the case of the [N1-A-N2] structure, the features on the merged noun [N1] become accessible to the prenominal adjective. As a result, the adjective agrees with [N1] in all features<sup>4</sup>.



In the structure above, the adjective (the Probe) fails to Agree with [N2] which it c-commands. Instead, the adjective must agree with [N1] which it doesn’t c-command at any point in the derivation. This suggests that adjectival agreement may not take place under downward Agree. What appears to be the case is that adjectival agreement can only take place when the noun c-commands the adjective, and not in the opposite direction. This configuration is compatible

<sup>4</sup> It is to be noted that while the adjective must inflect for the definite marker in agreement with [N1] when it is definite, it fails to inflect for the indefinite marker when [N1] is indefinite. This issue remains an open question in need of further investigation.

with the Upward Agree mechanism in which the GOAL c-commands the PROBE (Zeijlstra 2012; Bjorkman & Zeijlstra 2019).

Hence, I argue that adjectival agreement in the Arabic noun phrase takes place in an Upward Agree configuration. When the noun moves across the adjective, triggered by case requirements, it lands in a configuration compatible with the Upward Agree mechanism, allowing the adjective to probe the noun upwardly and agree with it. On the other hand, when the noun's case is assigned in-situ, it becomes inactive for movement. The failure of the noun to move across the adjective and to be in the right configuration for upward Agree to take place forces the adjective to receive default values, as a last resort. However, if a higher nominal merges in the structure, as in the case of the [N1-A-N2] structure, the features of the merged noun [N1] become accessible to the prenominal adjective. In this position, the adjective can probe [N1] and value its features against it under Upward Agree.

### 5. Conclusion

Adjectives in the Arabic noun phrase can combine with the noun in different contexts: postnominally, prenominally and internominally. Accordingly, adjectives display different patterns of agreement with the noun. To account for these inflectional variations, different analyses have been proposed in the literature. In this paper, I propose a unified analysis for adjectival agreement in the Arabic noun phrase which can account for these variations. The proposed analysis rests on the empirical observation that despite the variations in the form of the adjective with regard to whether a particular inflectional marker is present or not, the adjective consistently inflects for case in all contexts. On this basis, I argue that adjectives in this language, by virtue of always having an unvalued case feature, can absorb DP-external case and block case assignment on the following noun. To preempt this restriction, the noun moves across the adjective, deriving the canonical postnominal position of the adjective in this language. This necessarily predicts that in contexts where the noun's case is assigned in-situ, it becomes inactive for movement.

It is also shown that adjectives in this language cannot agree with the following noun. Instead, the adjective appears in a default form when not preceded by a noun. On the other hand, adjectives consistently agree with preceding nouns. This agreement configuration is compatible with the Upward Agree mechanism (Zeijlstra 2012; Bjorkman & Zeijlstra 2019) in which it is the Goal that c-commands the Probe. The upshot of this investigation is that the different patterns of adjectival agreement are the result of constrained agreement domains.

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## Abbreviations

3	third person	GEN	genitive
ACC	accusative	INDF	indefinite
COMP	complementiser	M	masculine
DEF	definite	NOM	nominative
DU	dual	PL	plural
F	feminine	SG	singular

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# Verbless directives and verbless interrogatives in German

## What expresses their directive meaning?

Shungo Fujii

German exhibits an independent non-verbal construction named verbless directives (VDs). VDs consist of PPs and/or particles which express directions and order the hearer to move referents of theme arguments. According to Fortmann (2018), VDs can be converted into interrogative sentences, which have modal interpretations and are called verbless interrogatives (VIs) in this paper. However, VIs are well-formed only when theme arguments are not coreferential with the speaker. I argue that VDs whose theme arguments are identical to the hearer lack high Mod (cf. Hacquard 2006) and cannot be converted into VIs because they do not retain elements expressing directive meaning.

### 1. Verbless directives and verbless interrogatives

As other Germanic languages also do, German exhibits non-verbal imperative constructions, namely **verbless directives (VDs)**, cf. Jacobs 2008). VDs consist of PPs and/or particles like *raus* in (1a) which express directions. Let us call them prepositional *r*-particles (the examples are given in 1a and 1b).

- (1) a. Raus aus dem Bett (mit dir)!  
R\_out out the.DAT bed.DAT (with you.DAT)  
'Wake up!'
- b. Den Abfall schnell raus aus dem Zimmer!  
the.ACC trash.ACC quickly R\_out out the.DAT room.DAT  
'Bring the trash out of the room, quickly!'

VDs express demand for movement of theme referents. As is shown in (1), theme arguments are realized as *mit* 'with'-phrases or as accusative DPs. The hearer of VDs, who should move referents of theme arguments, does not overtly appear, if she or he is not realized as theme arguments. Furthermore, if theme referents are identical to the hearer, they can be covertly realized as in (1a).

According to Fortmann (2018), VDs can be converted into interrogative sentences, which are called **verbless interrogatives (VIs)** in this paper. As the translation of the VI in (2)

indicates, VIs have modal interpretations; The speaker of VIs asks the hearer if the speaker or a group including the speaker has to move theme referents.

- (2) a. In den Müll mit den Klamotten?  
 in the.ACC dustbin.ACC with the.DAT clobber.DAT  
 ‘Should I/ one take the clobber into the dustbin?’ (Fortmann 2018:77)
- b. Warum in den Müll mit den Sachen?  
 why in the.ACC dustbin.ACC with the.DAT things.DAT  
 ‘Why should I/ one take these things into the dustbin?’ (Fortmann 2018:79)

However, VDs can’t always be converted into VIs. If the hearer of VDs, i.e. the speaker of VIs is coreferential with theme arguments, they cannot be used as reactions to verbal sentences. When theme arguments of VIs are not coreferential with the speaker, they can be used as reactions to verbal sentences as in (3). However, if they are identical to the speaker as in (4), they are deviant.

- (3) Rita: Wirf die Sachen in den Müll!  
 throw.IMP the.ACC things.ACC in the.ACC dustbin.ACC  
 ‘Take these things into the dustbin!’
- a. Hans: In den Müll mit den Sachen?  
 in the.ACC dustbin.ACC with the.DAT things.DAT  
 ‘Should I take the clobber into the dustbin?’
- b. Hans: Warum in den Müll mit den Sachen?  
 why in the.ACC dustbin.ACC with the.DAT things.DAT  
 ‘Why should I take these things into the dustbin?’
- (4) Rita: Gehe ins Zimmer!  
 go.IMP in\_the.ACC room.ACC  
 ‘Go into the room!’
- a. Hans: \* Ins Zimmer mit mir?  
 in\_the.ACC room.ACC with me.DAT  
 ‘(intended) Should I go into the room?’
- b. Hans: \* Warum ins Zimmer mit mir?  
 why in\_the.ACC room.ACC with me.DAT  
 ‘(intended) Why should I go into the room?’

To explain the ungrammaticality of (4a) and (4b), I argue that VDs whose theme arguments are coreferential with the hearer lack high Mod, which expresses deontic modality directed to the hearer (cf. Hacquard 2006). As they lack high Mod, their directive meaning is expressed only by the imperative Force. This is why VIs in (4) are ungrammatical; If the sentential Force is replaced with the interrogative one, there is no element in the sentences which expresses directive meaning. Based on Isaac’s (2015) assumption that high Mod licenses negators, my claim is supported by the fact that VDs are compatible with negators only when theme arguments are not identical to the hearer (cf. the sentences in 5).

- (5) a. Nicht ins Zimmer damit!  
 not into\_the.ACC room.ACC it\_with  
 ‘Don’t bring it into the room!’  
 b. \* Nicht ins Zimmer mit dir!  
 not in\_the.ACC room.ACC with you.DAT  
 ‘(intended) Don’t enter the room!’

The paper consists of six sections. After reviewing preceding studies on VDs in the second section, I make a brief syntactic analysis of VDs in section 3. In section 4, following Hacquard (2006) and Isac (2015), I make an essential assumption for the analysis that high Mod, which expresses deontic Modality directed to the hearer, has an interpretable Mod feature, which agrees with an uninterpretable one of negators. Based on the assumption, I argue in section 5 that VDs whose theme arguments are coreferential with the hearer lack high Mod. As their theme arguments, which are regarded as subjects of VDs in the paper, are identical to the hearer, *ought-to-be* deontics is not available. Section 6 summarizes the discussions.

## 2. What builds verbless directives?

In the literature, VDs are often considered to be formed by phonetically null verbs. For example, Wilder (2008) and Müller (2011) on one hand posit that VDs are constructed by covert finite verbs, Fortmann (2018) on the other hand employs a covert infinitive verb. After introducing these papers, I show that the analyses do not predict some empirical data.

Wilder (2008), who mainly examines English VDs, assumes that the verb represented as *GO* which also appears in modal+PP constructions builds VDs. An example of German modal+PP constructions is given in (6).

- (6) Der Brief muss zur Post.  
 the.NOM letter.NOM must.PRS to\_the.DAT post.DAT  
 ‘The letter needs posting.’

Modal+PP constructions and VDs have, however, some syntactic differences; Theme arguments in modal+PP are realized as nominative DPs and precede full directional PPs in neutral cases, while theme arguments in VDs appear as *with*-PPs and must follow full directional PPs. Wilder (2008) then makes additional assumptions to explain this. *GO* selects a full directional PP as its complement, and a theme argument as its specifier. Prepositions like *with* license theme arguments, if and only if the prepositions are in the complement position of the imperative head (Imp), which expresses the imperative mood. Moreover, directional PPs like *into the bag* in (7a) move to the specifier position of the ImpP due to the EPP-feature. A summary of Wilder’s (2008) analysis is shown in (7b).

- (7) a. Into the bag with the money! (Wilder 2008:235)  
 b. [ImpP [PP into the bag] [Imp [VP with the money GO t<sub>PP</sub> ]]] (Wilder 2008:246)

Müller (2011) argues that verbs in VDs are combined with *v*, which possesses an antipassive feature. The feature demotes the case of theme-arguments, but has no morphological realization. In VDs, therefore, theme arguments are realized as *mit*-PPs and no overt verbal

elements appear. He also postulates that directional PPs like *in den Müll* ‘into the dustbin’ in (8a) move to Spec-vP because of its EPP-property. This assumption explains the word order ‘directional PPs’ > ‘theme *mit*-PPs’. Müller’s analysis is summarized as in (8b).

- (8) a. In den Müll mit diesen Klamotten!  
 in the.ACC dustbin.ACC with these.DAT clobber.DAT  
 ‘Take this clobber into the dustbin!’ (Müller 2011:216)
- b. [CP [C [v V v:[apass][\*T\*]] C][TP [vP *in den Müll*<sub>2</sub> [[vP (*mit*) *diesen Klamotten*]  
 [v' t<sub>2</sub> t<sub>v</sub>]] t<sub>v</sub>]] T] (Müller 2011:226)

Fortmann (2018) makes an assumption that a phonetically null infinitive verb introduces theme arguments, based on the observation that VDs show parallel syntactic realizations and interpretations to root infinitives. Both constructions, for example, lack nominative noun phrases and allow modal interpretations. As is shown in (9), root infinitives express an order when their covert subjects are coreferential with the hearer.

- (9) a. Die Hände wegnehmen!  
 the.ACC hands.ACC away\_take.INF  
 ‘Your hands off!’
- b. Rausrücken mit dem Geld!  
 R\_out\_move with the.DAT money.DAT  
 ‘Hand over the money!’ (Fortmann 2018:85)

Fortmann correlates two ways of realizations of theme-arguments in VDs with alternative theme-arguments of some causative motion verbs like *rücken* ‘move’, *werfen* ‘throw’, *schmeißen* ‘chuck’, *rangieren* ‘shunt’ and *schießen* ‘shoot’. As the examples in (10) illustrate, theme arguments of these verbs can be realized as accusative nominals and as *mit*-PPs.

- (10) a. Er rückt mit dem Bauern vor den  
 he.NOM move.PRS with the.DAT farmers.DAT in\_front\_of the.ACC  
 König.  
 king.ACC  
 ‘He moves the farmers in front of the king.’
- b. Er rückt den Bauern vor den König.  
 he.NOM move.PRS the.ACC farmers.ACC in\_front\_of the.ACC king.ACC  
 ‘He moves the farmers in front of the king.’ (Fortmann 2018:71)

However, as is already mentioned in the first section, theme *mit*-PPs and accusative theme arguments in VDs exhibit different word order. While accusative theme arguments precede prepositional *r*-particles as in (11a), theme *mit*-PPs follow them as in (11b).

- (11) a. Den Abfall sofort raus aus dem Zimmer!  
 the.ACC trash.ACC immediately R\_out out the.DAT room.DAT  
 ‘Bring the trash out of the room, quickly!’
- b. Sofort raus aus dem Zimmer mit dem Abfall!  
 immediately R\_out out the.DAT room.DAT with the.DAT trash.DAT  
 ‘Bring the trash out of the room, quickly!’

Therefore, Fortmann (2018) postulates that theme *mit*-PPs are extraposed, whereas accusative theme-arguments stay in the base-generated position. To support the argument, he mentions that unlike PPs, DPs in verbal clauses are difficult to extrapose (see the sentences in 12).

- (12) a. Rück das GELD raus!  
 move.IMP the.ACC money.ACC R\_out  
 ‘Hand over the money!’
- b. # Rück RAUS das Geld!  
 move.IMP R\_out the.ACC money.ACC  
 ‘(intended) Hand over the money!’
- c. Rück mit dem GELD raus!  
 move.IMP with the.DAT money.DAT R\_out  
 ‘Hand over the money!’
- d. Rück RAUS mit dem Geld!  
 move.IMP R\_out with the.DAT money.DAT  
 ‘Hand over the money!’
- (Fortmann 2018: 86)

These analyses are, however, confronted with empirical problems. First of all, true imperatives and root infinitives in German are compatible with the negator *nicht* ‘not’ as in (13) and (14), while German VDs are not if their theme arguments are coreferential with the hearer as in (15).

- (13) Geh nicht ins Zimmer!  
 go.IMP not in\_the.ACC room.ACC  
 ‘Don’t enter the room!’
- (14) (Den) Rasen nicht betreten.  
 the.ACC grass.ACC not walk\_on.INF  
 ‘Keep off the grass.’
- (Reis 1995:114)
- (15) \* Nicht ins Zimmer mit dir!  
 not in\_the.ACC room.ACC with you.DAT  
 ‘(intended) Don’t enter the room!’

Secondly, while prepositional *r*-particles can precede and follow full directional PPs in true imperatives as in (16), prepositional *r*-particles in VDs must precede them (cf. 17).

- (16) a. Geh aus dem Bett raus!  
 go.IMP out the.DAT bed.DAT R\_out  
 ‘Wake up!’
- b. Geh raus aus dem Bett!  
 go.IMP R\_out out the.DAT bed.DAT  
 ‘Wake up!’

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<sup>1</sup> The words in capitals are stressed.

- (17) a. \* Aus dem Bett raus!  
 out the.DAT bed.DAT R\_out  
 ‘(intended) Wake up!’  
 b. Raus aus dem Bett!  
 R\_out out the.DAT bed.DAT  
 ‘Wake up!’

Moreover, as is shown in Fujii & Mori (2021), unlike prepositional *r*-particles, full directional PPs cannot be solely interpreted as VDs (cf. 18).

- (18) a. Raus (mit dir)!  
 R\_out with you.DAT  
 ‘Get out!’  
 b. Aus dem Zimmer ?? (mit dir)!  
 out the.DAT room.DAT with you.DAT  
 ‘Get out of the room!’

These data are difficult to predict if one assumes that VDs are built by (finite or infinite) verbs. To explain the above-mentioned data and word order of VDs, which is illustrated in section 3, I argue that VDs consist of a prepositional phrase and/or a prepositional *r*-particle with their functional categories in the left periphery.

### 3. Syntactic structure of verbless directives

In this section, based on Fujii & Mori (2021) and Fujii (2023), I make a syntactic analysis of VDs on how VDs are built, after introducing essential data for the analysis.

#### 3.1. Possible word order in VDs

As is shown in (19) and (20), possible word order of full directional PPs and theme *mit*-PPs in VDs depends on presence and absence of prepositional *r*-particles; If a prepositional *r*-particle appears, full directional PPs can precede and follow theme *mit*-PPs as in (19). If it isn’t realized as in (20), however, they must precede theme *mit*-PPs.

- (19) a. Raus mit dir aus dem Zimmer!  
 R\_out with you.DAT out the.DAT room.DAT  
 ‘Get out of the room!’  
 b. Raus aus dem Zimmer mit dir!  
 R\_out out the.DAT room.DAT with you.DAT  
 ‘Get out of the room!’
- (20) a. ?? Mit dir aus dem Zimmer!  
 with you.DAT out the.DAT room.DAT  
 ‘(intended) Get out of the room!’

- b. Aus dem Zimmer mit dir!  
 out the.DAT room.DAT with you.DAT  
 ‘Get out of the room!’

Besides the main elements, namely prepositional *r*-particles/ full directional PPs and theme arguments, VDs can also contain adverbs of manner and modal particles (MPs). As the sentences in (21), (22) and (23a) illustrate, they precede prepositional *r*-particles (and other main elements). When they simultaneously appear, adverbs of manner follow MPs as in (23).

- (21) a. Schnell raus!  
 quickly R\_out  
 ‘Get out quickly!’  
 b. ?? Raus schnell!  
 R\_out quickly  
 ‘(intended) Get out quickly!’
- (22) a. Einfach raus!  
 MP R\_out  
 ‘Just get out!’  
 b. ?? Raus einfach!  
 R\_out MP  
 ‘(intended) Just get out!’
- (23) a. Einfach schnell aus dem Zimmer!  
 MP quickly out the.DAT room.DAT  
 ‘Quickly, get out of the room!’  
 b. Einfach schnell raus!  
 MP quickly R\_out  
 ‘Just get out quickly!’  
 c. ?? Schnell einfach raus!  
 quickly MP R\_out  
 ‘(intended) Just get out quickly!’

Accusative theme arguments can be realized in any positions before prepositional *r*-particles, namely before MPs (24a), after adverbs of manner (24c) and between them (24b).

- (24) a. Den Abfall einfach schnell raus aus dem Zimmer!  
 the.ACC trash.ACC MP quickly R\_out out the.DAT room.DAT  
 ‘Bring the trash out of the room, quickly!’  
 b. Einfach den Abfall schnell raus aus dem Zimmer!  
 MP the.ACC trash.ACC quickly R\_out out the.DAT room.DAT  
 ‘Bring the trash out of the room, quickly!’  
 c. Einfach schnell den Abfall raus aus dem Zimmer!  
 MP quickly the.ACC trash.ACC R\_out out the.DAT room.DAT  
 ‘Bring the trash out of the room, quickly!’

As is shown above, except for accusative theme arguments, elements in VDs exhibit relatively stable word order. Possible word order of VDs with and without prepositional *r*-particles, in which theme arguments are realized as theme *mit*-PPs, is summarized in (25). ('Adverbs' stand for adverbs of manner and '*r*-particles' for prepositional *r*-particles. The word order of the items <X, Y> is free.)

- (25) a. MPs>adverbs>*r*-particles >theme *mit*-PP, full directional PP  
 b. MPs>adverbs>full directional PP>theme *mit*-PP

### 3.2. Prepositional *r*-particles as the functional category $\pi$

To mainly analyze the data given in (17)–(20), following Fujii and Mori (2021) and Fujii (2023), I make an assumption that the functional category  $\pi$ , which can be overtly realized as prepositional *r*-particles, introduces theme arguments. Based on the assumption accepted by den Dikken (2010), Terzi (2010) and Noonan (2010, 2017) a.o. that prepositional *r*-particles and directional PPs have parallel constructions to CPs, i.e. functional categories of PPs build their left peripheral domain (cf. Rizzi 1997) as in verbal clauses, I also assume that  $\pi$  moves to Fin, as V does in verbal main clauses. This explains not only possible word order in VDs exemplified in (17), (19) and (20), but also why the sentence in (18b) without an overt theme argument is deviant.

If  $\pi$  is realized as a prepositional *r*-particle like *raus* 'out', which introduces a theme argument in its specifier and selects a full directional PP as its complement, it head-adjoints to Fin.<sup>2</sup> As subjects in verbal imperatives, theme arguments can be covertly realized only when they are coreferential with the hearer (cf. the sentence in 1a, which is repeated in 26). This is why I assume that theme arguments in VDs are their subjects, namely arguments which move to Spec-TP from their base-generated position.

- (26) Raus aus dem Bett (mit dir)!  
 R\_out out the.DAT bed.DAT (with you.DAT)  
 'Wake up!'

Following Fujii (2023), theme *mit*-PPs are assumed to stay in the TP, while accusative theme arguments move to the left peripheral domain, namely the specifier position of the emphatic topic phrase (ETopP), in which emphatic topics are brought and their accusative case is licensed.<sup>3,4</sup> Full directional PPs can be optionally brought to Spec-TP by the scrambling feature,

<sup>2</sup> As German is a SOV language, it is assumed that the T head is generated behind the VoiceP (or the *v*P). In this case,  $\pi$  directly head-adjoints to Fin. If one assumes that T is generated before the VoiceP,  $\pi$  first head-adjoints to T and then  $\pi$ -T head-adjoints to Fin.

<sup>3</sup> This assumption is based on the observations that accusative theme arguments in VDs can appear not only as an answer to an interrogative in the base-generated position but also as a newly introduced entity (see Fujii 2023 for the detailed discussion).

<sup>4</sup> To support the argument, Fujii (2023) examines 'why-like what' in Surprise-Disapproval-Questions (SDQs, cf. Obenauer 2004 und Bayer & Obenauer 2011), whose accusative case is considered to be licensed in the left periphery (cf. the Japanese examples below).

- (i) (Anata-wa) nani-o bakana koto-o itte-iru no?  
 (you-TOP) what-ACC stupid thing-ACC say-PROG Q  
 'Why do you speak nonsense?'

(Fujii 2023:71)

which is also available in verbal clauses. This option enables two possible word order of full directional PPs and theme *mit*-PPs exemplified in (19). The analysis of this word order is illustrated in (27).

- (27) a.  $[_{\text{FinP}} \text{raus}_i\text{-Fin} [_{\text{TP}} \text{mit } \text{dir}_j [_{\text{T}'} [_{\pi\text{P}} \text{t}_j [_{\pi'} \text{t}_i [_{\text{aus dem Zimmer}}] \text{T}]]]]]$   
 b.  $[_{\text{FinP}} \text{raus}_j\text{-Fin} [_{\text{TP}} \text{aus dem Zimmer}_i [_{\text{TP}} \text{mit } \text{dir}_k [_{\text{T}'} [_{\pi\text{P}} \text{t}_k [_{\pi'} \text{t}_j [_{\dots \text{t}_i}] \text{T}]]]]]]]$

If no prepositional *r*-particles appear, that is to say, if  $\pi$  is covertly realized, what moves to FinP is not  $\pi$  alone, but the whole  $\pi$ P because of the morpho-phonological dependency of  $\pi$ . This is why full directional PPs precede theme *mit*-PPs in VDs without prepositional *r*-particles (cf. 20). As the  $\pi$ P is a phrase, what moves  $\pi$ P to Spec-FinP is the edge-feature, namely an “optional” feature. If there are no overt elements between Fin and  $\pi$ P as in (18b) without an overt theme argument, the derivation crashes because of violation of EOC (Effect on Output Condition, Sabel 2005). In contrast, in (18b) with the theme argument, the  $\pi$ P including the full directional PP *aus dem Zimmer* crosses the theme *mit*-PP *mit dir*, which is evacuated to Spec-TP beforehand. The analysis of VDs without prepositional *r*-particles is given in (29). (PRO<sub>IMP</sub> stands for a covert subject in imperative sentences.)

- (28) EOC (*Effect on Output Condition, final version*)  
 Optional  $\alpha$  enters the numeration only if it has an effect on output. (Sabel 2005:287)

- (29) a.  $[_{\text{FinP}} [_{\pi\text{P}} \text{t}_j \pi [_{\text{aus dem Zimmer}}]]]_i [_{\text{FinP}} \text{Fin} [_{\text{TP}} \text{mit } \text{dir}_j [_{\text{T}'} [_{\pi\text{P}} \text{t}_i] \text{T}]]]]]$   
 b. ??  $[_{\text{FinP}} [_{\pi\text{P}} \text{t}_j \pi [_{\text{aus dem Zimmer}}]]]_i [_{\text{FinP}} \text{Fin} [_{\text{TP}} \text{PRO}_{\text{IMP}j} [_{\text{T}'} [_{\pi\text{P}} \text{t}_i] \text{T}]]]]]$

This analysis of course also explains grammaticality of the sentences in (18a). Unlike the covert one, the overt  $\pi$  head-adjoins to Fin and this movement needs no optional features, therefore never makes derivations crash even if there is no element between Fin and  $\pi$ . The derivations of the sentences in (18a) are illustrated in (30).

- (30) a.  $[_{\text{FinP}} \text{raus}_i\text{-Fin} [_{\text{TP}} \text{mit } \text{dir}_j [_{\text{T}'} [_{\pi\text{P}} \text{t}_j \text{t}_i [_{\dots}] \text{T}]]]]]$   
 b.  $[_{\text{FinP}} \text{raus}_i\text{-Fin} [_{\text{TP}} \text{PRO}_{\text{IMP}j} [_{\text{T}'} [_{\pi\text{P}} \text{t}_j \text{t}_i [_{\dots}] \text{T}]]]]]$

Finally, I briefly mention where adverbs of manner and MPs are generated and move to. Following Fujii and Mori (2021), it is assumed that adverbs of manner are base-generated in the specifier position of the  $\pi$ P and move to Spec-ModP (modifier phrase, cf. Rizzi 2004). Based on the data in (23) and (24), I suppose that MPs are base-generated in the left peripheral domain and appear in a position which is higher than the ModP and lower than the ForceP (the exact position where MPs appear is left open in this paper). These assumptions are consistent

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As the translation illustrates, the interrogative *nani-o* ‘what’ asks for reasons instead of entities. The fact that the interrogative is realized as accusative one besides the object *bakana koto-o* ‘stupid thing’ strongly suggests that there is an additional functional category besides Voice (or *v*) which licenses accusative case, because Japanese strictly bans double accusative objects. In addition, the fact that the accusative object cannot precede the interrogative supports the assumption that the functional category licensing the accusative is in the left periphery (cf. the sentence below).

- (ii) \* Bakana koto-o nani-o itte-iru no?  
 stupid thing-ACC what-ACC say-PROG Q  
 ‘(intended) Why do you speak nonsense?’

(Fujii 2023:71)

with data in (31); Adding an adverb of manner to the sentence in (18b) without an overt theme argument improves the acceptability, whereas adding an MP does not. The derivations of the sentence in (23b) are illustrated in (32) (XP stands for a phrase in which MPs appear).<sup>5</sup>

- (31) a. Schnell aus dem Zimmer!  
 quickly out the.DAT room.DAT  
 ‘Get out of the room quickly!’  
 b. ?? Einfach aus dem Zimmer!  
 MP out the.DAT room.DAT  
 ‘(intended) Just get out of the room!’

(32) [<sub>ForceP</sub> [<sub>XP</sub> *einfach* [<sub>ModP</sub> *schnell*<sub>i</sub> [<sub>FinP</sub> *raus*-Fin [<sub>TP</sub> [<sub>πP</sub> *t*<sub>i</sub> [<sub>πP</sub> ... ] ] ... ] T]]]]

#### 4. High Mod

In this section, I employ a theoretical framework to analyze why not all VDs can be converted into VIs. As is briefly mentioned in the first section, Hacquard (2006) argues that high Mod expresses deontic modality directed to the hearer and syntactically precedes Asp (aspectual head). Following Hacquard (2006), Isac (2015) assumes that high Mod agrees with an imperative verb and the Neg-head (Neg), as a result, their uninterpretable features are deleted. One of the phenomena mentioned in Isac (2015) which supports this assumption is two Greek negators *dhe(n)* and *mi(n)*. When *dhe(n)* is combined with indicative verbs, the sentences are interpreted as declaratives (cf. 33a), whereas sentences consisting of indicatives with *mi(n)* express an order (cf. 33b).

- (33) a. Den grafis  
 NEG write.INDIC.2SG  
 ‘You are not writing.’

<sup>5</sup> The reason that theme *mit*-PPs and full directional PPs stay in the positions before prepositional *r*-particles, namely Fin head is assumed to be that the left periphery in VDs lack topic phrases (TopPs) and focus phrases (FocPs), which are typical landing sites in the left periphery. This assumption is supported by the fact that other non-verbal constructions like small-clause (SC)-complements of the attitude verb *finden* ‘find’ lack FocPs. As Reis (2013) shows, finite complements of *finden* lacking judge-variant predicates are legitimate if some phrase in them is stressed and focused, while SC-complements without the predicates are ill-formed anyway (cf. the sentences below).

- (i) a. Ich finde, PAUL ist {wütend/ sauer} auf Tim.  
 I.NOM find.PRS Paul.NOM be.PRS angry sour on Tim.ACC  
 ‘I find PAUL is angry with Tim. (It is Paul who is angry with Tim.)’  
 b.\* Ich finde, Paul ist {wütend/ sauer} auf Tim.  
 I.NOM find.PRS Paul.NOM be.PRS angry sour on Tim.ACC  
 ‘\*I find Paul is angry with Tim. (no phrase is focused)’ (Reis 2013:410)  
 (ii) \*Ich finde Paul {zornig/ wütend/ sauer} auf Petra.  
 I.NOM find.PRS Paul.ACC furious angry sour on Petra.ACC  
 ‘(intended) I think that Paul is angry with Petra.’ (Reis 2013:420)

Based on the data, Fujii & Mori (2022) argue that SC-complements of *finden* lack FocPs. This is, however, not the case of truncation, because they are compatible with modal particles, and are assumed to include the ForceP, if one assumes that modal particles are licensed in the ForceP (cf. Zimmermann 2004, Coniglio 2011 and Bayer 2012).

- b. Mi(n) grafis  
 NEG write.INDIC.2SG  
 ‘Don’t write!’

(Isac 2015: 113)

This strongly suggests that negators interact with high Mod and can provide modal interpretation. Based on Isac’s assumption, it is assumed in this paper that Neg in German has an uninterpretable feature  $u\text{Mod}[\ ]$ , which must agree with the interpretable one of high Mod to be deleted.

## 5. Analysis

### 5.1. True VDs and deontic VDs

As the sentences in (3) and (4) illustrate, which are repeated in (34) and (35), VDs can be converted into VIs only when their theme arguments are not coreferential with the hearer.

- (34) Rita: Wirf die Sachen in den Müll!  
 throw.IMP the.ACC things.ACC in the.ACC dustbin.ACC  
 ‘Take these things into the dustbin!’
- a. Hans: In den Müll mit den Sachen?  
 in the.ACC dustbin.ACC with the.DAT things.DAT  
 ‘Should I take the clobber into the dustbin?’
- b. Hans: Warum in den Müll mit den Sachen?  
 why in the.ACC dustbin.ACC with the.DAT things.DAT  
 ‘Why should I take these things into the dustbin?’
- (35) Rita: Gehe ins Zimmer!  
 go.IMP in\_the.ACC room.ACC  
 ‘Go into the room!’
- a. Hans: \* Ins Zimmer mit mir?  
 in\_the.ACC room.ACC with me.DAT  
 ‘(intended) Should I go into the room?’
- b. Hans: \* Warum ins Zimmer mit mir?  
 why in\_the.ACC room.ACC with me.DAT  
 ‘(intended) Why should I go into the room?’

In addition, as the sentences in (5), which are repeated in (36), negators can appear in VDs only when theme arguments are not identical to the hearer.

- (36) a. Nicht ins Zimmer damit!  
 not into\_the.ACC room.ACC it\_with  
 ‘Don’t bring it into the room!’
- b. \* Nicht ins Zimmer mit dir!  
 not in\_the.ACC room.ACC with you.DAT  
 ‘(intended) Don’t enter the room!’

Based on the data, I argue that VDs are divided into two types: **true VDs**, which lack high Mod, and **deontic VDs**, which possess high Mod. Unlike those in true VDs, theme arguments in deontic VDs cannot be coreferential with the hearer. As true VDs lack high Mod, their directive meaning is expressed only by the imperative Force. This is why true VDs cannot be converted into VIs; If their Force is replaced with the interrogative one, there is no element in the sentences which expresses directive meaning. Because of absence of high Mod, the uninterpretable feature of Neg remains undeleted in true VDs and crashes derivations.

Moreover, it is assumed that the Force head cannot be stacked on another Force head; If one assumes that it's possible, the ungrammaticality of the interrogative sentence in (36b), in which imperative verbs are embedded, is hard to explain.

- (37) a. {Mach/ Macht} die Tür zu!  
 make.IMP.SG make.IMP.PL the.ACC door.ACC shut  
 'Shut the door!'
- b. \* Was {mach/ macht} zu?  
 what make.IMP.SG make.IMP.PL shut  
 '(intended) What should I shut?' (Fortmann 2018: 78)

We then have a question: Why can't theme arguments in deontic VDs be coreferential with the hearer? To answer this question, Feldman's (1986) distinction between *ought-to-do* and *ought-to-be* deontics is important. While *ought-to-do* deontics puts an obligation on the subject, *ought-to-be* deontics does on the addressee. For example, the sentence in (38) has these two readings.

- (38) Kitty has to brush her teeth. (Hacquard 2006: 40)

As Hacquard (2006: 40) describes, with the *ought-to-do* interpretation, the sentence expresses what the subject ought to do, if she wants to avoid getting cavities. The sentence with an *ought-to-be* reading would be uttered in the situation in which Kitty's mother places an obligation on the babysitter; Kitty's mother orders the babysitter to make sure that Kitty brushes her teeth. Hacquard (2006) argues that high Mod expresses addressee-oriented deontics, namely *ought-to-be* deontics and low Mod does subject-oriented, namely *ought-to-do* deontics.

As is mentioned in section 3, it is assumed that theme arguments in VDs are subjects. When theme arguments are coreferential with the addressee, the possible interpretation of deontics of VDs are limited to subject-oriented one, because the addressee and the subject are then identical. As *ought-to-do* deontics has no performative dimension (Hacquard 2006: 41), VDs with an *ought-to-do* interpretation, if possible, do not preserve their directive meaning any more if they are converted into VIs.

Because German verbal sentences which do not have *ought-to-be* interpretation are compatible with negators, one additional assumption is needed; VDs lack the functional category high Mod<sub>0</sub> which licenses the uninterpretable feature of Neg, but does not express addressee-oriented deontics. This operator is assumed to be closely connected to morphological realization of verbs.

While deontic VDs can be converted into VIs and compatible with negators, they have an additional weird characteristic; As is shown in (39a), prepositional *r*-particles cannot be realized in deontic VDs. As VDs whose theme arguments are not coreferential with the hearer are compatible with prepositional *r*-particles if they contain no negators as in (39b), they can be realized not only as deontic VDs, but also as true VDs.

- (39) a. Nicht (\* rein) ins Zimmer damit!  
 not R\_in into\_the.ACC room.ACC it\_with  
 ‘Don’t bring it into the room!’
- b. Rein ins Zimmer damit!  
 R\_in into\_the.ACC room.ACC it\_with  
 ‘Bring it into the room!’

The reason that prepositional *r*-particles cannot appear in deontic VDs is open in this paper.

### 5.2. Tense in VDs

Furthermore, we still have another question: Why are VIs lacking directive meaning deviant, that is to say, why can’t they be interpreted as non-modal interrogative sentences? I argue that Tense feature of the T head in VDs and VIs lacks its value and therefore it is impossible to judge their truth value. This analysis is supported by the fact that unlike verbal imperatives, VDs are only compatible with temporal adverbs which refer to time of utterance like *sofort* ‘immediately’ and *jetzt* ‘now’ (cf. 40); Lacking the value, interpretation of the tense is restricted to time of utterance.<sup>6</sup>

- (40) a. Komm {sofort/ jetzt/ morgen/ später} zu mir!  
 come.IMP immediately now tomorrow later to me.DAT  
 ‘Come to see me {immediately/ right now/ tomorrow/ later}!’
- b. {Sofort/ jetzt/??? Morgen/ ??? Später} raus aus meinem  
 immediately now tomorrow later R\_out out my.DAT  
 Haus!  
 house.DAT  
 ‘Get out of my house {immediately/ right now/???tomorrow/ ???later}!’

This assumption also explains why nominatives are basically not allowed in VDs and VIs, while overt nominative subjects can appear in verbal imperatives. Following Pesetsky & Torrego (2007), who assume that the nominative case of subjects is licensed through entering value of T-feature, nominatives in verbal imperatives are predicted to appear without problems; Their T-feature with value like +Nonpast allows temporal adverbs which refer to time other than time of utterance like *später* ‘later’ and licenses the nominative case of subjects. However, as T-feature in VDs and VIs lacks its value, no nominative subjects can appear and only temporal

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<sup>6</sup> There are independent sentences whose T-feature seems to lack the value: e.g. Negation-Licensed Commands (NLCs, cf. Iatridou 2021) and nominal imperatives (see the sentences below. The sentence in ii is a German one).

- (i) No teasing your sister!  
 (ii) Achtung!  
 attention  
 ‘Watch out!’

Unlike ellipsis constructions, the sentences need no preceding corresponding expressions. Therefore, they are regarded as syntactically independent constructions. Interestingly, they also express commands. This is why it is assumed that T without the value can be interpreted without any problems if the sentences express commands.

adverbs which refer to time of utterance like *sofort* ‘immediately’ can be interpreted in VDs and VIs.<sup>7</sup>

### 6. Conclusion

In this paper, it is shown that Verbless Directives (VDs) are divided into true VDs and deontic VDs; The former lacks high Mod, which expresses addressee-oriented deontics, while the latter possesses it. When theme arguments, namely subjects in VDs are coreferential with the hearer, deontics is directed to the subject, as a result high Mod is not available in the structure. This is why theme arguments of deontic VDs cannot be identical to the hearer. As directive meaning of true VDs is expressed only by the imperative Force, they do not retain any functional category which expresses directive meaning after they are converted into VIs. The absence of high Mod in true VDs explains why negators cannot appear, if one accepts Isaac’s (2015) assumption that the uninterpretable Mod-feature of Neg must agree with the interpretable one of high Mod.

### Abbreviations

2SG	second person singular	NOM	nominative
ACC	accusative	PL	plural
DAT	dative	PROG	progressive
IMP	imperative	PRS	present
INDIC	indicative	Q	question
INF	infinitive	SG	singular
MP	modal particle	TOP	topic
NEG	negator		

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<sup>7</sup> Interestingly, German root infinitives (RIs) are compatible with temporal adverbs which refer to time other than time of utterance (cf. the sentence in i). This is consistent with the fact that RIs allow overt nominative subjects (see the sentence in ii).

(i) {Sofort/ Später} den Saal verlassen.  
immediately later the.ACC hall.ACC leave.IMP  
‘Leave the hall {immediately/ later}.’

(ii) Fahrradfahrer rechts halten.  
cyclists.NOM on\_the\_right hold.INF  
‘Cyclists keep right.’

(Reis 1995:116)

Therefore, based on the data, infiniteness does not automatically indicate lack of the value of the T-feature.

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# Indefinite determiners can still be existential quantifiers

## Evidence from Algerian Arabic indefinites

Walid Hafsi

In this paper, I investigate the scope properties of indefinites marked for specificity in Algerian Arabic (AA) and English. Following Schwarzschild (2002), I defend the classical analysis which takes indefinite DPs to contribute existential generalized quantifiers over individuals (EGQ). I argue that the surprising scope behavior of these indefinites is a matter of scope neutralization through extreme domain restriction. I show that extreme domain restriction to a singleton set is not implicit but morphologically marked in AA. I argue that the analysis is extendable to English *a+ certain* DPs and point out the challenges that it faces when applied to English *a* DPs.

### 1. Introduction

The standard analysis of indefinite DPs takes them to contribute an existential generalized quantifier over individuals (EGQ). However, as is well known, this analysis faces a serious issue. Fodor & Sag (1982) show that constituents that are scope islands for almost all quantifiers do not seem to behave as such for indefinite DPs. Consider the contrast between (1) and (2) below from Reinhart (1997). Under the standard analysis, the reading in (1b) comes about when the indefinite DP *a certain relative of mine* takes wide scope over the conditional operator *if* as in the structure in (1a). However, such a movement is illicit for almost all other quantifiers. For instance, the quantified DP *every relative of mine* in (2) yields the unattested meaning in (2b) when given scope above the conditional operator *if* as in (2a).

- (1) If a certain relative of mine dies, I'll inherit a house.  
a. [ **a certain relative of mine** ]  $\lambda_2$  [if [ **t<sub>2</sub>** dies ] [I'll inherit a house]]  
b. There exists a relative of mine *x* such that if *x* dies, I'll inherit a house.  
(Reinhart 1997:(342))
- (2) If every relative of mine dies, I'll inherit a house.  
a. [ **every relative of mine** ]  $\lambda_2$  [if [ **t<sub>2</sub>** dies ] [I'll inherit a house]]  
b. Every relative of mine *x* is such that if *x* dies, I'll inherit a house.  
(Reinhart 1997:(342))

Thus, if indefinites were quantifiers, it is unclear why their scope behavior should be different from almost all other quantifiers — not only *every* as in (2) but also *each*, *most*, *no*, *more than five* etc.

Fodor & Sag's observation has led to alternative proposals in the literature on indefinite nominals. Here are some of the most prominent among them.

To begin with, Fodor & Sag (1982) investigate the possibility that indefinites are ambiguous between a quantificational and a referential interpretation. Thus, instead of assuming that the reading in (1b) is due to the quantifier interpretation of *a* with wide scope over *if*, Fodor & Sag assume that it is rather due a referential interpretation of *a certain relative of mine*. In other words, when the speaker utters (1), what they have in mind is something along the lines of (3) below.

(3) If *Mary* dies, I'll inherit a house.

Kratzer (1998) following Fodor & Sag (1982), also assumes that wide scope readings (WSR) of indefinites are due to a referential use. More specifically, however, Kratzer takes the indefinite determiner *a* to contribute a variable ranging over a choice function: (roughly) a function that chooses elements from (nonempty) sets. Kratzer assumes that the value of the choice function variable is determined by the speaker. Thus, according to Kratzer, a reading like the one in (1b) of the sentence in (1) is due the LF in (4a) below.

(4) a. If  $f$  [ relative of mine ] dies, I'll inherit a house.  
b. If the relative that the choice function  $f$  chooses dies, the speaker will inherit a house.

Reinhart (1997), Winter (1997), Chierchia (2001) and Mirrazi (2021) also assume that the indefinite determiner *a* contributes a choice function. However, on their approaches, the value of the choice function variable is not determined by the speaker as Kratzer assumes. Instead, it is existentially closed (for some of them) at a level higher than that of the clause the indefinite belongs to. The meaning in (1b) is thus due to the LF in (5a) below.

(5) a.  $\exists f$  [ if  $f$  [ relative of mine ] dies, I'll inherit a house ]  
b. There is a choice function  $f$  such that if the relative of mine that  $f$  chooses dies, I will inherit a house.

Indefinites have also been analysed as introducing sets of alternatives. Kratzer & Shimoyama (2001) and Charlow (2014, 2020) among others adapt Hamblin's (1973) analysis of questions to indefinite DPs. These researchers claim that, like *wh* phrases, indefinite DPs contribute sets of alternatives that expand across the boundaries of scope islands. The wide scope reading in (1b) of the sentence in (1) results when a set as in (6) is generated. Each proposition in this set expresses that I will inherit a house if a particular individual dies; the set contains as many propositions as there are relatives of mine.

(6) { the proposition that if  $x$  dies, I inherit a house |  $x$  a relative of mine }

In contrast to the cited literature, Schwarzschild (2002) defends the EGQ analysis. According to Schwarzschild, the meaning in (1b) comes about when the speaker has in mind some extra unpronounced material. The role of the unpronounced material is to further restrict the domain

of quantification of the indefinite determiner (taken to contribute an existential generalized quantifier over individuals) to a singleton set. The complete spell out of the sentence in (1) according to Schwarzschild would be something like (7) below. Note that, with this kind of extra unpronounced material, whether the indefinite DP takes scope above or below the conditional operator *if*, doesn't affect the truth conditions of the sentence. This is what Schwarzschild calls *the scope neutralization of indefinites*.

(7) If a certain relative of mine whom I am thinking of right now dies, I'll inherit a house.

In this paper, I provide evidence from Algerian Arabic (AA) that supports Schwarzschild's claim. I show that extreme domain restriction to a singleton set is not implicit but morphologically marked in AA. I propose an implementation of Schwarzschild's singleton indefinite approach (SIA) that makes correct predictions as to the readings available for these expressions. This paper is organized as follows: in section 2, I introduce indefiniteness in AA and I consider the challenges that *wahəd+el* DPs raise for the standard analysis of indefinites. In section 3, I show that the most prominent alternative analyses to the standard EGQ approach are not suitable to account for the behaviour of *wahəd+el* DPs. In section 4, I propose a singleton indefinites approach to AA *wahəd+el* DPs that makes correct predictions as to the readings available to these expressions. Section 5 rejects a partitive analysis of these indefinites. In Section 6, I turn to English where I consider an implementation of Schwarzschild's singleton indefinite approach to *a+certain* DPs indefinites and point out the challenges that the current analysis faces when applied to English *a* DPs.<sup>1</sup> Section 7 concludes the paper.

## 2. Algerian Arabic specific indefinites

Indefinites can be expressed in AA using two different kinds of expressions, as in (8) and (9) below. The bare noun *ustad* 'teacher' in (1) can only be interpreted as an existential with scope within the antecedent of the conditional. The DP *wahəd el ustad* 'one the teacher' in (9) can only be interpreted as an existential with scope over the conditional operator. There seems to be a division of labor between bare nouns and *wahəd+el* DPs in their scope-taking capacities: the scope of bare NPs is local, and cannot escape scope islands in the sense of Fodor & Sag (1982), while *wahəd+el* DPs tend to take the widest scope possible (above negation, modals, conditionals, relatives etc).

(8) kun jʔib                      ustad    ʔli j.rawh.  
if    be.absent.SG.M    teacher    Ali    leaves.3SG.M  
'If there is a teacher who is absent, Ali will go home.'

(9) kun jʔib                      wahəd    el    ustad    ʔli    j.rawh.  
if    be.absent.SG.M    one        the    teacher    Ali    leaves.3SG.M  
a. 'There is a teacher x such that if x is absent, Ali will go home.'  
b. [ wahəd el ustad ] λ2 [ kun [ t2 jʔib ] [ ʔli j.rawh ] ]

<sup>1</sup> I want to thank an anonymous review for pointing out to me Hawthorne & Manley (2012). See specifically chapter 4 that is essentially a defense for Schwarzschild (2002) singleton indefinites approach to English indefinites.

The structure in (9b) indicated how the standard EGQ analysis of indefinite DPs would account for the meaning in (9a): on this approach, the meaning in (9a) would come about when the indefinite DP *wahəd el ustad* ‘one the teacher’ takes scope above the conditional operator *kun* ‘if’. As noted earlier, it is undesirable to assume such a mechanism, given that almost all quantifiers cross-linguistically do not allow it. This is the case for quantifiers in AA as well. This can be seen by looking at the quantified DP *kol ustad* ‘every teacher’ as in (10) but also *aghlab* ‘most’, *akter men tlata* ‘more than three’ etc. The sentence in (10) does not give rise to the reading in (10a) which would obtain by long distance movement of *kol ustad* above the conditional operator as in (10b).

- (10) kun jyib                      kol      ustad    ?li    j.rawh.  
 if    be.absent.SG.M    every    teacher    Ali    leaves.3SG.M  
 a.#‘Every teacher x is such that if x is absent, Ali will go home.’  
 b. [ kol ustad ] λ<sub>2</sub> [ kun [ t<sub>2</sub> jyib ] [ ?li j.rawh ] ]

One might doubt whether these expressions are really indefinites. Even though the expression is headed by *wahəd* ‘one’ which is known to convey indefiniteness at least in 112 languages (Dryer 2013), the presence of the definite determiner *el* ‘the’ within the indefinite DP might call into question the expression’s indefiniteness. In the next subsection, I run two well-known (in)definiteness diagnostics largely adapted from Dayal (2018). These diagnostics show that *wahəd+el* DPs are indeed indefinites.

### 2.1 (In)definiteness in Algerian Arabic

(In)definiteness diagnostics are typically used to distinguish between definiteness and indefiniteness of bare nominals in languages without articles. Löbner (1985), Heim (2011) and Dayal (2018) discuss (in)definiteness of bare nominals starting from the idea that doubts arise specifically in languages that do not have a definite marker. In fact, AA is not such a language: definiteness is typically marked with the determiner *el* ‘the’ which is morphologically different from the demonstrative *hada* ‘this’. Nonetheless, the presence of *el* within *wahəd+el* DPs might make one wonder about the status of these expressions.

Following Dayal (2018), I take it that anaphoricity and homogeneity diagnostics (taken together) are sufficient to determine the (in)definiteness of a nominal. Let us consider the anaphoricity test first. Note that, even though I am primarily interested in *wahəd+el* DPs, I will also consider *bare NPs* in this discussion, so as to provide a contrastive overview of (in)definiteness in AA.

- (11) a. A girl and a boy came into the room. The / #a girl sat down.  
 b. tofla w    tfol    daxlu    l    əf-ʃambra. #(el-) tofla    gaʔdət    fog    el-canape.  
 girl    and    boy    entered    to    the-room.    the-    girl    sat    on    the-sofa  
 ‘A girl and a boy came into the room. The girl sat on the sofa.’  
 c. tofla w    tfol    daklu    l    əf-ʃambra. (#wahəd)el-tofla    gaʔdət    fog    el-canape.  
 girl    and    boy    entered    to    the-room.    one    the-girl    sat    on    the-sofa  
 ‘A girl and a boy came into the room. A specific girl sat on the sofa.’

(Dayal 2018:(3))

The English example in (11a) shows that the definite determiner *the* is required in the second sentence to refer back to a discourse referent introduced by the indefinite DP *a girl*. The indefinite determiner *a* is infelicitous for this purpose. The AA counterparts of (11a) in (11b-c) show that the sentences are felicitous only with the nominal *el tofla* ‘the girl’. Both the bare noun *tofla* ‘girl’ and *wahəd el tofla* ‘one the girl’ are infelicitous. I can thus conclude that *el* DPs pass the anaphoricity test while both bare NPs and *wahəd+el* DPs fail.

The homogeneity test from Dayal (2018) credited there in to Löbner (1985) is intended to distinguish definites from demonstratives as well as indefinites. Let us consider the English examples in (12) below from Dayal (2018) to set the stage for AA examples.

- (12) a. A dog is sleeping and a dog is barking.  
 b. That dog is sleeping and that dog is barking.  
 c.#The dog is sleeping and the dog is barking.  
 d.#Fido is sleeping and Fido is barking.

(Dayal 2018:(4))

The standard analysis of definite descriptions takes them (roughly) to be referring expressions denoting a single individual. The prediction is then that a definite cannot combine with incompatible predicates in coordinated sentences. This prediction is born out in (12c). Because the same dog cannot be both asleep and barking, (12c) is infelicitous. Note that an indefinite has the capacity to introduce a new referent to the discourse. This explains the well-formedness of (12a) with the indefinite DP *a dog*.

Let us now go back to Algerian Arabic. The sentences in (13) below show that bare NPs and *wahəd+el* DPs can combine with incompatible predicates in coordinated sentences while *el* DPs cannot. Thus, both bare NPs and *wahəd+el* DPs pass the homogeneity test.

- (13) a. kelb gaʔəd jurgud w kelb gaʔəd yembah.  
 dog sitting sleep and dog sitting bark  
 ‘A dog is sleeping and a dog is barking.’  
 b. wahəd el-kelb gaʔəd jurgud w wahəd el-kelb gaʔəd yembah.  
 one the-dog sitting sleep and one the-dog sitting bark  
 ‘A specific dog is sleeping and a specific dog is barking.’  
 c. hada el-kelb gaʔəd jurgud w hada el-kelb gaʔəd yembah.  
 that the-dog sitting sleep and that the-dog sitting bark  
 ‘That dog is sleeping and that dog is barking.’  
 d.#el-kelb gaʔəd jurgud w el-kelb gaʔəd yembah.  
 the-dog sitting sleep and the-dog sitting bark  
 ‘The dog is sleeping and the dog is barking.’  
 e.#bubi gaʔəd jurgud w bubi gaʔəd yembah.  
 bubi sitting sleep and bubi sitting bark  
 ‘Bubi is asleep and Bubi is barking.’

I conclude that both bare NPs and *wahəd+el* DPs convey indefiniteness while *el* DPs convey definiteness.

2.2 *wahəd+el DPs as EGQ*

So far, I (i) established the indefiniteness of *wahəd+el* DPs and (ii) noted the undesirability of the standard EGQ analysis, which forces one to abandon a uniform picture of the scope possibilities of quantifiers. In this subsection, I argue that this is not the only deficiency of the standard EGQ analysis. In what follows, I show that the EGQ analysis overgenerates narrow scope readings (NSR) and intermediate scope readings of *wahəd+el* DPs. I also show that the standard analysis undergenerates functional readings. To do this, let us consider the sentence in (9) below in context C1.

## (14) Context C1

There are three kids under discussion: Ali, Ahmed and Reda. We are at a dinner at which all three kids are present. Each of them has brought dishes cooked by his two favorite female relatives. However, the kids decided to put the dishes they brought aside to try them later. At this point, each of the kids has tried dishes other people brought, but none of the dishes cooked by their relatives.

- (15) *tfoli ma jareb kol makla deret.ha wahəd el mra toqrob-l-o<sub>i</sub>.*  
 kid NEG tried every dish made.it one the woman relative-of-him  
 ‘No kid tried every dish a certain female relative of his made.’

Note first that it is difficult to judge (15) as true or false in (C1). It is just infelicitous. If indefinite DPs were EGQ with free scope, any position right above a type *t* node at LF would in principle be a possible landing site for them. Thus, for the sentence in (15), one possible landing site for the indefinite DP *wahəd el mra toqrob-l-o* ‘one the woman related to him’ would be below the negative quantifier *tfol ma* ‘no kid’. In that case, the meaning that would result is the one in (16) below, often referred to in the literature as an intermediate scope (existential) reading (ISER). Even though (15) is true in C1, this is not sufficient to make (16) true in C1. This shows that (15) lacks an ISER.

- (16) For no boy *x*, is there some *y* such that *y* is a female relative of *x* and *x* tried every dish *y* made.

Furthermore, the narrow scope reading of the sentence in (15) sketched in (17) below, is also true in C1. This also shows that (15) lacks a narrow scope existential reading.

- (17) No kid tried every dish any female relative of his made.

The question is now the following: what makes the sentence in (15) weird in C1? To answer this question, let us consider the sentence in (15) again but in a slightly different context sketched in C2.

## (18) Context C2

There are three kids under discussion: Ali, Ahmed and Reda. We are at a dinner at which all three kids are present. Each of them has brought dishes cooked by his two favorite female relatives, and each of them has started with those. At this point, each of the kids

has tried all the dishes cooked by one of his relatives, but none of the dishes cooked by the other.

For readability, I schematize the scenario in C2 as in (19) below. The sets represent each kid's favorite female relatives; the underlined relatives are those whose dishes were already tried out. Intuitively, the sentence in (15) is judged *true* in the context C2.

- (19) Ali:     { R1, R2 }  
       Ahmed: { R3, R4 }  
       Reda:  { R5, R6 }

Recall that I showed above that (15) lacks both the NSR and the ISER, which is by the way *false* in C2. Also, intuition goes against attributing the *true* judgement in this case to a wide scope reading of an existential quantifier (only available under a free variable interpretation of the pronoun *o* 'him' inside the indefinite DP). Rather, the reading available for the sentence in (15) seems to involve reference to (or quantification over) a skolem function as in (20) below.

- (20) (For some  $f$ ) no kid  $x$  has tried every dish  $f(x)$  made.  
       where  $f$  is a function from kids to relatives of theirs.

Note that the interpretation of (15) described in (20) could not arise from any combination of quantifiers over individuals, as discussed in Hintikka (1986) for English indefinites with *a certain*. Thus, the standard analysis that relies on such a mechanism undergenerates what we will be referring to here as the functional reading of indefinites (FR).

Let us now turn to the infelicity of (15) in C1. I have now established that (disregarding the wide scope reading, available only under a free variable interpretation of *o*), the only possible reading for (15) involves either reference to or quantification over skolem functions as sketched in (20). Imagine now that the reading involves quantification over skolem functions. Importantly, such a reading would be true in C1, because one can find a function  $f$  from kids to female relative of theirs such that no kid has tried every dish  $f(x)$  made; in fact, there are many functions of that sort in C1. Still, (15) is infelicitous in C1. This shows that existential quantification over skolem functions is also unavailable for (15): it is unclear how one could explain the infelicity of (15) in C1 if one allows for existential quantification over skolem functions. However, assuming that the only possible interpretation of (15) involves *reference to* a skolem function, there is a way to explain the infelicity of (15) in C1. As noted above, many skolem functions that could make (15) true are available in C1. Crucially, none of these functions is more salient than the others. This means that the referent of  $f$  is unrecoverable from C1, and this in turn results in the infelicity of (15). Importantly, things are different for (15) in C2; there is only one skolem function that makes the sentence *true* (the one I schematize in (21) below). More precisely: one function whose domain is limited to the kids. The referent is thus easily recoverable which makes (15) true in C2.

- (21) Ali:     { R1, R2 }   → R2  
       Ahmed: { R3, R4 }   → R3  
       Reda:  { R5, R6 }   → R6

In this section, I have shown that the standard EGQ analysis overgenerates both NSR and ISER of *wahad+el* DPs. The EGQ analysis also undergenerates functional readings.

### 2.3 Wrap up

I have shown so far that *wahad+el* DPs in Algerian Arabic (i) tend to get the widest scope possible above other operators they occur with. In other words, *wahad+el* DPs generate neither narrow scope nor intermediate scope readings. I have also shown that *wahad+el* DPs (ii) generate functional readings (FR). These facts are not predicted by the standard existential generalized quantifier analysis. On the contrary, the EGQ (when scope freedom is allowed) (i) overgenerates narrow scope and intermediate scope readings and (ii) undergenerates functional readings.

In the next section, I will consider possible analyses of *wahad+el* DPs based on the most prominent alternative analyses to the EGQ approach. I will be guided by the following related questions: what is the semantic contribution of *wahad+el* DPs and how does it come about on the basis of the indefinite's smaller parts? How does the range of readings actually available to *wahad+el* DPs compare to the readings predicted by the different analyses to be considered?

### 3. Alternative analyses to the EGQ

Let us first consider Fodor & Sag's (1982) referential indefinites. Recall that this analysis takes indefinites to be ambiguous between a quantificational and a referential use. Thus, the (apparent) WSR of *wahad+el* DPs comes about as a result of the referential use of the determiner *wahad* (or arguably of the complex determiner formed out of *wahad+el*). Notice that taking this position allows one to maintain the uniformity hypothesis on quantifier scope: the position that quantifiers have the same limits on their scope. Also, Fodor & Sag's proposal does not overgenerate intermediate scope existential readings which are (as I have shown) unavailable to *wahad+el* DPs indefinites.

However, a referential analysis raises some questions: first, the lexical ambiguity of indefinite determiners claimed by Fodor & Sag is not borne out in AA: *wahad+el* DPs do not contribute a narrow scope existential reading. So, are they exclusively referential? Also, it is not immediately clear how the attested functional reading of *wahad+el* DPs comes about within Fodor & Sag's referential analysis. Another issue that is not transparent in this system is the semantic contribution of the definite determiner *el*. How does it combine with *wahad* to form a referential determiner?

Reinhart (1997) and Winter (2001) among others claim that indefinite determiners contribute a choice function variable that may be existentially quantified over at a level higher than that of the minimal clause containing the indefinite. The existential choice function approach (ECA) successfully generates the desired WSRs of *wahad+el* DPs, assuming that *wahad* contributes a choice function variable that is existentially quantified over at the highest level of the representation.

However, according scope freedom to the existential closure operator as in Reinhart and Winter's original proposal incorrectly predicts the availability of both narrow scope and ISERs to AA *wahad+el* DPs. Also, the existential choice function approach, like the EGQ analysis, does not predict the availability of functional readings of AA *wahad+el* DPs.

In later work, Winter (2001) considers a version of the ECA based on skolem choice functions, i.e. functions from individuals to choice functions, that is said to generate functional readings of indefinites. According to Winter (2001), the functional readings of indefinites arise when the subject quantifier binds the skolem function's individual argument. However, Schwarz (2001) shows that such a mechanism overgenerates. In certain contexts, it produces unattested readings that could be paraphrased with a narrow scope universal quantifier.

A more recent version of this approach is proposed by Mirrazi (2021). Mirrazi, following Matthewson (1999), proposes an amendment of the ECA where indefinite determiners (*a*, *some* and *a certain*) contribute a skolem choice function variable that is existentially quantified over at the topmost level of the representation. Mirrazi claims that functional readings arise when the skolem function introduced by the indefinite determiner takes a functional NP of the form  $(\lambda x. P(y) \ \& \ R(x, y))$  as its argument. To introduce functional dependency between the topmost quantifier and the indefinite, she (i) type-shifts the predicate NP into a relation of type  $\langle e, et \rangle$ , (ii) feeds the relation an individual variable that is necessarily bound by the higher quantifier and (iii) introduces a free function variable *R* of type  $\langle e, et \rangle$  adjoined to the NP. Thus, the role of *R* is to restrict the restrictor (*P*) of the skolem function to only those individuals *x* that have been mapped to the bound variable pronoun. The referent of *R* comes from the linguistic context where the indefinite appears. The semantics of the indefinite DPs with *a*, *some* and *a certain* receive a unified analysis as represented in (22) below.

- (22)  $f_{\langle et, e \rangle} (\lambda x. P(x) \ \& \ R((g(i), x))$   
 where *i* is the index of the higher quantifier.

Mirrazi assumes that functional readings are always available to *a+certain* DPs. That is because a suitable referent of *R* can always be accommodated by *certain*. Functional readings are not available to *a/some* indefinites when there is no salient relation in the linguistic context that can serve as a value for *R*.

It seems that Mirrazi's system makes correct predictions as to the availability of functional readings of *wahad+el* DP if one assumes that accommodation of *R* is enabled by the definite determiner *el*. Because *wahad* cannot occur without *el*, the existence of *R* can always be accommodated. However, it is not clear either for English *certain* or for AA *el* how accommodation of *R* works. For AA specifically, the precise role of the definite determiner remains unexplained. The same issue arises under Kratzer's (1998) indexical choice function analysis. Kratzer does not envisage any true intermediate scope readings, and sees the readings that have been discussed in this way as functional readings. Kratzer's system therefore predicts the absence of ISER for AA *wahad+el* DPs; however, the precise contribution of the definite determiner *el* remains unclear.

In the next section I propose that the right way to account for AA *wahad+el* DPs is with a singleton indefinite approach along the lines of Schwarzschild (2002). I argue that the domain restriction to a singleton set that Schwarzschild claims to be implicit in English is morphologically marked in AA. I show that my implementation of Schwarzschild's proposal successfully predicts (i) the availability of WSR within an EGQ analysis of indefinite DPs without violating locality constraints on quantifier scope, (ii) the availability of functional readings of *wahad+el* DPs and (iii) the unavailability of ISER. Also, I motivate a semantic contribution for the definite determiner *el* within the indefinite *wahad+el* DP.

#### 4. A singleton indefinite approach to *wahəd+el* DPs

##### 4.1. Scope neutralization

I propose a singleton indefinite approach (SIA) for *wahəd+el* DPs under which (i) *wahəd* is an indefinite determiner with the classical existential quantifier meaning  $\lambda f_{\langle e,t \rangle} . \lambda g_{\langle e,t \rangle} . \exists x [ f(x) \& g(x) ]$ ; (ii) *el* DPs that *wahəd* combines with is a definite description on its predicative reading (Strawson 1950; Fara 2001; Coppock & Beaver 2015); (iii) *el* is a definite marker that marks the predicate that it attaches to as a singleton by imposing a uniqueness presupposition:  $\llbracket el \rrbracket = \lambda P_{\langle e,t \rangle} : |P| = 1 . P$ .

Consider again the example in (10) repeated here as (23). Supposing that *wahəd+el* DP has scope within the antecedent of the conditional as in (23a), The semantics in (23b) obtains. In the presence of the uniqueness presupposition contributed by *el*, (23a) is equivalent to (23d) where the indefinite DP takes wide scope above the conditional operator *kun* as in (23c). In this way, I claim that I correctly derive the meaning of the sentence in (23) while respecting locality constraints on quantifier scope. This effect is what Schwarzschild (2002) calls scope neutralization via extreme domain restriction to a singleton set.

- (23) *kun jʔib wahəd el ustad ʔli j.rawh.*  
 if be.absent.3SG.M one the teacher Ali leaves.3SG.M
- a. *kun [ [ wahəd el ustad ]  $\lambda_2 [ t_2 jʔib ] [ ʔli j.rawh ] ]$*   
 b. ‘If there is an absent teacher, Ali will leave.’  
 Presupposition:  $|teacher| = 1$ .
- c. *[ wahəd el ustad ]  $\lambda_2 [ kun [ t_2 jʔib ] [ ʔli j.rawh ] ]$*   
 d. ‘There is a teacher *x* such that if *x* is absent, Ali will leave.’  
 Presupposition:  $|teacher| = 1$

##### 4.2 The predicative use of definite determiners

Coppock & Beaver (2015) claim that definiteness (at least in English) is a morphological category which marks a sort of uniqueness<sup>2</sup> presupposition. They thus distinguish between definiteness and determinacy, which consists in denoting individuals. The authors argue with Strawson (1950) that definite descriptions are not inherently referential but fundamentally predicates (of type  $\langle e,t \rangle$ ), characterizing a set of individuals.

One piece of evidence comes from Fara (2001), who shows that definite descriptions can be coordinated with adjectives (taken to contribute functions of type  $\langle e,t \rangle$ ) and not proper names (taken to contribute entities of type *e*) as in (24) below.

- (24) a. John is tall, handsome and the love of my life.  
 b. \*The love of my life is tall, handsome and John.  
 (English; Coppock & Beaver 2015:(5))

This evidence extends to Algerian Arabic, where the definite description *el kbir fina* ‘the oldest among us’ can coordinate with adjectives while proper names cannot as in (25) below.

<sup>2</sup> The uniqueness presupposition that I am assuming here is a little different from Coppock & Beaver’s which is rather a presupposition of uniqueness ‘if existence’. In other words, they argue that *the* does not presuppose existence.

- (25) a. ?li twi w shih w el kbir fi.na.  
 ?li tall and strong and the old in.us  
 ‘Ali is tall, strong and the oldest among us.’  
 b. \*el kbir fi.na twil w shih w ?li.  
 the old in.us tall and strong and Ali  
 ‘The oldest among us is tall, strong and Ali.’

Also, and as is the case in English, definite descriptions in AA can combine with verbs like *jzi* ‘consider’ and *jlga* ‘find’ which combine with adjectives, bare NPs and possessives but not with proper names. Consider the sentence in (26) below.

- (26) ?li jzi-ni el zaw3 el mitali.  
 Ali is.considered-by.me the husband the perfect  
 ‘I consider Ali to be the perfect husband.’

In short, there is good reason for thinking that *el* NPs in AA can function as predicates of type  $\langle e, t \rangle$ . Thus, it is not surprising that they appear as an argument of an existential quantifier that selects for things of type  $\langle e, t \rangle$ . Thus, I propose a semantics of *el* that is a lot like the semantics proposed by Coppock and Beaver (2015) for English *the*. *El* denotes the identity function on predicates and is therefore of type  $\langle \langle e, t \rangle, \langle e, t \rangle \rangle$ , as in (27) below. Crucially, *el* can contribute a uniqueness presupposition, ensuring that any NP it combines with has as its extension a set containing exactly one element.

- (27)  $\llbracket el \rrbracket = \lambda P_{\langle e, t \rangle} : |P| = 1. P$

#### 4.3 Compositional semantics of *wahəd+el* DPs

*Wahəd+el* DPs generally behave as though they take wide scope relative to any operator they occur with (conditional operators, quantifiers, relatives, negation etc). The sentence in (28) below, for example, does not have an absolute negation meaning where negation takes scope above a simple existential quantifier over books: the only meaning the sentence has is one where the indefinite DP appears to take scope above negation. This is predicted by my implementation of the singleton indefinites approach. The diagram in (29) below shows how scope neutralization arises through domain restriction in an AA example such as this one. Note that even without taking literal scope above negation, The meaning available to the sentence in (28) is correctly predicted by my implementation of the singleton indefinite approach.

- (28) ?li ma fra -f wahəd el kteb.  
 Ali NEG bought -NEG one the book  
 a.  $\# \neg \exists x. x \text{ is a book \& Ali bought } x.$   
 b.  $\neg \exists x. x \text{ is a book \& Ali bought } x.$   
 Presupposition:  $| \text{book} | = 1$



Schwarzschild's idea that predicts the *true* judgement of (30) in C2. In the implementation I propose, the functional reading comes about when the NP *mra toqrob.l.o* 'woman that is related to him' is conjoined with a silent predicate containing a free function variable and a bound individual variable as shown in (32a).<sup>4</sup> The restrictor [ *el* [ ...  $F_8$   $pro_1$  ] *mra Toqrob-l-o\_1* ], is interpreted as follows:  $\llbracket el \dots \mathbf{F}_8 \mathbf{pro}_1 mra toqrob-l-o_1 \rrbracket^g$  is defined iff  $\llbracket \mathbf{F}_8 pro_1 \rrbracket^g$  is a female relative of  $g(1)$ ; when defined  $\llbracket el \dots \mathbf{F}_8 \mathbf{pro}_1 mra Toqrob-l-o_1 \rrbracket = \{ \llbracket \mathbf{F}_8 pro_1 \rrbracket^g \}$ . In other words, a structure of this kind yields as its interpretation a singleton set  $\{ g(8)(g(1)) \}$ , where  $g(8)$  is a function from individuals to female relatives of  $g(1)$ . As in Schwarzschild (2002) and Kratzer (1998), the value of the function variable is determined by the speaker. The meaning in (32b) comes about when the unpronounced individual variable is bound by the quantifier *tfol ma* 'no kid'. When that happens, the indefinite restrictor will be interpreted relative to a variety of assignments, each of which assigns a different kid to the unpronounced individual variable. Thus, the meaning of the sentence will concern a variety of different singleton sets that vary with the different kids under consideration. The effect of *el* in this case is ultimately to yield the presupposition that the function chosen maps every kid to a female relative of his. The derived meaning reads as in (32b) below.

- (32) a. *tfol ma*  $\lambda_1$  [  $t_1$  *jarəb kol makla deret.ha wahəd el* [ [ ...  $\mathbf{F}_8 \mathbf{pro}_1$  ] *mra Toqrob-l-o\_1* ] ]  
 b. No kid  $x$  tried every dish that some  $y$  *identical to the individual*  $f(x)$  made.  
 Presupposition: for every kid  $x$ ,  $f(x)$  is a female relative of  $x$ .

Using the schema in (21) repeated below as (33), (30) is judged true in C2 on the basis of an  $f$  such that  $f(\text{Ali}) = R2$ ,  $f(\text{Ahmed}) = R3$  and  $f(\text{Reda}) = R6$ . It is this value of  $f$  that makes it true that no kid  $x$  tried every dish that  $f(x)$  made. The felicity of (30) in C2 is due to the recoverability of that function from the context. This is because the function in (33) is the only function that makes (30) true. This is not the case in context C1. The fact that there is many functions that would in principle make (30) true and no salient one, makes the recovery of the referent of  $F_8$  impossible. Thus, (30) is true in C2 and infelicitous in C1.

- (33) Ali: { **R1**, R2 } → R2  
 Ahmed: { R3, **R4** } → R3  
 Reda: { **R5**, R6 } → R6

In this section, I showed that my implementation of the singleton indefinite approach successfully generates functional readings of *wahəd+el* DPs. Note that this reading should not be identified with an intermediate scope existential reading (ISER) that would run as follows: for no kid  $x$  can one find a female relative of his  $y$  such that  $x$  tried every dish  $y$  made: that reading would be *false* in C. As I mentioned, the ISR is not attested in AA — neither with bare NPs nor with *wahəd+el* DP. The SIA, as described does not overgenerate ISERs because it

<sup>4</sup> As pointed out by an anonymous review, once one allows for silent material as a potential source of domain restrictions, one opens the possibility for an extra source of domain restrictions other than *el* for AA and *certain* for English, which seems to overgenerate specifically wide scope and functional readings for AA bare nouns that are not available. I take bare nouns in AA to be property denoting predicates that get their existential force from a rule of semantic incorporation. That ensures that bare nouns always take the lowest scope possible. However, the question now is whether they can get domain restriction through potential mispronounced material. One way out is to say following Schwarz (2012) among others that implicit domain restriction is only available to strong determiners. This is not the case of bare nouns in AA. The case of English *a/some* DPs is beyond the scope of this paper but is nonetheless briefly discussed in section 6.2.

doesn't allow indefinites to take scope across syntactic islands. Also, my implementation of the singleton indefinites approach does not overgenerate narrow scope readings; the effect of the uniqueness presupposition contributed by *el* in *wahəd+el* DPs eliminates the narrow scope readings of these expressions.

In section 6, I argue that the analysis is extendable to English *a+certain* DPs and point out the challenges that it faces when applied to English *a* DPs. I aim to motivate a unified analysis of indefinite DPs in natural language as EGQ whose scope is syntactically constrained in the same way as other quantifiers. But before getting into that, section 5 argues against a partitive analysis of *wahəd+el* DPs.

### 5. Against a partitive analysis

The presence of the definite determiner *el* inside *wahəd+el* DPs might suggest that these expressions are partitives. However, the facts about AA suggest that this is not the case.

First of all, AA has a typical partitive expression of the form *one of the N* ((17b) below) that does not behave like our *wahəd+el* DPs. To illustrate, let us compare (34b) and (34c). As expected, the test below from Enç (1991) shows that (34c) does not introduce a new referent to the discourse, but rather refers back to an element of the set of kids introduced in (34a) as a partitive would do. However, this is not the case in (34b) where the indefinite expression introduces a new referent (namely a third boy) to the discourse.

- (34) a. *zouz drari daxlu l eʃ-ʃambra.*  
 two kids entered to the-room  
 'Two boys entered the room.'
- b. *wahəd el tʃol gʔad fog el canape.*  
 one the kid sat on the couch  
 'A certain boy sat on the couch.'
- c. *wahəd min el drari gʔad fog el canape.*  
 one of the kids sat on the couch  
 'One of the kids sat on the couch.'

Second of all, partitives typically select for a plural NPs (de Hoop 1997; Chierchia 1998). The distinction is transparent in the examples in (34) above where *tʃol* 'kid' that appears in *wahəd+el* DPs is singular in contrast to *drari* 'kids' that appears in the partitive expression in (34c). Note that a plural N inside *wahəd+el* DPs is also possible. When this happens, the result is a wide scope plural indefinite and not a partitive expression.

Finally, partitive expressions are said to not appear in existential constructions like *there is* sentences (Milsark 1974; Enç 1991). The example in (35) below shows that this is not the case for AA.

- (35) *kayn wahəd el rajel f el jardina.*  
 exists one the man in the garden  
 'There is a certain man in the garden.'

6. English a(+certain) DPs

It seems that *a+certain* DPs behave in a similar way to *wahad+el* DPs: (i) they contribute WSRs and FRs and (ii) they lack ISERs. Thus, my implementation of the singleton indefinites approach could extend straightforwardly to English *a+certain* DPs. In this section, I show that this is actually the case.

6.1 English a+certain DPs

To do this, let us consider the sentence in (1) from Reinhart (1997) repeated below as (36). Intuitively, the only reading available to (36) is the wide scope reading in (37) below.

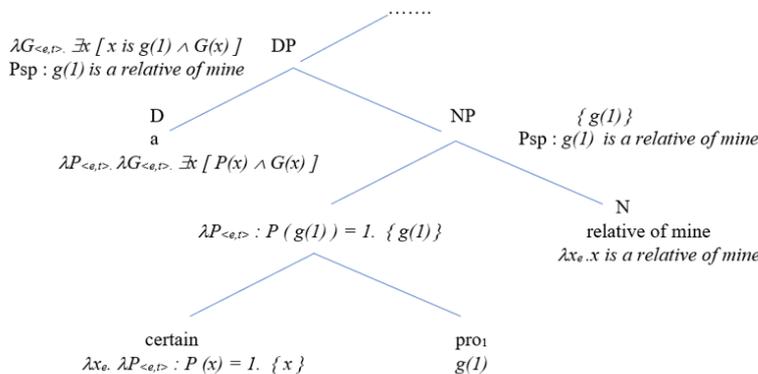
(36) If a certain relative of mine dies, I'll inherit a house.

(37) There exists a relative of mine *x* such that if *x* dies, I'll inherit a house.

To account for the wide scope reading in (37), I take English *certain* to be an NP modifier that selects for an individual creating a singleton predicate of type  $\langle e,t \rangle$ . Thus, *certain* has the following semantics:  $\llbracket \text{certain} \rrbracket^g = \lambda x_e. \lambda P_{\langle e,t \rangle} : P(x) = 1. \{ x \}$ . Thus, I stipulate that there is more structure to *a+certain* DPs indefinite than what is spelled out in (19): *a certain relative of mine* has a structure of the form  $[DP \text{ a } [ \text{certain } \text{pro}_1 \text{ relative of mine} ]]$  where  $\text{pro}_1$  is an individual variable. The restrictor  $[ \text{certain } \text{pro}_1 \text{ relative of mine} ]$  is interpreted as the following:  $\llbracket \text{certain } \text{pro}_1 \text{ relative of mine} \rrbracket^g$  is defined iff  $\llbracket \text{pro}_1 \rrbracket^g$  is a relative of mine; when it is the case  $\llbracket \text{certain } \text{pro}_1 \text{ relative of mine} \rrbracket^g = \{ g(1) \}$ <sup>5</sup>. The determiner  $\llbracket \text{a} \rrbracket^g$  is simply an existential quantifier which in this case ranges over the one element in the restrictor set. The indefinite DP *a certain relative of mine* is represent as in (39) below. The meaning that comes about for the sentence in (36) is sketched in (38) below.

(38) If some *x* identical to the individual *g(1)* dies, I'll inherit a house.  
 Presupposition: *g(1)* is a relative of mine.

(39)



<sup>5</sup> For convenience, I talk about a set here when I really mean to talk about the function characterizing that set. I did this above too.

Wide scope readings are not the only meanings *a+ certain* DPs contribute. To show this, let us compare the sentences in (40) and (41) below from Schwarz (2001) in a context where A, B and C are the only candidates, each one of them wrote two papers but submitted only one. The scenario is schematized in (42) below; the sets represent the papers each candidate wrote. The underlined papers are those that the candidates submitted.

(40) No candidate<sub>i</sub> submitted a paper he<sub>i</sub> had written. (Schwarz 2001:(5))

(41) No candidate<sub>i</sub> submitted a certain paper he<sub>i</sub> had written. (Schwarz 2001:(5))

(42) A: { A1, A2 }

B: { B1, B2 }

C: { C1, C2 }

Intuitively, (40) is judged false in (42) while (41) is judged true. In what follows, I answer the following questions: (i) what are the readings responsible for these judgements? and (ii) what analysis of *a* could account for the meanings it contributes both under its ‘bare use’ and in the presence of *certain*?

I argue that the *false* judgement of (40) in (42) arises from a narrow scope interpretation of the indefinite DP *a paper he had written* that I sketch in (43) below. This reading is false because one can find candidates that submitted papers they wrote ( $A \rightarrow A1$ ), ( $B \rightarrow B2$ ) and ( $C \rightarrow C1$ ).

(43) For no candidate *x* can one find a paper *y* that *x* wrote such that *x* submitted *y*.

As to the sentence in (41), I argue that the *true* judgement arises from the functional reading of *a certain paper he had written*. In this case, the semantics of the indefinite is slightly different from the one presented in (39) above. Instead of selecting for an individual, *certain* can also select for skolem functions of type  $\langle e, e \rangle : \lambda f_{\langle e, e \rangle}. \lambda x_e. \lambda R_{\langle e, et \rangle}. R(x)(f(x)) = 1. \{ f(x) \}$ . As in (39), I stipulate that the sentence in (40) has more structure than what is spelled out. Imagining the implicit variables to be arguments, the functional reading of (40) arises when *a certain paper he had written* has the following structure: [ a [certain  $f_8$   $pro_2$ ] paper that (OP)  $\lambda_3$  he<sub>2</sub> had written  $t_3$  ]. The restrictor [certain  $f_8$   $pro_2$ ] paper that (OP)  $\lambda_3$  he<sub>2</sub> had written  $t_3$  ] is interpreted as follows:  $\llbracket$  [certain  $f_8$   $pro_2$ ] paper that (OP)  $\lambda_3$  he<sub>2</sub> had written  $t_3$   $\rrbracket^g$  is defined iff  $\llbracket$   $f_8$   $pro_2$   $\rrbracket^g$  is a paper that  $pro_2$  had written; when defined  $\llbracket$  [certain  $f_8$   $pro_2$ ] paper that (OP)  $\lambda_3$  he<sub>2</sub> had written  $t_3$   $\rrbracket^g = \{ g(8) (g(2)) \}$ , for example:  $g(8)(x) = x$ 's latest paper. The meaning that comes about for the sentence in (41) arises from the structure in (44) and is represented in (45) below.

(44) No candidate  $\lambda_2$  [a [certain  $f_8$   $pro_2$ ] paper that  $\lambda_3$  he<sub>2</sub> had written  $t_3$  ]  $\lambda_1$  [  $t_2$  submitted  $t_1$  ].

(45) For no candidate *x* is there some *y* identical to the individual  $f_8(x)$  and *x* submitted *y* (i.e., for no candidate *x* is it the case that *x* submitted  $f_8(x)$ ).

Presupposition: for every candidate *x*,  $f_8(x)$  is a paper that *x* wrote.

In this section I argued for a semantics of *certain* as an NP modifier that could either select for an individual (in which case the sentence yields the wide scope reading) or for a skolem function (in which case the sentence yields a functional reading). In the absence of *certain* my analysis

predicts a narrow scope reading of *a* DPs. This prediction is borne out in the contrast between the sentences in (20) and (21). However, indefinite DPs being clause bounded, my analysis predicts that indefinite DPs without *certain* contribute neither wide scope, nor intermediate scope readings. In what follows I show that my analysis undergenerates.

### 6.2 English *a* DPs

First of all, *a* DPs have shown their capacity to take wide scope when they occur in a syntactic island. Consider the sentence in (46a) below from Reinhart (1997). The sentence is ambiguous between a wide scope as in (46b) and a narrow scope reading as in (46c).

- (46) a. If a relative of mine dies, I'll inherit a house.  
 b. There is a relative of mine *x*, such that if *x* dies, I'll inherit a house.  
 c. If any relative of mine *x* dies, I'll inherit a house. (Reinhart 1997:(342))

One question that arises is the following: in the absence of a domain restrictor like *certain*, what is responsible for the wide scope reading of (46a) sketched in (46b)?

Another question, concerns the so-called intermediate scope readings. Consider the sentence in (47a) below (Orin Percus, p.c.). It seems that *a professor* can give rise to an intermediate scope existential reading that is not predicted by my implementation of the singleton indefinite approach.

- (47) a. No student followed every instruction a professor had given.  
 b. No student  $\lambda_1$  [ a professor ]  $\lambda_2$  [ *t*<sub>1</sub> followed every instruction that *t*<sub>2</sub> had given ]  
 c. For no student *x* is there a professor *y* such that *x* followed every instruction that *y* had given.

The reading can be appreciated in the context schematized in the context in (48) below: A, B and C are the only students. The sets represent each student's professors. The underlined professors are those whose instructions were followed. Note that (47) is *false* in (48). The falsity of the sentence in (47) in the context sketched in (48) below is attributed to the availability of the ISR in (47c).

- (48) A : { A1, A2 }  
 B : { B1, B2 }  
 C : { C1, C2 }

The question that this discussion rises for our current analysis is the following: if indefinite DPs are existential quantifiers with local scope as is the claim here, what contributes ISRs of (47a)? Recall that ISR comes about when an indefinite DP is taken to contribute an existential quantifier takes scope outside an island and below a higher quantifier as in (47b) above. Such movement is not predicted by my implementation of the singleton indefinites approach. However, the current analysis is in harmony with Schwarz (2001) who claims that ISRs and functional readings, being distinct, should be accounted for with two separate mechanisms.

Importantly, Schwarzschild's original proposal incorrectly predicts the sentence in (47) to be true in the context in (48). As alluded to in footnote 2, that is because the unpronounced material that Schwarzschild posits inside the indefinite restrictor is nothing more than a function and bound variable pronoun as in (49) below. Schwarzschild claims that his mechanism mimics ISRs. However, the meaning in (49) is true in (48) assuming that the teachers whose instructions were not followed are the teachers each student hates the most. In other words, what Schwarzschild generates is actually a functional reading and not a genuine ISR. Importantly, such a reading is only available to *a+certains* indefinites (see Schwarz 2001; Solomon 2011 among others). Thus Schwarzschild's original proposal overgenerates.

(49) No student<sub>1</sub> followed every instruction that a teacher he<sub>1</sub> hates the most gave.

Notice that my implementation of Schwarzschild (2002) does not run into such a problem. That is because under my analysis, it is *certain* that selects for an individual by requiring its sister to be a singleton.

Nonetheless, it seems that the scope of *a* DPs is not as free as generally assumed. Consider the sentence in (50a) below. The sentence lacks a wide scope reading according to which there is a persuasive lawyer, such that if John hired him, he would have inherited a house. Interestingly, most of the examples of wide scope *a* DPs are ones where the indefinite is in subject position.

- (50) a. If John hired a persuasive lawyer, he would have inherited a house.  
 b. If John hired any persuasive lawyer, he would have inherited a house.

This is also transparent in the counterpart of (49) in (51a) below (Orin Percus, p.c.). The sentence in (51a) is judged *true* in context in (48). Intuitively, the true judgement is due to the narrow scope reading sketched in (51b). Importantly, the sentence lacks an intermediate scope existential reading as in (51c).

- (51) a. No student followed every instruction that concerned a professor.  
 b. No student followed every instruction that concerned a professor or another.  
 c. #For no student *x* can one find a professor *y* such that *x* followed every instruction that concerned *y*.

In this section, I have shown that my implementation of the singleton indefinite approach makes correct predictions as to the availability of wide scope readings and functional readings of *a+certains* DPs. My account also correctly predicts unavailability of genuine intermediate scope readings of *a+certains* DPs. However, when concerned with *a* DPs my analysis seems to undergenerate intermediate scope readings.

Nonetheless, I have also shown that the scope of *a* DPs is not as free as generally assumed. It seems that when *a* DPs are deeply embedded, they are not likely to undergo long distance movements.

## 7. Conclusion

This paper contributes to the cross-linguistic study of indefiniteness, one of the core linguistic categories that has been claimed to be universally present in natural language. I have proposed that the apparent wide scope reading of AA *wahad+el* DPs comes about when the existential quantifier *wahad* ranges over a singleton set. I argued that extreme domain restriction is morphologically marked in AA with the definite determiner *el* on its predicative use. Extreme domain restriction comes about as a result of the uniqueness presupposition introduced by *el*. I showed that this leads to what Schwarzschild (2002) calls scope neutralization via extreme domain restriction, i.e. by according the indefinite DP narrow scope, I nonetheless obtain a meaning that is equivalent to according it wide scope. I also argued that functional readings of *wahad+el* DPs come about when the indefinite's restrictor is conjoined with a silent predicate containing a function variable and an individual variable bound by an external operator. The meaning that comes about is not to be identified with the so-called intermediate scope existential readings. The latter comes about when an indefinite DP that occurs within a scope island, takes scope outside that island but below a further operator. I argued that the analysis is extendable to English *a+certain* DPs and pointed out the challenges that it faces when applied to English *a* DPs. The aim of this paper was to motivate a unified analysis of indefinite DPs in natural language as existential generalized quantifiers whose scope is syntactically constrained in the same way as other quantifiers.

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# A diachronic case study of the exclusive markers *but* and *just* in English

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The functional inventory of English has changed from the 1600s to today. The exclusive markers *but* and *just* have experienced opposite trajectories, where one has become very frequent while the other is almost completely out of use. This change happened slowly over the centuries through semantic reanalysis and a chain shift, which led to the linguistic situation we recognise today where *just* is an often-used exclusive marker in all registers while *but* is barely in use and limited to formal registers.

## 1. Introduction

This paper presents a case study of a change in exclusive markers in the functional inventory of English. Deo (2015:183) explains that there exists a “common core of functional meanings that human languages may encode grammatically”, and this functional inventory is subject to change over time. This diachronic study will investigate the semantic development of *just* from the 1620s to the 2010s and look at the change in functional inventory in English with regard to the exclusive markers *but* and *just*. *But* in its limiting sense is marked in the Oxford English Dictionary as “somewhat literal” (‘but, adv., sense 2.a’, n.d.), suggesting that the exclusive marker is not commonly found in spoken language anymore. *Just*, on the other hand, is highly frequent in both spoken and written language. This second exclusive marker was chosen for this study as it has experienced an opposite trajectory of use compared to *but*, and because it is a recent addition to the functional inventory of English, having undergone semantic reanalysis from a temporal of specifying marker to an exclusive marker during the 17<sup>th</sup> century. One example of each of the two exclusive markers is given below in (1) and (2).<sup>1</sup>

- (1) she was **but** one daughter of a dozen (COHA, 1912)  
(2) she was **just** one of many women (COHA, 1972)

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<sup>1</sup> In all examples in this paper, the exclusive marker has been boldfaced. The corpus reference (e.g. ‘COHA, 1912’ and ‘EEBO, 1637’) includes the name of the corpus the example is taken from and the year corresponds to the year the example is from.

The aim of this analysis, which is based in the framework of semantic reanalysis (Eckardt 2006), is to help shed light on how conventions change over time. The corpora used are introduced in section 2 along with the search queries used for this study. Section 3 will present the results of the study and section 4 will discuss possible reasons for the change in inventory using a framework of semantic reanalysis. I will propose that the exclusive meaning of *just* emerged due to a process of semantic reanalysis which happened before 1630 and that the subsequent years saw a chain shift where the use of exclusive *but* decreased due to competition with other exclusive markers.

## 2. Methodology

This study relies on data from the Corpus of Historical American English (COHA; Davies 2010), which is a genre-balanced corpus with data from the 1820s to 2019 and consists of 475 million words. I collected random samples of 100 instances of *but* and *just* from the 1820s, 1920s, and 2010s. In total, this yielded 600 concordance lines. Due to the large number of words in the corpus and the range of genres the texts belong to, COHA is well suited for this case study as it allows researchers to look at the language used in a variety of contexts and across different genres.

The Early English Books Online corpus (EEBO; Davies 2017) has been used to supplement the COHA findings with data from an earlier period. EEBO contains 755 million words from the period from the 1470s to the 1690s. As with the data from COHA, a sample of 100 concordance lines for *but* has been collected from the 1620s. However, while the query for *just* as an adverb in the 1620s yielded 799 results, most were mistagged adjectives. These instances were so plentiful that the sample of 100 mostly consisted of adjectives, so therefore it was not possible to collect a sample similar to the other time periods. Some exclusive instances of *just* from the 1630s, found by using a more specific search query, are presented in section 3.

To find instances of *just* as an adverb, I searched the corpora for ‘just\_r’, where ‘\_r’ is the part-of-speech tag for adverbs. This search term was used to avoid instances of *just* as an adjective in the sample. A similar approach for *but* was not possible, as the automatic tagger used in both EEBO and COHA only tags the instances where *but* follows a small number of words (e.g. ‘all’ or ‘anything’) as adverbs, which excludes many relevant hits. In addition to this, all relevant instances of *but* are not necessarily adverbs. Prepositions and conjunctions are also included in the samples. *But* as a coordinator, either in clauses or in phrases, is not included as it has a clearly different function (namely coordinative) than the exceptive and exclusive instances of *but*. Therefore I used the search string ‘but’ in both EEBO and COHA and collected a large sample. As the irrelevant readings were dominant in the results of this search string, I manually extracted the relevant hits (exceptive and exclusive uses). Out of the corpus hits remaining when all instances of coordinative *but* had been disregarded, a random sample of 100 was extracted.

I proceeded by annotating the 400 corpus examples of *but* and the 300 examples of *just* in a binary way. This annotation was based on whether they can have an exclusive reading or not. If an example contained an instance of *just* or *but* that could be replaced with other exclusives such as *only*, *merely* or *simply* without changing the meaning of the sentence, it was annotated as exclusive. The exclusive reading should be able to combine with a limiting phrase (e.g. ‘and

nothing more’) to emphasize the exclusive nature of the item (Grosz 2012). The examples where *just* can be replaced by either *only* or *exactly* were more challenging to annotate. Both denote a fixed amount within an upper boundary and a lower boundary, but *only* has a lowness component to it that triggers a lowness presupposition in the material it focuses (Coppock & Beaver 2014). One example of this type of sentence is (6) below. These kinds of sentences can be tested for lowness by adding a clause that explicitly expresses lowness (e.g. ‘which was early’ in the exclusive reading of (6)). If the lowness clause changes the meaning of the original sentence, the sentence is not exclusive. If the lowness clause appears redundant, the sentence is annotated as exclusive. Two more examples of clauses with this annotation issue are presented in section 3 (examples (7) and (8)). Ambiguous examples are counted as exclusive if an exclusive reading is possible. The non-exclusive uses of *but* are exceptive uses and the non-exclusive uses of *just* are mainly temporal (‘recently’) or specifying (‘precisely, exactly’). The different uses are exemplified in (3)–(6) below:

- (3) They were **but** men (COHA, 1827)  
 Exclusive reading: ‘They were **only** men, *and nothing more*’  
 Non-exclusive reading: ‘\*They were **except** men’
- (4) He has no son **but** me (COHA, 1824)  
 Exclusive reading: ‘\*He has no son **only** me, *and no one else*’  
 Non-exclusive reading: ‘He has no son **except** me’
- (5) ‘Perhaps they can see **just** the light and not me,’ he said to himself (COHA, 1922)  
 Exclusive reading: ‘Perhaps they can see **only** the light and not me [...]’  
 Non-exclusive reading: ‘\*Perhaps they can see **recently/exactly** the light and not me [...]’
- (6) On the third morning, **just** at dawn, there was a heavy snow squall for an hour. (COHA, 1922)  
 Exclusive reading: ‘?On the third morning, **only** at dawn, *which was early* [...]’  
 Non-exclusive reading: ‘On the third morning, **exactly** at dawn [...]’

Thus, after the annotation criteria, (3) and (5) above are annotated as exclusive as *but* and *just* in both examples can be replaced with *only*. In (4), *but* has an exceptive reading and is thus annotated as non-exclusive. (6) is annotated as non-exclusive, as the use of *only* to replace *just* would trigger a lowness presupposition that is not present in the original sentence.

## 3. Results

The annotation effort shows a clear increase in instances of exclusive *just* and a stagnating course for exclusive *but* from the 1620s to the 2010s. The numbers are presented in table 1 below. I will look at each one in turn.

	Annotation criteria	1620s	1820s	1920s	2010s
<i>but</i>	Exclusive	59	53	47	8
	Non-exclusive	41	47	53	92
<i>just</i>	Exclusive	-	10	25	50
	Non-exclusive	-	90	75	50
<b>Total</b>		<b>100</b>	<b>200</b>	<b>200</b>	<b>200</b>

Table 1. Overview of findings.<sup>2</sup> Data from EEBO and COHA.

As stated above, the use of *just* as an adverb was sparse in the 1620s compared to the use of *just* as an adjective, which rendered it difficult to collect a random sample of adverbial use. The Oxford English Dictionary lists the first instance of exclusive *just* in 1668 ('Just, Adv.', n.d.), but a more specific search string ('just two') in the Early English Books Online corpus shows that an exclusive reading for *just* was possible in the 1630s in addition to a specifying reading:

- (7) but to the sacred isle (for so they used to call it long ago) from hence a course who so desires, **just** two days sailing it requires (EEBO, 1637)  
 Exclusive reading: '[...] **only** two days sailing it requires, *which is not a lot*'  
 Non-exclusive reading: '[...] **exactly** two days sailing it requires'
- (8) if of one pound divide the diameter into 4 parts, and five such parts will make the diameter of a shot of the said metall or stone, that shall weigh **just** two pound (EEBO, 1639)  
 Exclusive reading: '[...] that shall weigh **only** two pound, *which is not much*'  
 Non-exclusive reading: '[...] that shall weigh **exactly** two pound'

<sup>2</sup> The slot for *just* in the 1620s is left blank, even though the sample of 100 contained only non-exclusive uses of *just*. To put 0 instances of exclusive *just* would not give a nuanced picture of the situation when a more specific search string yields clear examples of exclusive *just* in this period.

In (7) and (8) a spelled-out lowness clause does not change the meaning by adding something new to the examples, and the lowness clause appears redundant. Thus, both can have an exclusive reading with *only*. These examples show that while the broad search string ‘just’ did not provide any relevant hits of *just* in the corpus, it does not mean they did not exist in the period. The adjectival use is simply so much more frequent that exclusive uses of *just* only appear when a more specific search string is used.

*But* was frequent in the 1620s. Out of 100 instances of *but* 59 were exclusive uses. Two examples are given in (9) and (10). Here, *but* has been replaced by *only* and *merely* respectively. The non-exclusive readings show the same sentences where *but* has been replaced by *except*, which changes the meaning in both examples. In the exclusive reading the meaning did not change, thus they are both annotated as exclusive.

(9) this happened **but** in certaine matters (EEBO, 1627)

Exclusive reading: ‘this happened **only** in certaine matters’

Non-exclusive reading: ‘?this happened **except** in certaine matters’

(10) it might seeme that christ should rather haue said, yee are **but** idle sluggards following mee for loaues (EEBO, 1629)

Exclusive reading: ‘[...] yee are **merely** idle sluggards following mee for loaues’

Non-exclusive reading: ‘\*[...] yee are **except** idle sluggards following mee for loaues’

During the 1820s, 10 out of the random sample of 100 were instances where *just* had an exclusive reading. This means that the majority, 90% of the instances, were non-exclusive uses of the adverb. These uses of *just* were mainly temporal or specifying. One example of each sense is given in (11) and (12) below.

(11) he was still in danger of some accident taking place which might again expose him to the awful fate from which he had been **just** saved (COHA, 1823)

Exclusive reading: ‘\*[...] the awful fate from which he had been **only** saved’

Non-exclusive reading: ‘[...] the awful fate from which he had been **recently** saved’

(12) She is **just** like one of them heathen idols (COHA, 1824)

Exclusive reading: ‘\*She is **only** like one of them heathen idols’

Non-exclusive reading: ‘She is **exactly** like one of them heathen idols’

The number of exclusive instances of *just* rose significantly in the 100-year period between the 1820s and the 1920s. The data from the 1920s shows that one quarter of the instances of *just* are exclusive, a 150% rise from the previous century. This exponential growth continues over the next century and in the 2010s half of the instances of *just* are exclusive. This means that during the course of 200 years, there was a fivefold increase in the use of *just* as an exclusive marker.

*But* was frequently used as an exclusive marker in the 1820s. Slightly more than half of the instances during that time period were exclusive uses of *but*. *But* retained its steady level of use during the next century as is evident from the number of exclusive instances in the 1920s. The

number of instances of *but* as an exclusive marker in this period was 47, a mere 6% fall from the 1820s. However, *but* experienced a rapid decline in use over the following century. In the 2010s, only 8 out of 100 instances of *but* were exclusive uses. This means that from the 1820s to the 2010s, *but* as an exclusive marker experienced an 84.9% fall in use. Keep in mind that we are dealing with a random sample, so a different sample might have yielded different numbers. However, the trajectory is still clear and it is highly unlikely that the sharp decline in use is due exclusively to the sentences included in the random sample.

As the numbers in table 1 show, *just* was significantly more infrequent than *but* in the 1820s. It seems that the exclusive meaning of *just* had not yet reached a level of usage where it is fully in competition with exclusive *but*, while *but* had yet to experience any decline in frequency. Examples of the exclusive uses of *just* and *but* during this period are given below in (13), (14), (15), and (16). Notice that both exclusive markers *just* and *but* has been used in (14), *just* in the main clause and *but* in the direct object.

- (13) When the minister was dressed, he **just** said, 'How can you propagate religion in this empire? But come along.' (COHA, 1829)  
Exclusive reading: '[...] he **simply** said, 'How can you propagate religion in this empire [...], *and nothing else*'
- (14) But I will **just** inform my husband, who is afraid you have taken sick, that the noise was **but** the effect of a dream, and shall then return and stay with you till the morning. (COHA, 1823)  
Exclusive reading: 'But I will **only** inform my husband, *and not do anything else*, [...] that the noise was **only** the effect of a dream *and nothing else* [...]'
- (15) The British minister at first insisted on the Ohio as the western limits, and that the United States should have **but** a small share in the fisheries. (COHA, 1827)  
Exclusive reading: '[...] the United States should have **merely** a small share in the fisheries, *nothing more*'
- (16) I was **but** a man (COHA, 1823)  
Exclusive reading: 'I was **merely** a man, *nothing more*'

As mentioned earlier, *but* had a slight drop from the 1820s to the 1920s, but it was not significant enough to suggest that *but* was losing ground as an exclusive marker this early. Meanwhile, *just* experienced a significant rise in frequency and noticeably extended its use during this period. Two examples of each exclusive marker during the 1920s are given in (17)–(20) below.

- (17) Then you don't think he's **just** an ordinary crook with a lot of luck? (COHA, 1920)  
Exclusive reading: 'Then you don't think he's **merely** an ordinary crook [...] *and nothing else*'

- (18) "Got a smack, I see." "**Just** a mere scratch," replied Grace. (COHA, 1921)  
Exclusive reading: '[...]' "**Only** a mere scratch, *nothing more serious*," replied Grace.
- (19) Men on the roof held **but** one significance. (COHA, 1920)  
Exclusive reading: 'Men on the roof held **merely** one significance, *and nothing else*'
- (20) She seemed then **but** half as large as they had supposed; a fragile child who must be cloaked with understanding kindness. (COHA, 1920)  
Exclusive reading: 'She seemed then **only** half as large as they had supposed, *nothing more* [...]'

The most noticeable shift in conventions happened in the time period between 1920 and 2010. While exclusive *just* continues to rise, *but* drops down to a usage level lower than *just* in the 1820s. Possible reasons for this shift will be discussed in section 4 below. During just one century, the roles have been reversed and *but* has barely any ground left as an exclusive marker. This reversal of roles is illustrated with a graph in figure 1 in section 4. Furthermore, six of the eight instances of exclusive *but* in the 2010s occur in texts with rather ornate language. Thus, it seems the exclusive meaning of *but* is retained in specific registers of speech associated with a very formal style of writing. This is exemplified in (21) and (22) below. Three of the eight instances of *but* as an exclusive marker were instances of the construction 'you have but to', which is uncommon in everyday speech but do occur in fixed expressions. All are given below in (22)–(24).

- (21) Having been **but** a babe in her mother's arms when they crossed the border, she never had the slightest hint of an accent (COHA, 2016)  
Exclusive reading: 'Having been **only** a babe in her mother's arms [...]'
- (22) We have **but** to add to this notice that the success of M. Liszt's unassisted Concert on Tuesday was brilliant beyond all expectation, since we must reserve a few remarks upon his peculiarities as a composer for a future occasion. (COHA, 2011)  
Exclusive reading: 'We have **only** to add to this notice [...]'
- (23) You have **but** to tell me a name (COHA, 2014)  
Exclusive reading: 'You have **merely** to tell me a name, *nothing more*'
- (24) You have **but** to say the word (COHA, 2015)  
Exclusive reading: 'You have **only** to say the word, *and nothing more*'

Meanwhile, *just* does not seem to be bound by any register or style restrictions. It occurs both in writing of more formal registers, as in (25) and (26), and in written accounts of spoken language, as in (27) and (28).

- (25) 70 percent of the world's remaining tigers are concentrated in small reserves (like Nagarhole) that cover **just** 6 percent of their current range. (COHA, 2012)  
Exclusive reading: '[...] in small reserves [...] that cover **merely** 6 percent of their current range, *and nothing more*'
- (26) Curiosity is set to land in Gale Crater. An ancient asteroid impact gouged out this deep, 96-mile-wide (154km) hole in the ground, which lies **just** 5 [sic] south of the martian equator. (COHA, 2012)  
Exclusive reading: '[...] which lies **only** 5 south of the martian equator, *which is not far*'
- (27) I'm **just** making an appointment - to get the stick out of your ass. (COHA, 2013)  
Exclusive reading: 'I'm **only** making an appointment, *nothing else* [...]'
- (28) It's **just** about not ignoring it, I guess. (COHA, 2019)  
Exclusive reading: 'It's **simply** about not ignoring it, *nothing else*, I guess'

#### 4. Discussing the findings: how '*just*' emerged and '*but*' receded

From the 1920s to the 2010s there is a sharp rise in the number of exclusive *just*, and a sharp drop of exclusive *but*. Based on the data in table 1 and our examples from the 1630s, we can tell that *just* emerged as an exclusive marker before *but* lost ground as they both existed in the 1630s. *Just* had a significant jump in use from the 1820s to the 1920s, where it became 150% more frequent. However, *but* did not experience an equally drastic fall in this period which would suggest that *but* had either not yet started, or very recently started, to lose ground as an exclusive marker. Hence when *just* had established itself as an exclusive marker in English, it competed with *but* (and other exclusive markers such as *merely* and *simply*) expressing the same meaning. Thus, it is reasonable to hypothesise that it was due to the competition between the exclusive markers that *but* lost ground. To investigate how *just* became an exclusive marker, I will use a framework of semantic reanalysis as it provides a plausible motivation for the shift from specifying or temporal marker to exclusive marker.

I will use parts of the framework used by Eckardt (2006) to argue that the development of *just* as a specifying adverb or temporal marker to *just* as an exclusive marker was an instance of semantic reanalysis. Langacker explains reanalysis as "change in the structure of an expression or class of expressions that does not involve any immediate or intrinsic modification of its surface manifestation" (Langacker 1977:58, in Eckardt 2006:2). This encompasses the reanalysis of *just* as a specifying adverb or temporal marker into an exclusive marker, as only the internal structure (the semantics) of the adverb was altered and not the surface manifestation (the surface form / pronunciation).

According to Eckardt (2006), meaning change through semantic reanalysis can happen over time when pragmatic inferences are part of a grammaticalisation process where the item is reanalysed so that the inference becomes part of the meaning rather than simply something implied. This reanalysis happens in several stages. In the case of *just*, we can identify two

separate stages and illustrate this with (29) below. In the first stage, there is no indication that any reanalysis will happen. The only reading of (29) available is the non-exclusive meaning, which states that the girl ('she') had recently turned sixteen. In this reading *just* is a temporal marker. However, the use of *just* triggers the pragmatic inference that the girl is still sixteen, and no more than sixteen. The exclusive pragmatic inferences that can be applied to this clause will arise so frequently that they eventually become part of the conventional interpretation of the clause (Eckardt 2006: 8). Over time the exclusive reading of (29) will be available, and this will be based on the pragmatic inferencing and change the internal structure of *just*.

(29) She was **just** sixteen

Original non-exclusive reading: 'She had **recently** turned sixteen'

New exclusive reading: 'She was **only** sixteen'

As the examples presented above from the 1630s contained instances of *just* that could be interpreted as exclusive, this reanalysis and subsequent meaning change from specifying adverb or temporal marker to exclusive marker are likely to have happened before this period.

During the two centuries from 1620 to 1820, exclusive *just* established itself as a viable exclusive marker in the language. Yet the more significant rise in frequency took place in the following centuries. The cause for this might have been the number of ambiguous cases where *just* could be either temporal, specifying, or exclusive, which would have allowed exclusive *just* to continue to rise and not simply stay at a low level of use. The following discussion will investigate four cases of *just* from the 1820s where the meaning of *just* is ambiguous, presented in (30)–(33). In (30), the exclusive reading states that Lucy was only sixteen, and that sixteen is a low number. However, a temporal reading is also possible, where Lucy has very recently turned sixteen. The non-exclusive reading states that the event (Lucy turning sixteen) has happened very recently but does not comment on whether sixteen is a low number or not.

(30) Lucy, then **just** sixteen, was one of the loveliest girls that the light of the sun shone upon  
(COHA, 1829)

Exclusive reading: 'Lucy, then **only** sixteen [...]'

Non-exclusive reading: 'Lucy, then **recently** [turned] sixteen [...]'

In (31), the exclusive reading emphasizes that Charles was only excusing himself to Peter, and not doing anything else. The non-exclusive reading provides a temporal interpretation and states that the event (Charles excusing himself) happened very recently before the moment of utterance, but does not comment on whether Charles did anything else besides excusing himself.

(31) "Doctor, I beg your pardon," said Charles, "I was **just** excusing myself to Peter for not permitting my arm to remain for the last six weeks in a state of fracture, in order that you might now have the pleasure of reducing it."  
(COHA, 1823)

Exclusive reading: '[...] I was **only** excusing myself to Peter, *not doing anything else* [...]'

Non-exclusive reading: '[...] I was **recently** excusing myself to Peter [...]'

The exclusive reading of (32) emphasizes that the difference was only alluded to, and not explicitly stated. The non-exclusive reading is temporal and carries the meaning that the difference was recently alluded to. The exclusive reading does not imply when the alluding happened (which the temporal reading does) whereas the temporal reading does not imply whether the difference was stated or not (which the exclusive reading does).

- (32) if it means any thing else than the difference, to which we have **just** alluded (COHA, 1823)  
Exclusive reading: ‘[...] the difference, to which we have **only** alluded *and nothing more*’  
Non-exclusive reading: ‘[...] the difference, to which we have **recently** alluded’

In (33), the exclusive reading states that the only reason for the appearance of Sambo was for him to dress his master. The non-exclusive reading provides a temporal perspective for Sambo’s appearance and states that this happened very recently.

- (33) This command was instantly obeyed by Sambo, who had **just** appeared for the purpose of dressing his master. (COHA, 1827)  
Exclusive reading: ‘[...] Sambo, who had **only** appeared for the purpose of dressing his master *and nothing else*’  
Non-exclusive reading: ‘[...] Sambo, who had **recently** appeared for the purpose of dressing his master’

There are quite a few of these ambiguous instances in the 1820s, which might have contributed to the perceived frequency of exclusive *just* in the period as well as the rise of it during the following century. This is because seeing ambiguous instances might cause an effect similar to semantic priming. Sedivy describes semantic priming as an effect where “when you hear or read a word, you also partially activate other words that are related in meaning” (2020:301). This effect is often used to illustrate how, in an experiment where participants are to name a picture, showing a picture of a related item first helps the participants find the correct word faster, as they are already “primed” to more easily identify the concept. It is possible to imagine a similar effect in our case. When a language user hears or reads an instance of *just* used in a context where it can be interpreted as exclusive, this might cause a priming effect where they are more likely to interpret *just* as exclusive in the next ambiguous context they come across. This correlates with the rise of exclusive *just* from the 1820s to the 1920s, and might have helped *just* to be used as an exclusive marker more frequently during this period.

As is evident from the data in table 1 and from the examples from the 1630s, both *just* and *but* have had an exclusive reading since the early 1600s. Hence it cannot follow that *just* took over after *but* disappeared, but rather the data shows a gradual replacement that took place in the functional inventory. This is illustrated in figure 1 below. This can be explained as a chain shift where the increase in use of exclusive *just* led to stronger competition between the exclusive markers, which caused exclusive *but* to recede.

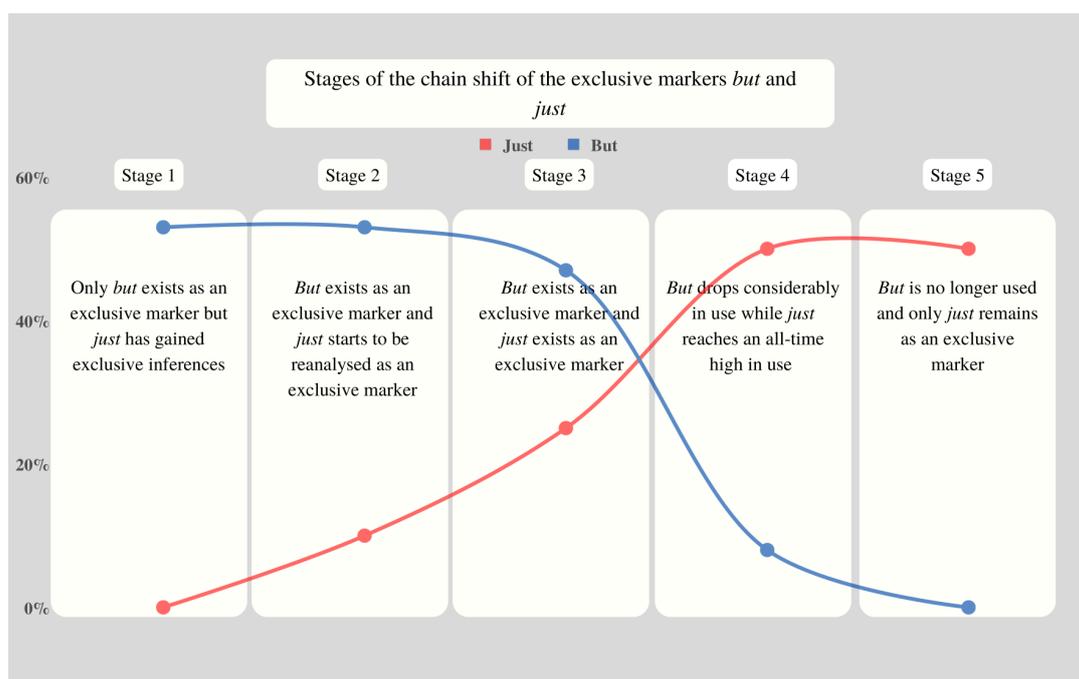


Figure 1. Stages of the chain shift of the exclusive markers *but* and *just*. The percentage of exclusive instances are given on the y axis and the x axis shows the stages of the chain shift. The numbers are taken from table 1.

This chain shift can be accounted for in five stages, which is illustrated in figure 1 alongside the corresponding use of *just* and *but* in the different stages (time periods) of the shift. We can hypothesise that stage 1 happened before 1630. While the data in table 1 from this period contains no instances of exclusive *just*, we know from examples (7) and (8) that *just* could have an exclusive reading at this time, so it must have started obtaining exclusive pragmatic inferences before this period. The data from the 1820s illustrates stage 2, the stage where *but* is still the main exclusive marker out of the two. During this stage there are some instances of exclusive *just*, but not enough for it to be a proper competitor of *but* yet. Stage 3 sets the backdrop for the loss of exclusive *but* in stage 4. *Just* has in the century leading up to the 2010s established itself firmly as an exclusive marker and it is no longer economical to keep both *just* and *but* as they have the same function. In addition to this, other exclusive markers are also competing with these and each other. This explains the sharp drop in use of *but* between the 1920s and the 2010s, which is stage 4. Here, the space left behind by *but* allows for even more frequent use of *just*. Based on the data in table 1 we can hypothesise a stage 5 which takes place after the 2010s. In this stage *but* as an exclusive marker has been completely lost from the language and only *just* remains as an exclusive marker out of the two. This is supported by the examples (21)–(24) provided above, which demonstrated that exclusive *but* today is used mainly in ornate language and not in everyday speech and writing.

We can view this change in functional inventory in terms of recruitment and loss, two terms for different types of change which is used by Deo (2015). *Just* is recruited as an exclusive marker, thus extending the group of exclusive markers in the functional inventory of English. Note that the recruitment process in this case is not concerned with the development of a new functional meaning, but rather with the development of a new way to express an already existing functional meaning. The gradual decline of *but* is an instance of loss, as the exclusive marker is lost from the inventory.

The shift in functional inventory can be explained in two ways. Either the loss of *but* led to the recruitment of *just*, or the loss of *but* is an effect of the recruitment of *just* which led to competition between new and existing variants (Deo 2015:184). Our data shows that *just* had already been reanalysed as an exclusive marker by the time exclusive *but* started to decline in frequency. Therefore the hypothesis that it was the loss of *but* that led to the recruitment of *just* is unlikely. This leaves us with the other explanation, namely that the competition between the exclusive markers caused the loss of exclusive *but*. It must be kept in mind that in addition to *just*, many other exclusive markers were in competition with *but*. These include but are not limited to *only*, *merely*, *simply*, *purely*, *exclusively* and *solely* (Coppock & Beaver 2014). All of the exclusive markers mentioned above came into the language before *just* became an exclusive marker. Some had been exclusive markers for centuries (*only* was first recorded as an exclusive marker in 1325 ('only, adv., conj., and prep.', n.d.)) whereas others came into the language around the same time as *just* (*exclusively* was first recorded as an exclusive marker in 1650 ('exclusively, adv.', n.d.)).<sup>3</sup> Hence, it might be the case that *but* already had competition from other exclusive markers before *just* emerged. Figure 1 shows a clear trajectory for both exclusive markers, and it is plausible to hypothesise that it was the competition between the new variant (*just*) and the existing variants (*but*, but also other exclusive markers such as *only* and *merely*) that led to the eventual loss of *but*.

## 5. Conclusion

From the 1600s to the 2010s, the functional inventory of English saw two distinct changes, namely the recruitment of *just* as an exclusive marker through semantic reanalysis and the loss of *but* as an exclusive marker. As figure 1 illustrated, the recruitment and the loss balanced each other out. Consequently, English did not experience an increase or a decrease in its functional inventory, but rather a change of items. This process can be interpreted as a chain shift, where the addition of *just* to the functional inventory caused greater competition between the exclusive markers and eventually led to the loss of *but*. However, it should be noted that these results are based on a relatively small sample, and should thus be interpreted with some caution. Future studies should include a larger sample size so that the results are more reliable.

## Acknowledgements

I would like to thank Patrick Grosz for guidance and invaluable comments throughout the writing of this paper, as well as one anonymous reviewer for helpful suggestions to its further improvement.

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<sup>3</sup> Note that these dates refer to the Oxford English Dictionary's first recorded written instances of the words. However, it is not given that it is the actual first instance of the words. As we saw earlier, some instances of *just* in the 1630s can be read as exclusive even though they are dated earlier than the OED's first recorded instance of exclusive *just*.

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# Dependency between pre-classifier adjectives and classifiers

A root-based analysis

Lu Jin

This paper investigates the selectional restrictions of pre-classifier modifiers in Numeral Classifier Constructions (NCC) in Mandarin Chinese. The adjectival modifiers *da* ‘big’ and *xiao* ‘small’ can be used as phrase-internal modifiers by preceding a classifier in an NCC. However, the two modifiers trigger different modifying patterns. Specifically, when they precede a sortal classifier (SCL), the adjectives modify the sequence SCL+Noun, but when they are placed before a mensural classifier (MCL), the modifiee is the MCL without the noun. Facing the variation in the modifying scope, I assume that both *da* ‘big’ and *xiao* ‘big’ are modifiers of roots. They can modify a root projection, or they can modify an nP, and their position at the root level determines their modifying scope in the surface structure.

## 1. Introduction

In the word order Numeral+Classifier+Noun, Numeral Classifier Constructions (NCCs) have been analysed as quantificational expressions.<sup>1</sup> The classification of classifiers are well-documented in the literature. In this study, I adopt the general terminology from Cheng & Sybesma (1999) and Tang (2005), they distinguish two types of classifiers: sortal classifiers (SCLs) and mensural classifiers (MCLs).<sup>2</sup> The primary function of SCLs is individuating the denotation from the following noun (Tang 2005). In (1-a), the sortal classifier *ben* ‘sheet’ is a singular instance of the noun *shu* ‘book’.<sup>3</sup> Also, an SCL shows selectional restrictions with its following noun. For example, the SCL *ben* ‘sheet’ is felicitous with the noun ‘book’ or any

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<sup>1</sup> If not indicated otherwise, all Mandarin Chinese examples in this paper are my own.

<sup>2</sup> The classification of the classifier system is an ongoing debate. For example, Zhang (2013) identified that these general terms fail to catch the feature variation among classifiers, such as variation in the feature [+Delimitability]. Since I focus on pre-classifier modifiers and the features of classifiers are beyond the current scope of this paper, I will stick to these two terminologies in the rest of this paper.

<sup>3</sup> There is no English counterpart for *ben*. When *ben* is used as an SCL, it refers to an entity that consists of printed sheets. For the sake of convenience, I translate it as sheet in the rest of this paper.

nouns that refer to the similar kind of entities (such as *za zhi* ‘novel’ in (1-b)). But mensural classifiers (MCLs) are natural units of their following noun. Both natural measuring units (2-a) and container words (2-b) are measuring classifiers. Semantically, MCLs create an additional quantifiable unit rather than naming a unit from the nominal denotation (Cheng & Sybesma 1999), and therefore measuring classifiers have their own lexical meanings.

- |     |    |   |    |  |
|-----|----|---|----|--|
| (1) | a. | Yi ben shu<br>one SCL book<br>‘one book’              | b. | Yi ben za-zhi<br>one SCL magazine<br>‘one magazine’  |
| (2) | a. | Yi bang shui<br>one MCL water<br>‘one pound of water’ | b. | Yi bei shui<br>one MCL water<br>‘one glass of water’ |

Adjectives are allowed in an NCC, and there are two slots for inserting an adjectival modifier: either before the classifier or before the noun. However, there are restrictions about which type of adjectives can be inserted in an NCC. Only degree adjectives, particularly *da* ‘big’ and *xiao* ‘small’, can be placed before a classifier (3-a). Other types of adjectives can only precede the noun in an NCC. For example in (3-b), the colour adjective *hong* ‘red’ is not allowed in the pre-classifier position.

- |     |    |  |
|-----|----|--|
| (3) | a. | Yi da kuai bu<br>one big SCL cloth<br>‘a big piece of cloth’         |
|     | b. | Yi (*hong) kuai hong bu<br>one (*red) SCL red cloth<br>‘a red cloth’ |

Furthermore, the degree modifier has a different modifying pattern when it surfaces with different types of classifiers: when *da* ‘big’ or *xiao* ‘small’ precedes an SCL, the modifiee is SCL+N. For example, in (4-a), *da* ‘big’ is not an attributive modifier of *ben* ‘sheet’. If it modifies *ben* ‘sheet’, (4-b) should mean that I read a book, and the size of the book is big. Specifically, *ben* ‘sheet’ is a shape-defining classifier, and a classifier is assumed to have a functional projection in syntax (Cheng & Sybesma 1999). In this case, the modifier *da* ‘big’ is placed at the specifier position due to its adjacency with *ben* ‘sheet’. Scott (2003) assumes that the semantic interpretation for a specifier is determined by the head element. Consequently, if *da* ‘big’ modifies *ben* ‘sheet’ in (4-b), a size-relating meaning should be implied. But such a meaning is not borne out, and the NCC actually implies that the content of a book is massive. Therefore, the adjectival modifier *da* ‘big’ scopes over the SCL and modifies SCL+N.

- |     |    |   |
|-----|----|---|
| (4) | a. | Yi da ben shu<br>one big SCL book<br>‘one big book’   |
|     | b. | Wo du-le yi da ben shu<br>I read-past one big SCL book<br>‘I read a big book, which is a lot’ |

Things become more straightforward when a degree modifier precedes an MCL, in which case it modifies the MCL directly, and it functions as an intensifier. Therefore in (5-b), *da* ‘big’ intensifies the largeness of the bowl so that the indication of ‘a lot’ is expressed.

- (5) a. Yi da wan tang  
 one big MCL soup  
 ‘one big bowl of soup’
- b. Wo he-le yi da wan tang  
 I drink-past one big MCL soup  
 ‘I drank a big bowl of soup, which is a lot’

To wrap up the data that I have introduced so far, both the pre-classifier position and the pre-nominal position are possible positions for an adjectival modifier, but only degree adjectives *da* ‘big’ and *xiao* ‘small’ can be placed before a classifier. However, when a degree adjective precedes an SCL, its modifiee is SCL+N. When a degree adjective precedes an MCL, it only modifies the MCL. Despite the difference in modifying scope, the same implication ‘a lot’ is expressed through both constructions.

Given the patterns, it seems that the modifiee of a pre-classifier adjective is associated with the type of the classifier that the adjective adjoins with. Thus, it is plausible to assume that different classifiers have distinctive syntactic environments, which may further influence the modifying scope of a pre-classifier adjective. In the rest of the paper, I firstly discuss the nominal properties of certain Chinese classifiers, which indicates that certain classifiers are derived from NP. After this, I assume that the modifiee of a pre-classifier adjective is determined in the root projection, and both *da* ‘big’ and *xiao* ‘small’ are root modifiers.

## 2. Nominal properties in classifiers

There are two major approaches regarding the relation between numerals and classifiers. First, the left-branch approach, under which a numeral and a classifier form a constituent before merging with a noun (Zhang 2011; Her 2017). In this type of analysis, classifiers function as a counting unit and share the features that are encoded in numerals. On the other hand, some researchers put forward the right-branch approach, in which a classifier and a noun form a constituent. The major argument for the right-branch approach is based on the semantic relation between a classifier and its following noun. For example, in Cheng & Sybesma (1999), an SCL is seen as a natural subset of the whole denotation of a noun, and an MCL is a nominal expression that is moved out of an NP to the classifier phrase, which means that SCLs have a closer semantic relation with a head noun than MCLs.

Both approaches neglect the roles of pre-classifier adjectives. The pre-classifier adjectives are only treated as a tool to support the division of functional items and lexical item in Chinese classifiers. Specifically, SCLs are assumed as functional items, whereas MCLs are assumed as lexical items. Consequently, MCLs are more likely to accept a preceding modifier and a modifying marker *de* ‘of’, but SCLs are not allowed to surface with any modifiers.

In this paper, I agree with Li (2011) that the analysis in Cheng & Sybesma (1999) cannot explain that the other types of adjectives are blocked before an MCL (as mentioned in the introduction, only degree modifiers can precede a classifier). Meanwhile, the assumption that

SCLs are functional and MCLs are lexical items needs to be reconsidered, because certain SCLs share the same nominal properties with MCLs.

More specifically, some classifiers can be placed after a noun and form an N-CL compound, and this transition is not restricted to MCLs only. As shown in (7) and (9), the SCL can be placed post-nominally to form an N-CL compound as an MCL does. More importantly, such compounds can be used as nominal expressions and be classified in an NCC (see (10)). Therefore, the strict division between functional and lexical categories is not accurate. If SCLs are functional items, and they are base-generated in the head of the classifier phrase, what converts them into nominal items in an N-CL compound?

- |      |  |     |  |
|------|--|-----|--|
| (6)  | Yi ben shu<br>one SCL book<br>'one book'   | (7) | Shu-ben<br>book-SCL<br>'books'                         |
| (8)  | Yi ping shui<br>one MCL water<br>'one bottle of water'   | (9) | Shui-ping<br>water-MCL<br>'bottles filling with water' |
| (10) | Wo na-le liang xiang shu-ben/shui-ping<br>I take-past two MCL books/water-bottles<br>'I took two boxes of books/water-bottles' |     |  |

Furthermore, assuming SCLs as functional heads fails to explain the modifying scope of pre-classifier adjectives. The distribution of pre-classifier adjectives would be as shown below in (11-a) and (11-b) in the analysis from Cheng & Sybesma (1999), in which the adjective is inserted after the classifier is merged. But as mentioned previously, pre-SCL adjectives modify SCL+N, which is not reflected through (11-a)

- |      |    |  |    |   |
|------|----|--|----|---|
| (11) | a. | <pre> graph TD     CLP --&gt; SCL1[SCL]     CLP --&gt; NP1[NP]     SCL1 --&gt; AP1[AP]     SCL1 --&gt; SCL2[SCL]     AP1 --&gt; dx[da/xiao] </pre> | b. | <pre> graph TD     CLP --&gt; CL[CL]     CLP --&gt; NP1[NP]     CL --&gt; AP1[AP]     CL --&gt; MCL1[MCL]     AP1 --&gt; dx[da/xiao]     NP1 --&gt; N[N]     NP1 --&gt; NP2[NP]     N --&gt; MCL2[MCL]     MCL1 -.-&gt; MCL2 </pre> |
|------|----|--|----|---|

Therefore, I follow the proposal from Li (2011). He assumes that Chinese classifiers inherently contain lexical properties, but the degree of lexicality in Chinese classifiers varies. The classifiers with a high lexicality can denote a full lexical meaning (such as MCLs). But the classifiers with a low degree of lexicality can denote a partial lexical meaning (such as SCLs). A similar suggestion can be found in Wu (2017), in which Chinese classifiers are assumed as semi-lexicals, because they all have intrinsically contentful meanings and they also behave like a quantifying element in the grammar.

Based on these analyses, I suggest that those SCLs with a relatively higher degree of lexicality can form an N-CL compound, and they are derived from the NP. More precisely, whichever

SCLs can form an N-CL compound, both the noun and the classifier are roots under the NP. In the following section, I will discuss this proposal in a more detailed sense. Noun phrases generally denote entities (Panagiotidis 2011; Harley 2014), and this interpretive feature stems from the *n* categoriser. In my analysis, I assume there is a complex root projection near the *n* categoriser, which includes the noun and the classifier.

### 3. Classifiers as roots

Roots are defined as the bases of a linguistic item under the framework of Distributed Morphology (Hale & Keyser 1993). Generally, the model covers three derivations: at the primitive stage, a list of roots that satisfy syntactic operations (such as numeration, merge) is selected, then the roots are handed off to PF and LF respectively. PF contains phonological realisations and constraints, and LF is where the semantic roles get applied.

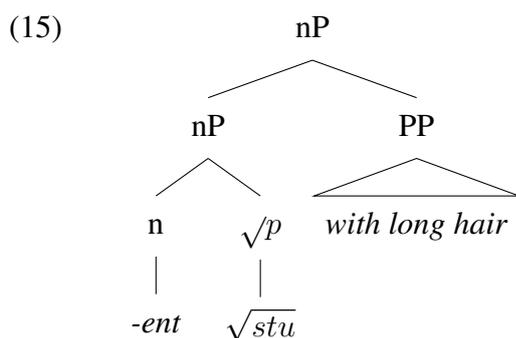
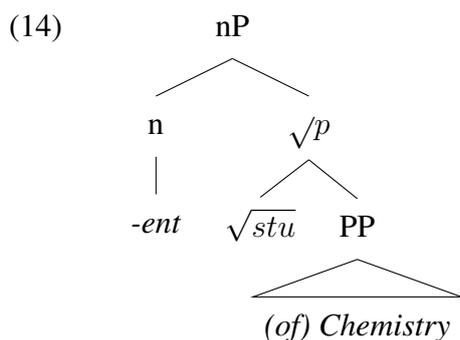
When it comes to the semantic interpretation of a root, it has been assumed that roots contain the base information that a noun or a verb should have. In other words, roots can denote entities, properties, and events (Harley 2005; Marantz 2007). But roots *per se* cannot form an eligible expression, and they are dependent on a categoriser before any syntactic derivations take place (Panagiotidis 2011).

Following this approach, Harley (2014) assumes a complex structure at the root level, in which roots can select for arguments to form a projection ( $\sqrt{p}$ ). Inside the projection, the internal arguments are adjoined to the root. Whereas internal adjuncts are attached next to a categorised terminal node (such as *nP*, *vP*). Specifically, Harley (2014) uses the root projection to explain the parallelism of the argument structure between VPs and NPs. In (12), the noun ‘student’ and the verb ‘study’ have the same root *stud-*, which selects for ‘Chemistry’ as their internal argument.

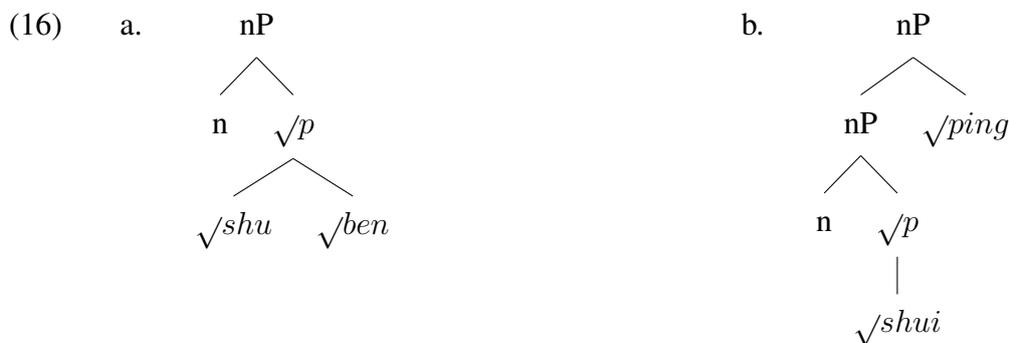
- (12) a. John studied Chemistry  
b. John is a student of Chemistry

- (13) a. A student of Chemistry  
b. A student with long hair

Furthermore, this root-based analysis can explain the difference between (13-a) and (13-b). As shown in (14), the PP in (13-a) is an internal argument of the root *stud-*, which means that the PP is a part of the phrase. However, the PP in (13-b) is an internal adjunct. As shown in (15), the PP is adjoined above  $\sqrt{p}$  to the *nP*. Therefore, the PP ‘with long hair’ is optional to the phrase.



In this study, I assume that whichever classifiers can form an N-CL compound, they are derived in the root projection under an nP. By following the assumption from Harley (2014), the structures for the N-CL compounds *shu-ben* 'books' and *shui-ping* 'bottles filling with water' would be as shown in (16-a) and (16-b) respectively. The n categoriser contains the categorial information, and the root projection gives the categoriser a contentful information.



This analysis can explain why the SCL *ben* 'sheet' has an internal relation with the noun *shu* 'book' in the phrase *yi ben shu* 'one book', because they project together and form a  $\sqrt{p}$ . But for the MCL *ping* 'bottle', it is an internal adjunct and it is adjoined to the nP. Therefore, there is no internal relation between the MCL *ping* 'bottle' and the noun *shui* 'water'.

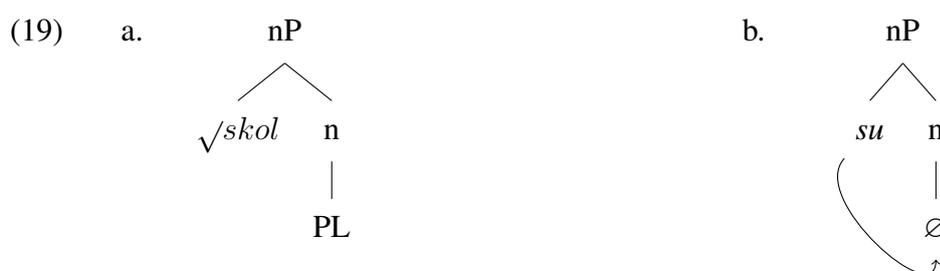
Furthermore, this analysis can explain the flexibility of using MCLs in an NCC. As mentioned previously, SCLs show a selectional restriction with their following noun. But MCLs can be used productively regardless of the meaning of their following noun. For example, the MCL *xiang* 'box' can be placed before a count noun *shu* 'book', a mass noun *shui* 'water', or a kind-referring noun *shui guo* 'fruit'. Following the structure above, all MCLs are placed in an internal adjunct position, which means that they only provide an additional information to the nP. Consequently, MCLs can combine with a wider range of nouns in NCCs.

However, a question arises with regard to (16-a) and (16-b): what is the status of the categoriser? Unlike the English examples that the *n* categoriser is filled with a root (14). The status of the Chinese *n* categoriser is empty. Also, the current proposal cannot capture the property of the interpretation in N-CL compounds. The meaning for an N-CL compound can be derived from the noun or from the classifier. For example in (17), the SCL *ben* ‘sheet’ only provides an additional meaning to the word, and it is the noun *shu* ‘book’ that provides the core meaning for (17). But in (18), the MCL *ping* ‘bottle’ contributes the meaning to the compound. Therefore, the position of SCL roots and MCL roots needs to be reconsidered, and the status of the *n* categoriser needs to be defined.

(17) shu-ben  
book-SCL  
‘books’

(18) shui-ping  
water-MCL(bottle)  
‘bottles that are filling with water’

Regarding the status of the *n* categoriser, I follow the idea from Wang & Holmberg (2021). They assume that categorisers in Mandarin-Chinese are null morphemes, and the null morphemes accept the copying of their sister root to have a phonological realisation at PF. Specifically, the same copying mechanism was found in Swedish compounds, in which a number of noun compounds end with the vowel /a/ or /e/. The vowels are assumed to replace the functional categorisers (such as number, gender) through vocabulary insertion (Wang & Holmberg 2021). Therefore, in (19-a), the categorial feature of nP is determined by the *n* node, which encodes the number feature but lacks a lexical realisation. The root *skol* ‘school’ is acategorial and it merges with the *n* node to form an nP. The whole configuration spells out as *skol* ‘school’, and at this time, the vowel /a/ fills in the categoriser position and form the noun *skola* ‘school’. In this analysis, the categoriser can be empty before being sent to PF. Vocabulary insertion takes place at PF, which results in the insertion of the word-final vowels in Swedish compounds.

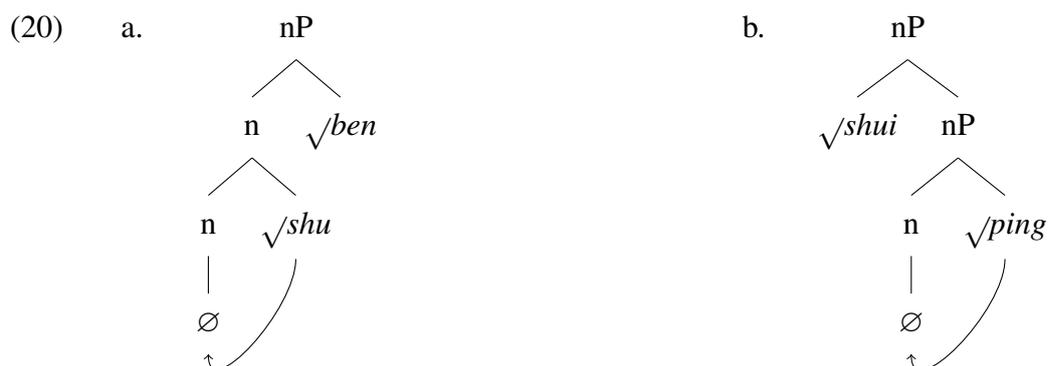


Wang & Holmberg (2021) investigated the reduplication of nouns in Xi Ning Chinese and assume that there is a parallelism between vowel insertions in Swedish compounds and reduplication of nouns in Xi Ning Chinese. Specifically, the word *su su* ‘lock’ in Xi Ning Chinese contains two phonologically analogous items. Wang & Holmberg (2021) assume that reduplication occurs when a phonological form is copied onto the *n* categoriser. In (19-b), the root *su* merges with an *n* categoriser, which is a null morpheme that encodes the categorial feature. At PF, the root receives a matching phonological realisation *su*, and in the meantime, this phonological form is copied onto *n* categoriser, which results in the compound *su su* ‘lock’.

By adopting the analysis from Wang & Holmberg (2021), I assume the *n* categoriser is a null morpheme before entering into PF. However, the *n* node has to be filled with a phonological form before spell-out, which triggers the copying of the phonological form of the *n* categoriser’s

sister node to the n categoriser. Therefore, the mechanism consists of the following steps. First, the n categoriser merges with roots, and the categoriser encodes canonical category information so that the nP can be interpreted in syntax and undergo syntactic derivations. Vocabulary insertion takes place at PF, and at this time, roots receive their phonological forms. Since there is no matching phonological form for the n categoriser, the copying of a root onto the n node is triggered. In addition, there is a local constraint during the copying process. The internal complement of the n categoriser is copied onto the categoriser position. Therefore, as shown in (20-b), it is *ping* ‘bottle’ that is copied onto the n node.

When it comes to SCL roots, they do not function as an internal complement of an n categoriser, and meanwhile, they are not the internal adjunct of nP either. I assume SCL roots are placed in a special position in an nP. This position provides a similar function with *inner morpheme* (Panagiotidis 2011). For example, in the verbal phrase ‘paint the wall’. It is assumed that there is an inner morpheme that merges the root  $\sqrt{\text{paint}}$  first before moving to the v categoriser, and the inner morpheme functions as a PP, which makes paint a locatum verb (Hale & Keyser 1993). In this case, an inner morpheme provides the thematic relation that a verb assigns. In the case of *shu ben* ‘books’, as mentioned previously, *ben* ‘sheet’ is analysed as a subset of the denotation from the noun *shu* ‘book’. Therefore, I assume the root *ben* ‘sheet’ merges at the intermediate position between n and nP (20-a), and this position gives rise to the internal relation between *ben* ‘sheet’ and *shu* ‘book’.



Finally, by using this analysis, the puzzle of the meaning in an N-CL compound is resolved. In (20-a), the root  $\sqrt{\text{shu}}$  ‘book’ is an internal complement of the n categoriser, which is copied to the n node. Thus, in the compound *shu ben* ‘books’, *shu* ‘book’ provides the meaning for the compound. But in (20-b), the root  $\sqrt{\text{ping}}$  ‘bottle’ is the complement of the categoriser, which makes  $\sqrt{\text{ping}}$  a copy at the n node, and therefore, *ping* ‘bottle’ contributes the meaning for the compound *shui ping* ‘bottles that are filling with water’.

#### 4. Interim summary

So far, I assumed that if a CL can transform into an N-CL compound, it is derived from the nP. Under this analysis, both classifiers and nouns are roots, but the local relation between the categoriser and the root is distinctive. For the case of SCLs, the SCL root adjoins at the intermediate position between the categoriser and nP. Whereas in the case of MCLs, they project with the n-categoriser and function as an internal complement.

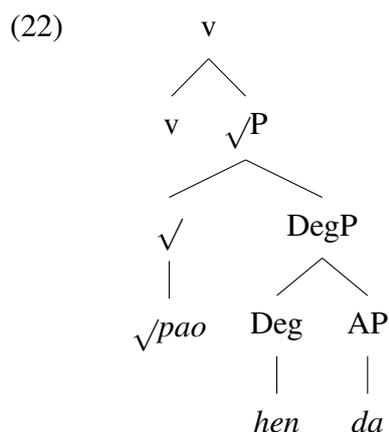
Because an n categoriser accepts the copying of its sister node at PF, there is variation of the meaning in N-CL compounds. In an N-MCL compound, the MCL contributes the meaning to the compound. But in an N-SCL compound, the N part contributes the meaning to the compound. In the following section, I use this mechanism to explain the variation of the modifying scope in pre-classifier adjectives and treat *da* ‘big’ and *xiao* ‘small’ as root-based modifiers.

### 5. The position of pre-classifier adjectives

Recalling the data on *da* ‘big’ and *xiao* ‘small’, they exhibit a different modifying scope in an NCC. They modify SCL+N when the classifier is an SCL, but they only modify the MCL when a mensural classifier is used in an NCC. According to the previous analyses on SCLs and MCLs, if they are root elements, the immediate question to discuss is the insertion site of an adjective modifier. As shown previously (11-a), inserting a modifier in a functional layer is not plausible, because it cannot capture the scope difference. In this case, I consider pre-classifier modifiers as root modifiers, and the modifying scope is determined at the root level.

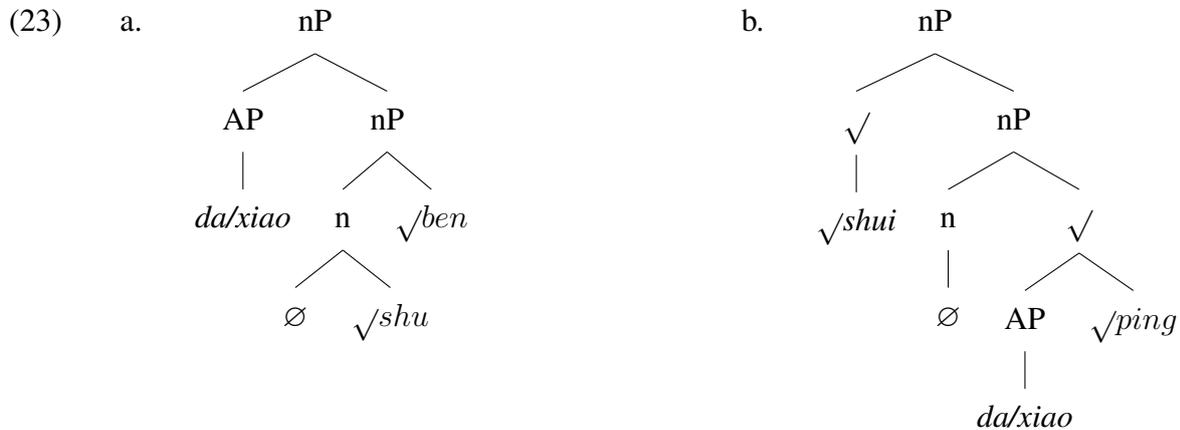
In Levinson (2010) and Liu (2020), it is suggested that an adjectival modifier can merge with a root. Particularly, in Liu (2020), the special use of the verbal phrase *pao hen da* ‘run very fast’ is analysed, and this verbal expression consists of a main verb *pao* ‘run’, an adverb *hen* ‘very’, and the adjective *da* ‘big’. This verbal phrase can directly follow a subject, as shown in (21), to express a degree-relating meaning. Liu (2020) assumes that there is a light verb layer, as shown in (22), which is the landing site for the root  $\sqrt{pao}$  ‘run’. The degree phrase *hen da* ‘very big’ attaches with  $\sqrt{pao}$  ‘run’ first, and then the whole configuration moves to the little v.

- (21) Zhangsan pao hen da  
 Zhangsan run very big  
 ‘Zhangsan runs a lot’



If *da* ‘big’ can modify roots, the puzzle about the modifying scope of pre-classifier adjectives can be answered. First, the position for pre-SCL adjectives should be as shown in (23-a); what the AP modifies is the nP, which includes two roots, and this structural relation remains unchanged after vocabulary insertion at PF. Consequently, *da* ‘big’ modifies SCL+N on the sur-

face structure. In comparison, as shown in (23-b), the AP is attached with the MCL root, and in the same vein, such a local relation is stored until lexical insertion takes place, which is why *da* ‘big’ modifies the MCL only when it precedes an MCL.



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# Grammatical gender selection in Norwegian-Spanish code-switching

Elena Varona

In this paper, I show and discuss the results of conducting an online acceptability judgment task where native speakers of Spanish were asked to rate sentences containing Norwegian nouns within them. The nouns were presented with either masculine (*el*) or feminine (*la*) gender with the objective to find out what grammatical gender speakers of Spanish select when code-switching, and whether there are any factors, linguistic or sociodemographic, that can explain the choice.

## 1. Introduction

This paper explores and analyzes the assignment of grammatical gender in the context of insertion code-switching of Norwegian nouns into a Spanish sentence. Said analysis focuses on the selection made by native speakers of Spanish that have learned Norwegian as a second language (L2). There is no separation among participants between adult or child learners, and all sorts of L2 learning have been included, as long as the speaker did not have Norwegian as part of their mother tongue repertoire. My investigation focuses on what gender is assigned by Spanish native speakers in the context of code-switching when using a Norwegian word embedded in an otherwise Spanish sentence, a case of insertion (Muysken 2000), described below in the literature review. An example of this can be seen in (1).

- (1) Compramos                    la                    minihus.  
buy.1PL.PST                    DET.F                    tiny house  
'We bought the tiny house.'
- (constructed example)

- (2) Te                    veo                    en                    el                    togstasjon                    luego  
2SG.ACC                    see.1SG.PRS                    in                    DET.M                    train station                    later  
'I will see you at the train station later.'
- (personally observed example)

In example (1), one can see that the speaker of the utterance assigned the feminine gender by uttering the article *la* with the Norwegian noun, *minihus* 'tiny house', which has a neuter gender in Norwegian. Previous research has shown that speakers assign gender to nouns in the context

of code-switching (Wyngaerd 2021). This is not a straight-forward task because speakers have to decide on what gender to use, and standard Spanish only has two grammatical genders, masculine and feminine, whereas Norwegian has three: masculine, feminine and neuter. So, with the word *minihus* from (1), the speaker would have to decide whether to assign masculine or feminine gender to the noun when using it in Spanish, since this language does not have neuter gender. However, even though one could assume that this is only something that concerns Norwegian neuter nouns because of the lack of neuter gender in Spanish, selection and mismatches of gender appear to occur as well with Norwegian feminine and masculine nouns, which can be seen in (2). In that example, the Norwegian word *togstasjon* ‘train station’, which is feminine, has been used with the article *el*, marking it for masculine gender, even though that noun is feminine both in Spanish and Norwegian.

The aim of this paper is to establish if there are any sociolinguistic or linguistic factors that can explain and predict what grammatical gender a speaker will assign to a Norwegian noun when embedding it in a Spanish sentence. In order to do so, acceptability judgments of utterances were collected where a Norwegian noun was used in the middle of a Spanish sentence. After the acceptability judgment task, the participants were asked their gender, and other demographic questions, to try to uncover whether there is a correlation between those factors and the gender assigned to the Norwegian noun. For the purpose of this paper and to narrow its scope, the demographic factor I focus on is the gender of the speaker, which is, to the best of my knowledge, a factor that has not been explored in the literature regarding grammatical gender in code-switching. When it comes to linguistic factors, the phonological shape of the word, the gender of the translation and the possibility of masculine gender being assigned as default are the possibilities explored. These linguistic factors are based on what has been found in previous literature on grammatical gender in code-switching (see for example Poplack et al. 1982), which are further explained later in the literature review section. Importantly, the phenomenon of grammatical gender in code-switching has not been explored when it comes to the combination of a language like Norwegian, with a three-gender system and Spanish, which has a two-gender one. With all these issues taken into account, the question that this paper aims to answer is: Are there any linguistic or sociodemographic factors that determine the choice of grammatical gender made by Spanish native speakers when inserting Norwegian nouns into utterances in Spanish?

This paper is organized as follows: Section 2 starts with a literature review that explains what understanding of code-switching the study is based on, and reviews similar previous research done on the subject. Moreover, it contains a brief explanation of grammatical gender in Norwegian and Spanish. Section 3 presents the hypotheses of the experiment. In section 4, the survey created to collect acceptability judgments and sociodemographic information is explained. Section 5 shows the results, and section 6 the discussion, limitations of the study and possible ways forward. Finally, section 7 includes the conclusions of this paper.

## 2. Background

### 2.1. Code-switching

Code-switching is a phenomenon that has been widely studied in sociolinguistics (Holmes & Wilson 2017; Wyngaerd 2021) and different definitions and understandings have been argued for. Therefore, I begin this review of the literature by briefly explaining what understanding of code-switching this paper assumes. I assume the definition from Bhatt & Bolonyai (2011), who

describe code-switching as the mixing of languages for socio-pragmatic purposes, which have to do with showing proximity, identity and group belonging... as explained by Holmes & Wilson (2017), who also point out that code-switching can be triggered by the topic at hand. There is a great debate in the code-switching literature on where to draw the line between code-switching and what is called loanwords or lexical borrowings, which are lexical items taken from another language (Campbell 2020). For example, the word *siesta*, ‘nap’, is a loanword. I draw the line based on the distinction made by Muysken (2000:71) who argues that a loanword is one that “has gained acceptance within a particular speech community”. Since the words I use in my study are more of a “spur of the moment” switch and not really established words that have made their way into the lexicon, I consider them to be code-switching and not loanwords.

Muysken (2000) distinguishes three types of code-switching: alternation, insertion and dense code-switching. In alternation, the languages are structurally independent from one another, which means that the constituents in the switching have several words and are clearly separate units, as shown in example (3).

- (3) Hoy           no                    voy            fordi           jeg           er           syk.  
 Today       no                    go.1SG.PRS because   1SG.NOM be.1SG.PRS sick  
 ‘I am not going today because I am sick.’  
(constructed example)

In insertion, lexical items from one language get, as the name hints at, inserted into a sentence which is otherwise in another language, as shown in example (4). In that example, one can clearly see that the matrix language is Spanish and there is an element from Norwegian inserted into the otherwise Spanish sentence. This type of code-switching is the one I focus my study on.

- (4) Te            mando                    el            timeplan            mañana.  
 2SG.DAT    send.1SG.PRS            DET.M       schedule            tomorrow  
 ‘I will send you the schedule tomorrow.’  
(constructed example)

In dense code-switching, also called congruent lexicalization, there is co-activation of both languages, resulting in an utterance that combines the lexemes and basic grammar of the languages. This is shown in example (5) where there is first a calque of the English expression *the point*, which would be expressed in another manner in Spanish, then usage of the English word order of first having the modal verb, *should*, in English, and then the negation (*no*), which would come before the modal verb in Spanish, and then a calque of *do drugs*, which would also be expressed differently. This example is a constructed example, but very similar instances of these calques are observable in day-to-day communication with native speakers of Spanish living in Norway.

- (5) El            punto es                    que tú            bør       no hacer            drogas  
 DET.M       point be.3SG.PRS that 2SG.NOM should no do.3SG.INF drugs  
 ‘The point is that you should not do drugs.’  
(constructed example)

Previous research done on the assignment of grammatical gender to nouns by Spanish speakers (Poplack et al. 1982) has shown that two factors have a strong bearing on which gender is assigned to words in the context of code-switching and/or loans: the gender of the referent (with words like *housewife* being assigned feminine gender) and the grammatical gender of the translation equivalent (so, for example, the English word *table* would likely get assigned feminine gender as the Spanish word is feminine). Also, assigning masculine gender tends to be a strategy in most cases, but other factors play a role, such as phonological ones, for example a word finishing in *-a*, a typically feminine word ending in Spanish, or the word being very similar to another one in the other language (Wyngaerd 2021).

## 2.2. Grammatical gender in Norwegian

Norwegian is a Germanic language that has a distinction between feminine (*ei krone* ‘a crown’), masculine (*en banan* ‘a banana’) and neuter (*et hus* ‘a house’), which can be seen in the article usage and inflection of definite nouns.<sup>1</sup> In some dialects of Norwegian, the gender system has stopped being a three-gender one, using instead a neuter/“common” two-gender system distinction. The analysis of gender in those cases is the subject of numerous discussions (see, for example, Lødrup 2011). For the purpose of my study, I will assume the Norwegian three-gender system, which is characteristic of the writing systems called *radikalt bokmål* ‘radical book language’ and *nynorsk* ‘new Norwegian’ (Kilarski 1997; Språkrådet 2021). However, I will indicate [MASC/FEM] when presenting the stimuli later in the paper for those nouns that are seen as “common” gender in the two-gender system dialects.

## 2.3. Grammatical gender in Spanish

Spanish is a Romance language which has a masculine/feminine gender system where *la* is the feminine article and *el* is the masculine one. Spanish does not have neuter, but the masculine form is used as a default and neuter. Therefore, when one wants to refer to a group of boys and girls, for example, the speaker will use *los niños*. In recent years, there has been a push from feminism for more inclusive language, as many women and non-binary people felt the usage of masculine as neuter did not include them. This has led to some speakers opting for using *los/las niños/as*, using both the masculine and feminine, or introducing the use of another vowel, *e*, and using *les niñas* instead.<sup>2</sup>

## 3. Hypotheses

My study is more exploratory than hypothesis-driven, but there are nevertheless four main hypotheses that are discussed and tested with the study, based on the review of the literature

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<sup>1</sup> See: Språkrådet (2021). Grammatisk kjønn og variasjon i norsk. Retrieved 29<sup>th</sup> April 2022, from <https://www.sprakradet.no/Vi-og-vart/Publikasjoner/Spraaknytt/spraknytt-22017/grammatisk-kjonn-og-variasjon-i-norsk/>

<sup>2</sup> See: Centenera, M. & A. Marcos (2019). ‘Les amigas’ del lenguaje inclusivo. El País. Retrieved 13<sup>th</sup> June 2022, from [https://elpais.com/cultura/2019/12/21/actualidad/1576920741\\_401325.html](https://elpais.com/cultura/2019/12/21/actualidad/1576920741_401325.html)

from section 2 and discussions on intuitions with five native speakers of Spanish who learned Norwegian as an L2.

Firstly, I believe that the Spanish grammatical gender of the word will play a role, as it has been shown in previous research (Poplack et al. 1982). However, as the masculine gender in Spanish has traditionally been seen as default, I reckon it could override a feminine gender translation.

Secondly, based on discussion with informants and research that has shown differences regarding acceptance of grammatical gender between men and women (Stetie & Zunino 2021), I believe that the gender of the speaker could play a role in grammatical gender assignment. I expect women to accept the assignment of feminine grammatical gender more than men.

Thirdly, some word endings in Spanish tend to have a specific grammatical gender assigned to them. For example, words that end with *-o* tend to be masculine gender, such as *trueno* ‘thunder’, whereas words that end with *-a*, *-ión*, *-dad*, tend to be feminine, such as *pizarra* ‘blackboard’, *estación* ‘station’ or *ciudad* ‘city’. The ending *-e* can be neutral, changing only the article in order to mark gender of the referent, with examples such as *el intérprete* and *la intérprete* ‘the interpreter’. Despite this, the ending *-e* still has a masculine gender connotation, as there are words such as *el jefe* ‘the boss’, which need to be changed to *la jefa* in order to be feminine (Butt et al. 2018).

Based on all this, I formulate the hypotheses in (H1) to (H4).

(H1) Masculine as default: The most common accepted grammatical gender will be masculine.

(H2) Gender of the speaker: Speaker’s identification as a non-masculine gender (i.e. not a man) will correlate with more acceptability of feminine grammatical gender.

(H3) Phonological shape of the word: The ending of the Norwegian word will play a role in the grammatical gender choice, with endings such as *-e* and *-o* taking masculine gender across the board, and endings like *-a*, *-ión* and *-dad* taking feminine gender. For example, a word like *søknad* ‘application’ would take feminine gender.

(H4) Gender of the translation: The grammatical gender of the Spanish equivalent will play a role, being carried to the assignment of gender to the Norwegian word, but Spanish feminine gender may be overridden by “masculine as default”. Continuing with *søknad*, this hypothesis would predict its getting assigned feminine gender as the Spanish translation (*la solicitud* is feminine, but could still get assigned masculine gender because of what is stated on (H1).

#### 4. Method

This section lays out how the study was conducted. I explain in detail who was included in the sample, how the stimulus was created and how the survey was presented to the participants.

#### 4.1. Participants

The participants were recruited by sharing my survey on my Facebook page, as well as in several Facebook groups for Spanish people living in Norway. I also sent it to potential participants that I knew of personally. The people that were to take the survey were native speakers of Spanish that had learned Norwegian as an L2, regardless of level and age of acquisition. Another factor was that they had to have lived in Norway or live there currently, to make sure that they had encountered the language in the society around them and been immersed in it. Adult and child learners were not separated due to time constraints as it would have made it significantly difficult to find a big enough sample which had the same level and acquired the language at approximately the same age. Therefore, in order to be able to find a big enough sample in the limited amount of time available, everyone was included as long as they had lived or were living in Norway and had a level of Norwegian of at least A2. I considered this as acceptable enough conditions as age of acquisition and level are, to my knowledge, not factors that have been presented as relevant in the literature regarding gender selection in code-switching.

I collected in total 36 responses ( $n=36$ ). Even though I aimed to be inclusive, and it was possible in the survey to state one's gender as non-binary, the survey only had participants of binary genders. 10 of the participants were men and 26 were women.

#### 4.2. Stimulus

All the stimulus sentences were formulated so the Norwegian word was in medial position, so all would be instances of insertion, to control for that variable. The words were chosen based on observation of regular everyday use and discussion with several informants, and the sentences constructed to sound as natural as possible with the inserted word that was chosen. They were discussed with one native speaker informant who proof-read the sentences to make sure they could occur in natural speech. The Norwegian nouns, shown in Table 1, were chosen to end up with three groups of five words based on grammatical gender, so one for feminine/masculine, one for masculine and one for neuter. Due to an oversight on my part, the categories turned out unbalanced, 6/5/4 (see Table 1). I tried to have balance in the translations between Norwegian and Spanish of the items used. Therefore, I aimed to have an as equal as possible combination of masculine-masculine, neuter-masculine, masculine-feminine, etc. For example, what I mean by masculine-masculine would be a noun such as *trikk* 'tram', which is both masculine in Norwegian and in Spanish.

In Table 1, the list of Norwegian words is shown with their translations into Spanish and English. The Spanish words are given with the definite article to show what gender they are. When there are two very salient Spanish translations, both are given.

Norwegian	Spanish (with article to show gender)	English
<i>Adeling</i> [MASC/FEM]	<i>La clase/el grupo</i>	Class/group
<i>Grense</i> [MASC/FEM]	<i>La frontera</i>	Border
<i>Kvalifiseringsoppgave</i> [MASC/FEM]	<i>La tarea/el trabajo</i>	Assignment
<i>Kåpe</i> [MASC/FEM]	<i>El Abrigo</i>	Coat
<i>Legevakt</i> [MASC/FEM]	<i>Las urgencias/el departamento de emergencias</i>	Emergency room
<i>Ytterdør</i> [MASC/FEM]	<i>La Puerta principal</i>	Front door
<i>Boliglån</i> [NEUTER]	<i>La hipoteca</i>	Mortgage
<i>Hjemmekontor</i> [NEUTER]	<i>La oficina en casa</i>	Home office
<i>Møte</i> [NEUTER]	<i>La reunion/el meeting</i>	Meeting
<i>Utkast</i> [NEUTER]	<i>El borrador</i>	Draft
<i>Vinmonopol</i> [NEUTER]	<i>La tienda de licores</i>	Liquor store
<i>Barnehage</i> [MASC]	<i>La guardería/el jardín de infancia</i>	Kindergarten
<i>Datamaskin</i> [MASC]	<i>La computadora/el computador/el ordenador</i>	Computer
<i>Kommune</i> [MASC]	<i>La ciudad/la comuna/el municipio</i>	Municipality
<i>Trikk</i> [MASC]	<i>El tranvía</i>	Tram

Table 1. Norwegian stimulus words

The survey had five distractors mixed with the target sentences to try to prevent the participants from figuring out what the goal of the survey was. They were made so the code-switching happened with verbs taking typical Spanish endings or with nouns that had an indefinite article or were in plural form with no article at all.

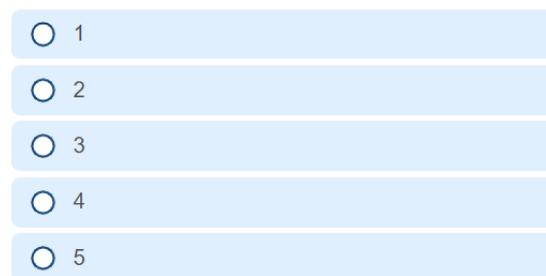
#### 4.3. The survey

The survey was administered by setting up two *Nettskjema* surveys<sup>3</sup>, ethically approved by the Norwegian Center for Research Data, with acceptability judgments using a five-point Likert scale and, at the end, a questionnaire with demographic questions. This questionnaire included questions regarding gender, age, linguistic background, use of inclusive language in Spanish, use and level of Norwegian language and attitudes to code-switching. The reason why it was placed at the end was so as to not prime the participants to focus on grammatical gender. Attitudes toward code-switching were asked in order to make sure that if a participant judged the sentences too harshly, it could be considered to remove those data points. This is because it could be assumed that said participant could have been focusing more on their dislike for code-switching than in their dislike for the grammatical gender that was chosen for the Norwegian noun.

<sup>3</sup> This word roughly translates as ‘online form’, and it is an online survey making tool created by the University of Oslo. It is used to collect data in a safe manner. URL: <https://nettskjema.no>

The reason why I set up two online surveys is that the stimulus sentences had two possible variants: one with the Norwegian noun preceded by the article *el* and another with the article *la*. For example, participants who clicked on one of the surveys would be presented with the set up shown in Image 1 below, which contains one target sentence from the study that means ‘Yesterday, we ran into Pedro at the emergency room downtown’.

Ayer nos encontramos a Pedro en el legevakt del centro.



1

2

3

4

5

Image 1. Stimulus example from the survey

Meanwhile, the participants who clicked on the other survey would encounter that same sentence, but with *la legevakt* instead. The participants were prompted to choose between the two links depending on whether their birthyear was even or odd, used as an arbitrary metric to split participants into two groups. The instructions that the participants received for the acceptability judgment task was that they would be presented with 20 sentences, and they would have to rate from one (completely unacceptable) to five (completely acceptable). The participants saw one sentence at a time, and it was not possible for them to click back to previous sentences.

## 5. Results

This section presents the results of the acceptability judgments. Firstly, I present them by Norwegian noun, showing the percentage that each of the one (completely unacceptable) to five (completely acceptable) ratings received, comparing *el* and *la*. After that, I show the averages of acceptability that the two grammatical genders received, grouped by the gender of the speaker.

### 5.1. Grouped by grammatical gender

When it comes to the group of Norwegian words that are listed in the dictionary as masculine and feminine gender (*legevakt*, *kvalifiseringsoppgave*, *avdeling*, *grense*, *ytterdør* and *kåpe*), the results below in Figures 1 to 6 are observed.

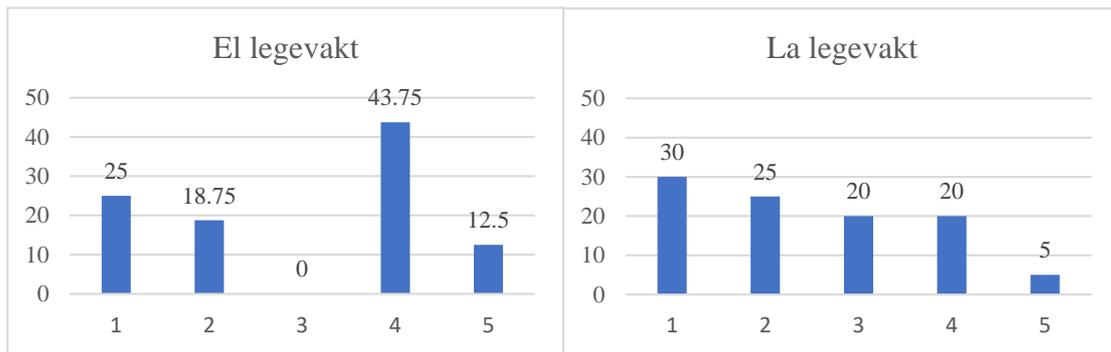


Figure 1. El/la legevakt comparison results

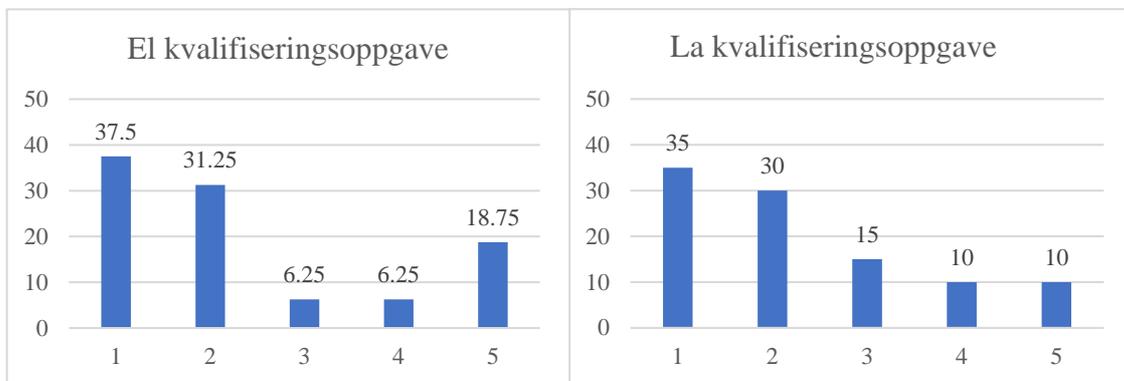


Figure 2. El/la kvalifiseringsoppgave comparison results

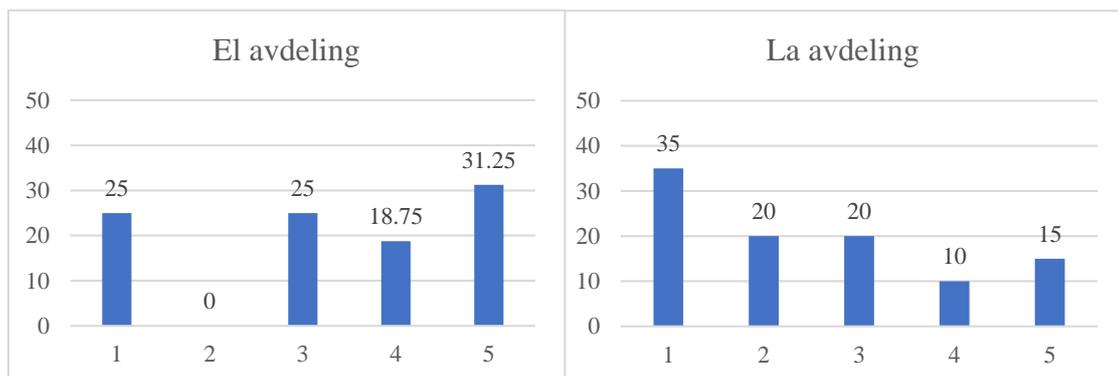
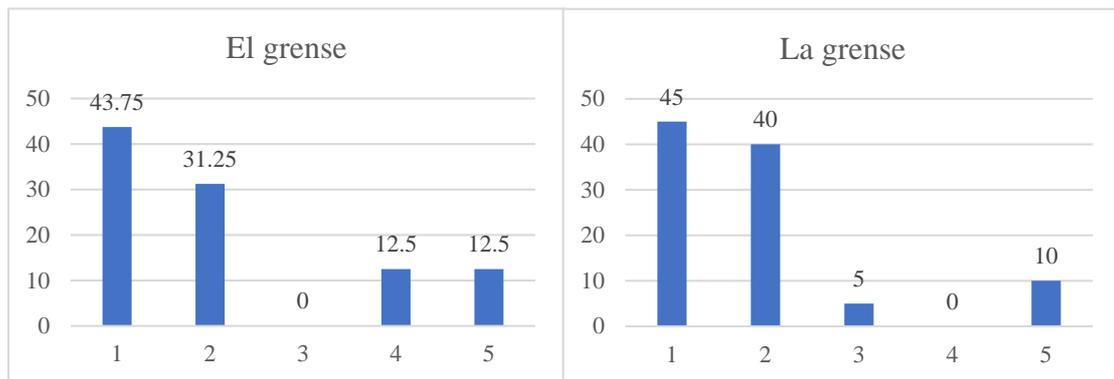
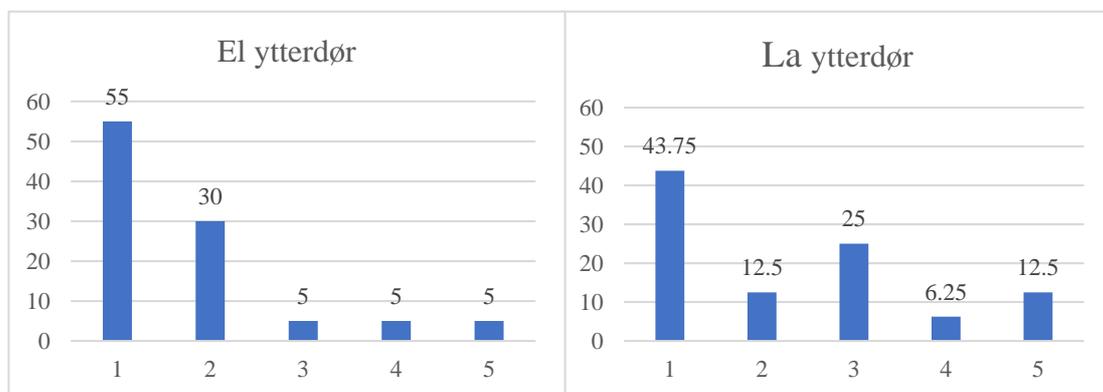
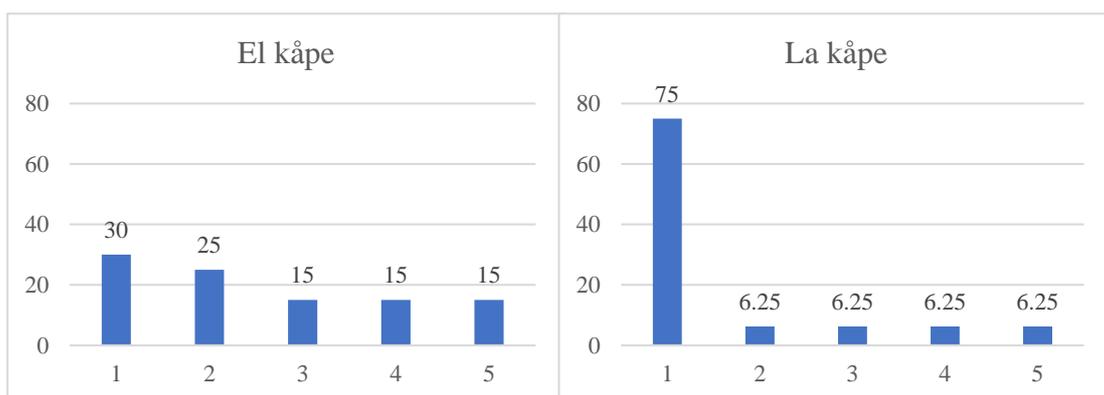


Figure 3. El/la avdeling comparison results

Figure 4. *El/la grense* comparison resultsFigure 5. *El/la ytterdør* comparison resultsFigure 6. *El/la kåpe* comparison results

In Figures 1-6, it can be seen that sentences which contained the masculine article *el* are generally ranked higher in the acceptability judgments than those with *la*. This supports the hypothesis of assigning masculine gender being more likely than feminine. The exception on

this is *ytterdør*, where the participants presented with the article *la* ranked the sentence higher than those presented with *el*. Since the translation of *ytterdør* is, roughly, *(la) puerta principal*, in this case it could be that the grammatical gender of the Spanish translation has managed to override the masculine as default. Interestingly, *kåpe* ‘coat’ was incredibly disliked with the feminine gender, which could also be showing that the participants judged according to the gender of the translation, as the Spanish word for coat is *abrigo*, which is masculine.

The Norwegian nouns of neuter gender (*boliglån*, *hjemmekontor*, *møte*, *vinmonopol* and *utkast*) yielded the percentages shown in Figures 7 to 11.

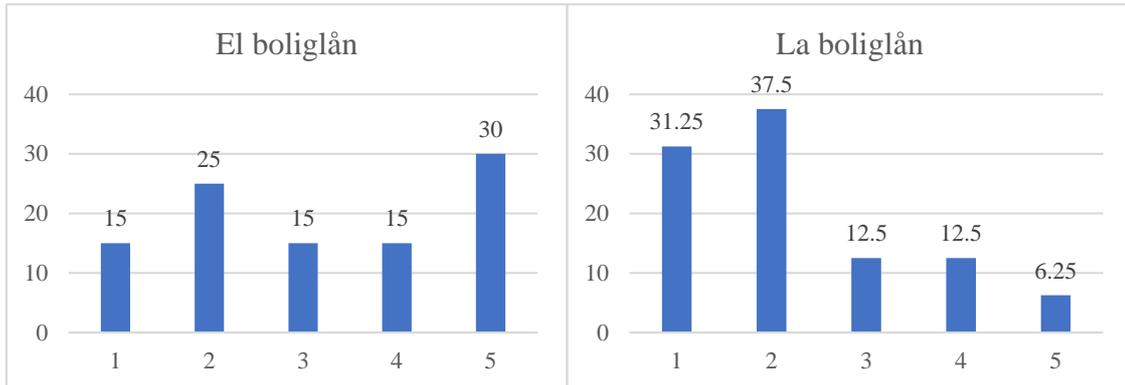


Figure 7. *El/la boliglån* comparison results

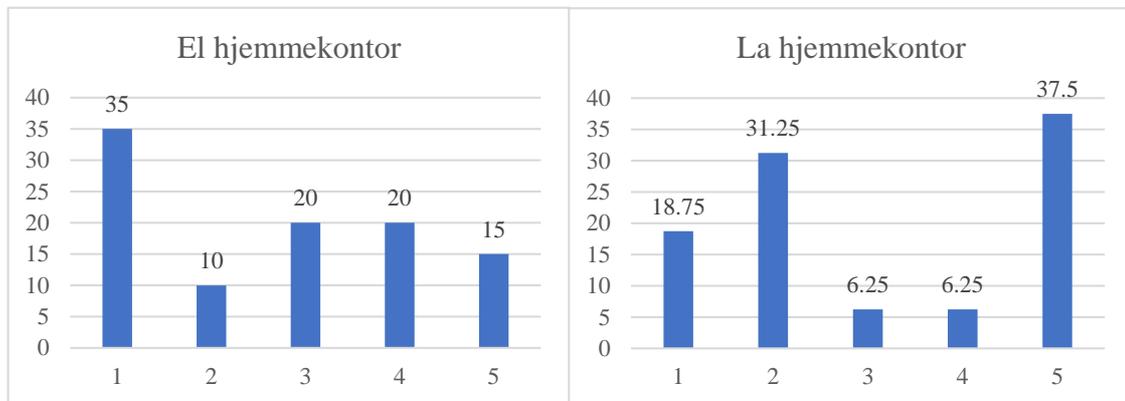


Figure 8. *El/la hjemmekontor* comparison results

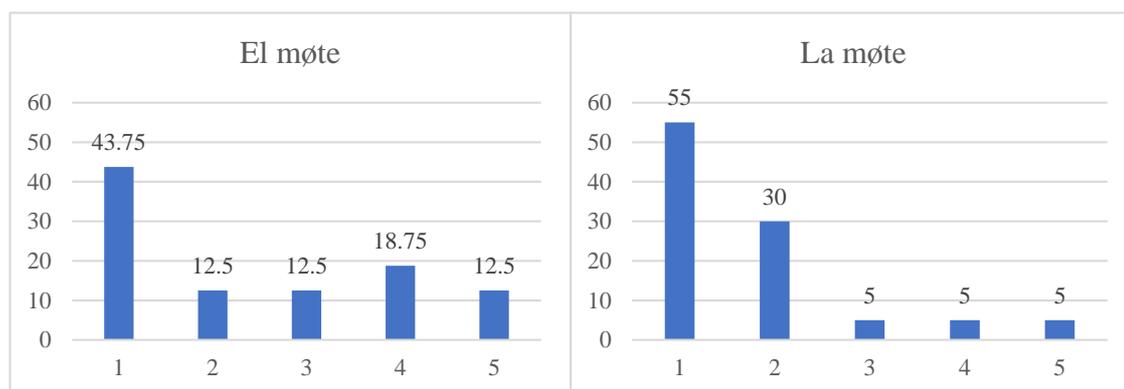


Figure 9. *El/la møte* comparison results

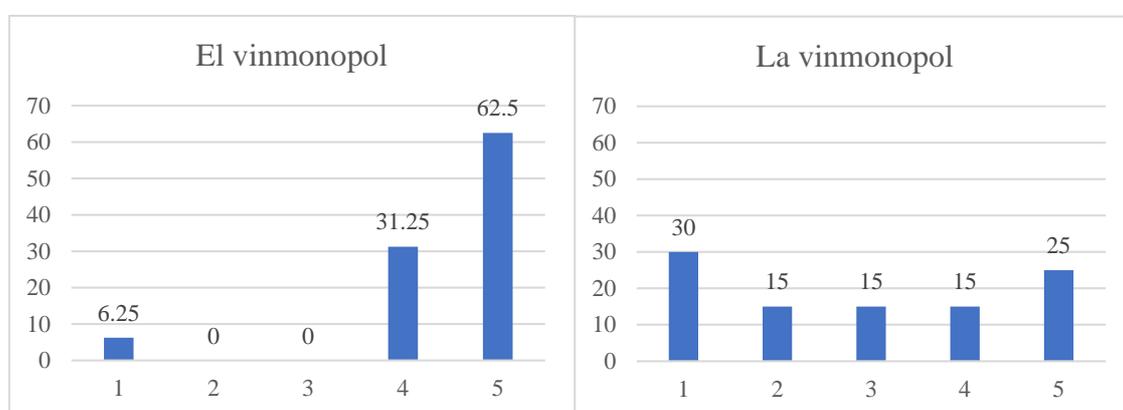


Figure 10. *El/la vinmonopol* comparison results

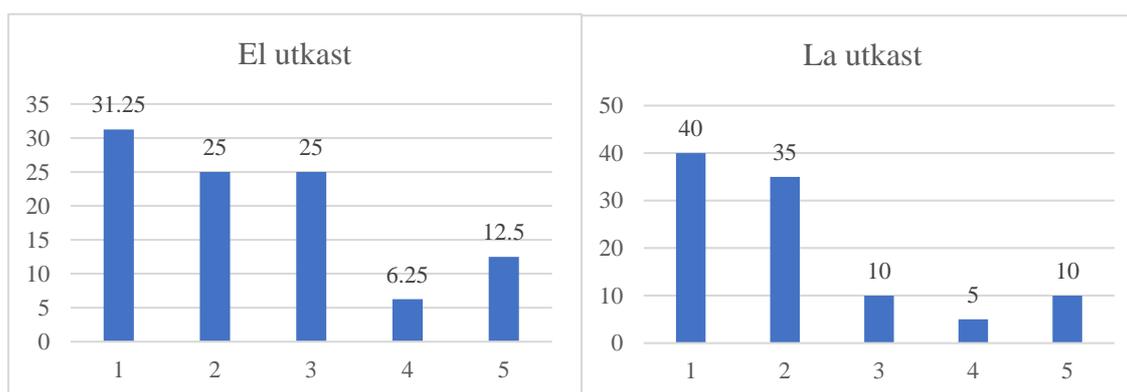


Figure 11. *El/la utkast* comparison results

In Figures from 7 to 11, there is more variation in the acceptability judgments than what could be seen on 1-6. There is still a majority of masculine acceptability, but in the case of *hjemmekontor* 'home office', which would have a feminine word as its translation in Spanish,

(*la oficina en casa*, the acceptability judgments of four and five combined are slightly larger favoring the feminine gender than the masculine. This could be a sign of speakers taking into account the gender of the translation.

The Norwegian masculine nouns (*kommune*, *datamaskin*, *barnehage* and *trikk*) yielded the percentages compared in Figures 12 to 15 below.

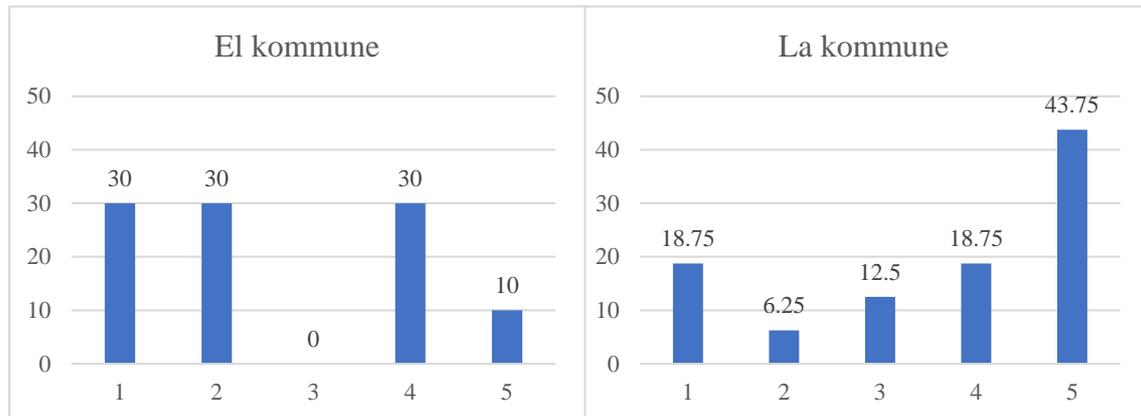


Figure 12. *El/la kommune* comparison results

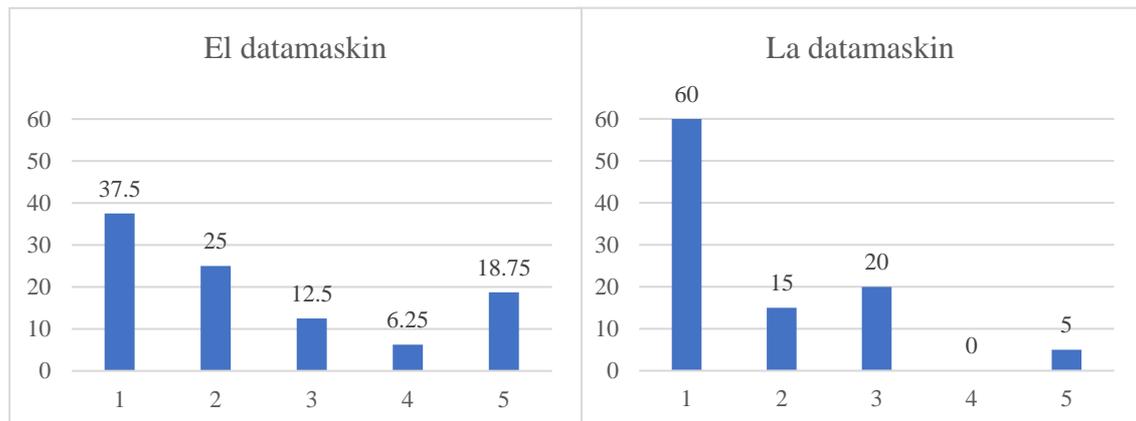
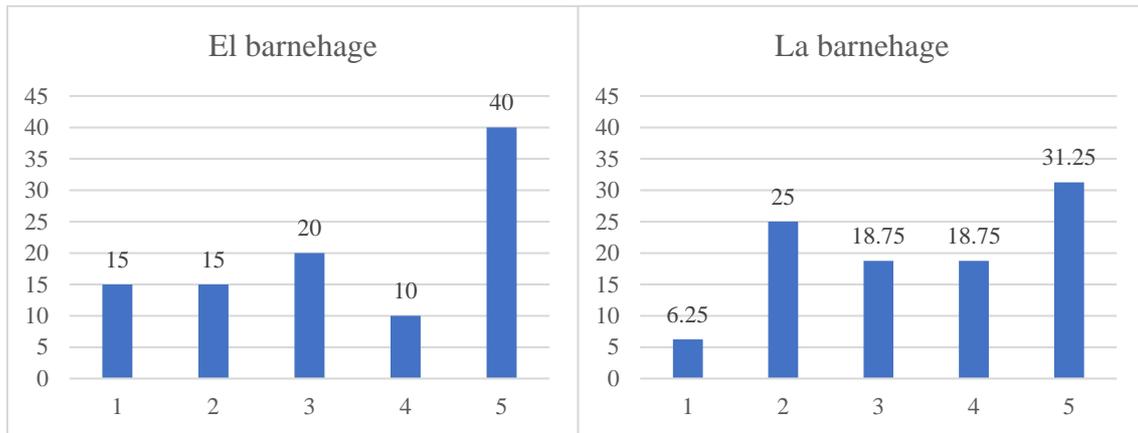
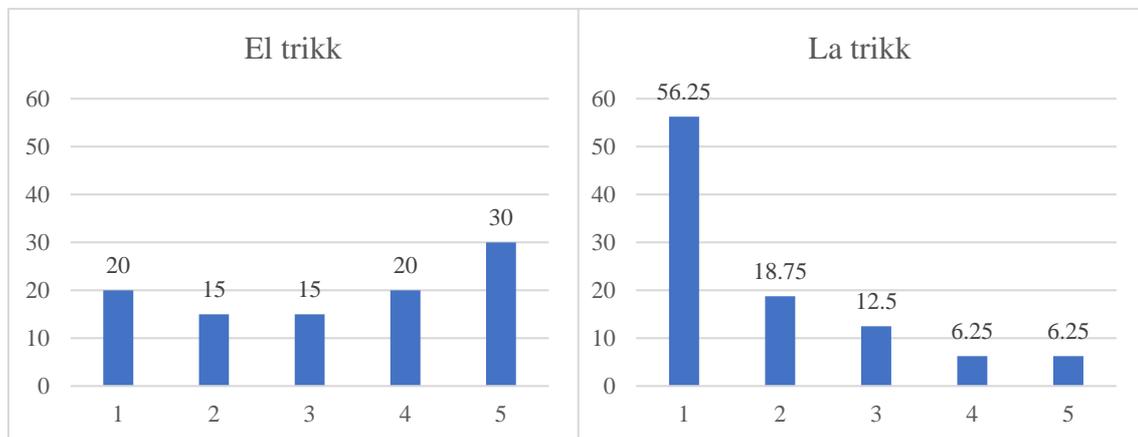


Figure 13. *El/la datamaskin* comparison results

Figure 14. *El/la barnehage* comparison resultsFigure 15. *El/la trikk* comparison results

Figures 12 to 15 show a very similar pattern to the one found in 1 to 11. The acceptability judgments favor sentences with the article *el* over those with *la*, supporting the masculine by default hypothesis. However, one of the words stands out: *kommune*. The official translation for this term would be (*el*) *municipio*, which is masculine, so it is noticeable that the participants who were presented this word with *la* ranked it higher than those who encountered with *el*. However, it could be the case that the speakers think of that word as (*la*) *comuna* ‘the community’ and, as it is extremely similar to *commune*, assigned it the feminine gender. This would support the hypothesis of the gender of the translation being a factor.

It is also interesting to see that sometimes there are cases where participants have very strong group intuitions towards disliking something, as we can see in examples such as *la trikk* ‘the tram’ or *la datamaskin* ‘the computer’, where the acceptability score of one, completely unacceptable, is chosen very often.

### 5.2. Grouped by gender of the speaker

Table 2 shows the average rating scores that men and women gave to the stimuli, separated by the average score given to *el*, the masculine article, and *la*, the feminine article.

	<b>El (average rating score)</b>	<b>La (average rating score)</b>
Women	2.75	2.25
Men	2.99	2.72

Table 2. Average rating scores by gender

As seen in Table 2, men had higher acceptability ratings on average than women did for both *el* and *la*. So, they were also more accepting of the sentences that assigned feminine grammatical gender to the Norwegian nouns. Therefore, it appears that men were more likely to find feminine gender more acceptable than women were. This does not support my hypothesis that women would rate the assignment of feminine gender higher.

## 6. Discussion

This paper aimed to test the hypotheses ‘masculine as default’, ‘gender of the speaker’, ‘phonological shape of the word’ and ‘gender of the translation’ when it comes to gender assignment of nouns in the context of codeswitching. This discussion section is therefore structured around the hypotheses, limitations of the experiment and possible ways forward.

### 6.1. Masculine as default

The results of the experiment seem to support this hypothesis, as with the exception of *ytterdør*, *kommune* and *hjemmekontor*, speakers judged more favorably the stimuli which had masculine grammatical gender assignment. This confirms what has been observed in previous studies such as the one by Poplack et al. (1982).

### 6.2. Gender of the speaker

This hypothesis was not supported by the data collected, as women did not rate higher than men the stimulus sentences that contained feminine grammatical gender assignment. Men were more accepting of the feminine grammatical gender assignment than women were. However, the amount of men (n=10) and women (n=36) that took the survey is very different. Therefore, it might prove fruitful in the future to run a similar acceptability judgment survey where there is a better gender balance and a bigger sample in order to explore this better.

### 6.3. Phonological shape of the word

This hypothesis appears to have been supported by words such as *kåpe*, *møte* or *barnehage*, where the *-e* ending could have triggered the acceptability of the assignment of masculine gender. In five of the six stimuli with *-e* ending, *el* was preferred. This would agree with what was claimed by Poplack et al. (1982). However, it is difficult to know whether these words were more accepted as masculine because of their phonological shape or because of masculine gender being assigned as default. More research with more words that could help tease apart this distinction is needed, using more endings associated with feminine gender. Also, in the case of words ending in *-r*, which were expected to take masculine gender, zero out of two were preferred with *el*, which does not support this hypothesis.

### 6.4. Gender of the translation

This hypothesis found some support in what was observed for the assignment of gender for the noun *kommune*, as it could appear that participants associated that word with (*la*) *comuna*, which is feminine, and possibly therefore accepted it more as feminine gender. This seems to be the case as well for *ytterdør* and *hjemmekontor*, which have feminine gender translations in Spanish. However, some speakers did accept the stimuli sentences where these words were assigned masculine gender, so this could also confirm the idea of masculine grammatical gender being so salient that it overrides the feminine gender translation. It could therefore also be a case of ‘masculine as default’ being supported, which would agree with what is shown in the review of the literature. More research that takes into account these factors is needed in order to tease apart these issues, especially paying attention to the fact that some translations to Spanish may have different grammatical genders depending on the variant that is used. Therefore, the sample should be limited to a specific variety, or only words with one possible gender translation should be chosen.

### 6.5. Limitations and possible ways forward

This study has the limitation of relying on the acceptability judgment of sentences which contained insertion code-switching. Even though I deemed it the best possible task for testing my hypotheses at the time, it is difficult to know whether the participant’s response is giving answer to the specific phenomenon that is targeted. We could assume that the trends observed in the results are an indication that the survey design did target the differences between using *el* or *la*, but this may not have been the case and be due to something else entirely. Therefore, in a future study, I would try to only have one online survey where the participant would be forced to choose between *el* and *la*, and compare with the results that were obtained from the acceptability judgments of whole sentences, to see if differences can be observed.

Another limitation of this experiment is the fact that there were very few stimuli sentences and only 36 participants, which is not enough to capture a very representative sample of the population and test all hypotheses in depth. In a future experiment I would like to have more participants, consider more demographic factors such as age, and create the stimuli based on phonological form instead of grouping it based on Norwegian gender, which could have been relegated to a more secondary role.

However, it is important to keep in mind that this experiment has the novelty of testing gender assignment from a three-gender system, Norwegian, to a two-gender system, Spanish. The previous research done regarding Spanish gender assignment in the context of code-switching tends to explore what happens when a noun from a language where nouns do not have grammatical gender, like English (Poplack et al. 1982) or Basque (Parafita Couto et al. 2015) gets borrowed or inserted in an otherwise Spanish sentence. More research, testing different hypotheses and done in different ways, is needed to fully explore this phenomenon and what linguistic and demographic factors may be at play when assigning gender in the context of code-switching.

### 7. Conclusion

In this paper, by doing an experiment where native speakers of Spanish were asked to judge the acceptability of several sentences where there were instances of Norwegian noun insertion into a Spanish sentence, I explored and analyzed the assignment of grammatical gender. The aim was to find out whether there were linguistic and/or demographic factors that could explain and predict what gender a speaker would select for a noun in Norwegian, a three-gender system, when using it in a sentence in Spanish, a two-gender system. What I found appears to agree with what previous research has claimed, which is that masculine gender tends to be assigned more often, and also that two other factors may play a role: phonological shape of the word, with endings associated with masculine or feminine potentially triggering the assignment of that gender respectively; and gender of the translation, with nouns with feminine translation such as *hjemmekontor* being preferred with *la*. These last two ideas support what was already observed in the gender in code-switching literature. What I also found is that being a woman did not correlate with being more accepting of feminine gender assignment in code-switching.

### Acknowledgements

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### Abbreviations

1, 2, 3	first, second, third person	M	masculine
ACC	accusative	NOM	nominative
DAT	dative	PL	plural
DET	determiner	PRS	present
F	feminine	PST	past
INF	infinitive	SG	singular

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# Aspect-marked copulas in Bangla

Srabasti Dey

This paper looks at aspect-marked copulas that are obligatory only for matrix equative clauses in the present tense in the Eastern Indo-Aryan language Bangla. It looks into the nature of present tense in copular constructions and tries to account for these quirky copulas through the interaction of the structure of equative clauses and the role of temporal arguments involved in yielding present tense in copular constructions.

## 1. Introduction

Bangla has a curious copular element that shows up mandatorily in matrix equative clauses (and optionally in other contexts) which is unique in two respects (1a). First, the copula occurs between the subject and the attribute (otherwise, Bangla has canonical SOV order and allows other orders pertaining to information structure constraints). Second, it takes either the perfect form (*holo*) or the progressive form (*hochche*) of the verb ‘be’ (*hOwa*), though they are interpreted in the present tense in this position. If they appear in the default final position they would be interpreted as ‘becoming’ (1b) or ‘became’ (1c) respectively, as expected.

- (1) a. Peter Parker ho-l-o / ho-chch-e Spiderman  
Peter Parker be-PERF-3 / be-PROG-3 Spiderman  
‘Peter Parker is Spiderman.’  
b. Peter Parker Spiderman ho-chche-e  
Peter Parker Spiderman be-PROG-3  
‘Peter Parker is becoming Spiderman.’  
c. Peter Parker Spiderman ho-l-o  
Peter Parker Spiderman be-PERF-3  
‘Peter Parker became Spiderman.’

I will compare these copular constructions with lexical verb constructions to demonstrate the general pattern of word order in Bangla from which the above examples deviate. Below we have

a sentence with a lexical verb in SOV order (2a), which is regarded as canonical while (2b) has SVO order and is appropriate only in certain pragmatic contexts, unlike the sentences in (1).

- (2) a. ami badminton khel-ch-i  
 I badminton play-PROG-1  
 'I am playing badminton.'  
 b. ami khel-ch-i badminton  
 I play-PROG-1 badminton  
 'It is badminton that I am playing.'

There are no semantic differences between the two word orders in (2). Native speakers deem (2a) to be more 'neutral' while (2b) could be perceived to have some kind of focalised effect without invoking any difference in the meaning of the verb in the two sentences.

Dasgupta (2006:61) notes that the 'deviation' in word order seen in a sentence like (2b) arises only when a speaker has some 'specific intentions'; however, copular constructions as in (1a) have this 'deviated' word order as a default and lose the copular interpretation in the canonical word order in (1b) and (1c). Thus, when compared with the lexical verb in (2) the verb 'be' in (1) exhibits an unexpected behaviour by yielding a lexical meaning in the clause-final position but not in the clause-medial position. This is also not noticed with lexical verb forms where the aspect-marked verb retains its aspect interpretation irrespective of its position as in (2).

This is why these quirky copulas are empirically interesting with respect to both their form and their position as it is only in this higher position that the aspect markings are rendered opaque to allow these forms to function as copulas.

As we will see in latter sections, the position of the copulas in these constructions find an explanation in the framework of where he posits a predicate inversion analysis. With respect to the tense interpretation and aspect markings, I have looked at the nature of present tense in copular constructions (Zagona 1992; Maienborn 2005) and the interaction between temporal arguments that yield tense and aspect inflections (Demirdache & Uribe-Etxebarria 2007).

These semantically-vacuous, mutually interchangeable aspect-marked copulas that render present-tense meaning in Bangla seem to be a result of the interaction between the temporal arguments at play in these constructions and I will claim that they emerge in the CP domain.

## 2. Background

The attempt to relegate this copula to a higher domain than the canonical TP is attested in the literature. Dasgupta (2006:61) calls it a positive polarity copula (PPC) and claims that it occupies MoodP. He notes that *holo* can allow an emphatic meaning for the preceding DP, along with the emphasis marker *i* (3a). His claim is that the proposed MoodP position, which is at the boundary of CP and TP, would allow the copula to exhibit focus attributes from the CP domain and inflection (person agreement) from the TP domain.

However, the focussed interpretation is not necessarily tied to the presence of *holo* since the emphasis marker *i* can occur without the copula as well (3b). Thus, *holo* does not seem to be a necessary condition for focalisation. Even if the copulas emerge in the 'boundary' of CP and TP as Dasgupta suggests, it does not explain why they would take the aspectual forms yielding present-tense interpretation. However, the underlying point in Dasgupta (2006) about the copula emerging above the TP is well-taken — I will claim that it actually emerges in CP.

- (3) a. Clark Kent-i holo Superman  
Clark Kent-FOC COP Superman  
'It is Clark Kent who is Superman.'
- b. Clark Kent-i Superman  
Clark Kent-FOC Superman  
'It is Clark Kent who is Superman.'

Though the TP domain is regarded as the canonical domain for copulas, there are accounts of copulas occurring outside the TP domain. For instance, O'Neill (2016) shows that there is a special type of copular construction in English, which she calls 'amalgam specificational constructions', where the copula *is* emerges in FinP. She argues that in such clauses (4) the logical subject does not require nominative licensing and the anchoring of the clause happens directly through the utterance context, allowing T to be absent in these clauses. This causes the copula to appear in Fin.

- (4) What he studies is he studies biology.

This provides precedence for a situation where the copula emerges higher up in the clause when T is not warranted or needed. I will try to motivate that the T in Bangla is unable to host the copula, making movement necessary.

One piece of evidence O'Neill (2016) provides to claim that the copula emerges in FinP in such clauses is the incompatibility of these clauses with negation (5). Since negation is a TP domain phenomenon, it makes sense that negation is not possible for these structures if the copula in amalgam specificational clauses emerges higher up, she argues.

- (5) \*What he studies is not he studies biology.

This empirical observation bears out in Bangla as well since quirky copula constructions cannot be negated either.

- (6) a. \*Clark Kent holo na Superman  
Clark Kent COP NEG Superman  
Intended: 'Clark Kent is not Superman.'
- b. Clark Kent Superman na  
Clark Kent Superman NEG  
'Clark Kent is not Superman.'

As we noted earlier through examples in (1) and (2), *holo* occupies a higher position than the canonical verbal position in Bangla and is inflexible when it comes to different word orders. This, along with the observation that it cannot be negated, can be treated as prima facie empirical evidence that the position of *holo* is somewhere higher than the TP.

### 3. Overview of copular constructions in Bangla

Besides these quirky copular forms, Bangla has structures that carry the regular present tense form of the copula *hOe* in the SOV order (8b), a zero copula, and an 'existential' or locational copula *achhe* which will not be discussed here.

Though the quirky copulas are mandatory only in matrix equatives, identificationals (7a) and specificational (7b) can also take them optionally.<sup>1</sup> Predicationals can marginally allow them if the predicate is an individual-level one (7c), but not if it is a stage-level one (7d).

- (7) a. o (holo) John  
3 COP John  
'He is John.'
- b. Gora-r lekhok (holo) Tagore  
Gora-GEN writer COP Tagore  
'The writer of Gora is Tagore.'
- c. meye-Ta (?holo) lOmba  
girl-CL COP tall  
'The girl is tall.'
- d. meye-Ta (\*holo) klanto  
girl-CL COP tired  
'The girl is tired.'

Thus, predicationals (8a) are usually the zero-copula structures in Bangla. The point to keep in mind is that none of the examples in (7) or (8a) can carry *hOe*, the present form of the verb 'be' *hOwa*. It can only occur in property exemplification contexts in the generic sense (8b).

- (8) a. chhele-ta lOmba  
boy-CL tall  
'The boy is tall.'
- b. chhele-ra lOmba hO-e  
boy-PL tall be.PRES-3  
'Boys are (generally) tall.'

Example (8b) shows that the language does allow the usage of the present form of 'be' (*hOe*) as a copula in generic contexts. So the inability of *hOe* to appear in examples in (7) can be taken as an indication for some other kind of incompatibility, necessitating the use of *holo* or *hochche* as a syntactic reflex obligatorily in root equative clauses while the other kind of copular constructions allow or prefer a zero-copula structure. I will look into the nature of present tense in copular constructions in section 6 to make sense of this distribution.

#### 4. Equative clauses

Before getting into the empirical evidence to show that the quirky copulas emerge in the CP domain, I will lay down the theoretical premise that would support such a claim. There has been a lot of debate on whether the four types of copular constructions (specificational, identificational, predicational and equative) are primitives in themselves or some of them can be reduced to a uniform predicational structure. Arguably, equatives were the most resistant category to be reduced to an underlying predicational structure both theoretically as well as empirically.<sup>2</sup>

<sup>1</sup> I am using the classification of copular constructions proposed by Higgins (1979).

<sup>2</sup> Languages such as Hebrew, Russian, Scottish-Gaelic, Indonesian display different structural or morphological surface forms for equatives.

The theoretical issue with equatives was that both entities are referential, which makes them unsuitable to be complements of the Pred head.

However, there are syntactic and semantic tools to allow the complement entity to be predicative so that all copular constructions can be reduced to one underlying type of construction.<sup>3</sup> I will follow Adger & Ramchand (2003) and den Dikken (2006) in following the parsimonious theoretical approach of reducing all types of copular constructions to a single predicative structure. This would mean that all copular constructions are underlyingly predicational.

- (9) The girl is tall. (Predicational)  
 (10) Brian is the best candidate. (Specificational)  
 (11) Cicero is Tully. (Equative)

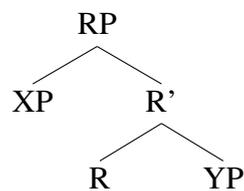


Figure 1. Syntactic structure of predication (from den Dikken 2006:11)

Figure 1 captures examples (9) and (10), where R is the Relator and XP and YP are the two constituents. However, equatives (11) cannot be captured by Figure 1 because both elements in an equative clause are referential entities, which are unsuitable predicates (Adger & Ramchand 2003; den Dikken 2006). den Dikken distinguishes between the examples (9) and (10) on the one hand and example (11) on the other to show that there are ‘canonical’ copular structures (Figure 1) and ‘inverse’ copular structures (Figure 2), and equatives are deemed to be the latter.

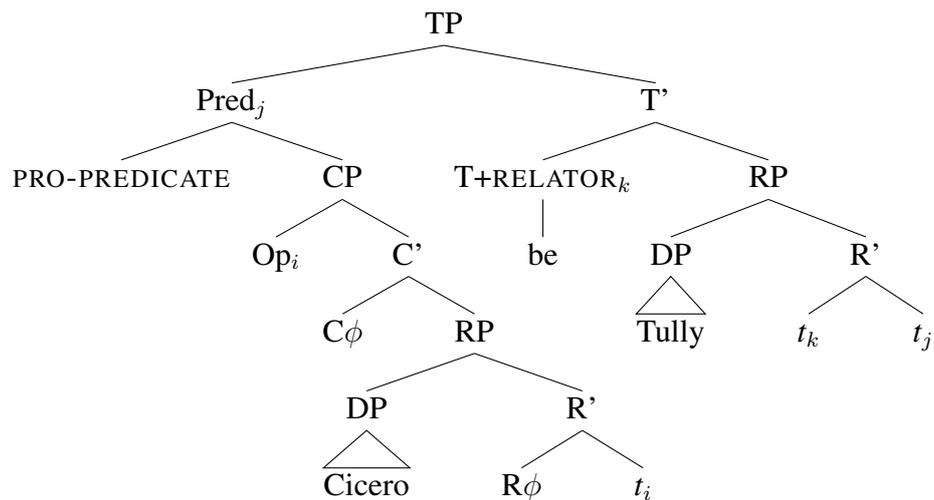


Figure 2. Structure of an inverse copular construction (from den Dikken 2006:73)

<sup>3</sup> For instance, den Dikken (2006) treats the complement in equatives as pseudoclefts; den Dikken & O’Neill (2017:23) cite the proposal in Partee (1986) to type-shift referential expressions to predicative expressions.

The surface order in these sentences does not reflect their underlying order — the underlying predicate in an equative clause is not a simple DP but a reduced relative clause, a relative clause with a null pro-predicate (den Dikken 2006). This null pro-predicate rises in the clause structure to become the surface subject. In other words, in a sentence like (11), you get the predicative relation in the way that Tully is the person who is Cicero.

When the complement is a reduced free relative it needs to undergo predicate inversion to land in the specifier of a functional head (like TP) for the null pro-predicate to be licensed.<sup>4</sup>

Thus, for inverse copular constructions the surface subject is actually the complement that has undergone ‘predicate inversion’ (den Dikken 2006). Thus, unlike in other types of copular constructions, the underlying predicate in equatives always undergoes movement higher up in the clause to be licensed. If a licenser (in this case, T) is unable to license the predicate then there is motivation for it to go higher up in the clause to be licensed by an appropriate head. I will briefly review Bangla equative clauses following den Dikken’s model to show that they undergo predicate inversion. In the next subsection I will ascertain empirically that predicates in Bangla equative structures move higher up to the CP domain with the help of embedded equative clauses.

#### 4.1. Equative clauses in Bangla

den Dikken compares specificational pseudoclefts (12a) and equatives to provide empirical evidence that equatives obligatorily undergo predicate inversion. Sentences like (12a) and (12b) have a predicate that is a free relative, with an overt relative-clause marker. Thus, it is not mandatory for them to undergo predicate inversion since they do not have a null pro-predicate that needs to be licensed.

- (12) a. What Brian said is that he likes Imogen.  
 b. That he likes Imogen is what Brian said. (den Dikken 2006:73)

While A’ extraction from the canonical construction (12b) is allowed as in (13b), A’ extraction of the inverse construction (the pseudocleft) is disallowed as in (13a).

- (13) a. \*Which of these things do you think what Brian said is *t*?  
 b. Which of these things do you think *t* is what Brian said? (den Dikken 2006:74)

However, equatives disallow A’ extraction (14) in both orders, which implies that equatives always undergo predicate inversion. Thus, den Dikken concludes that equatives invariably have an inverse predicate construction.

- (14) a. I think your opinion of New York is my opinion of Amsterdam.  
 b. \*Whose opinion of Amsterdam do you think your opinion of New York is *t*?  
 c. \*Whose opinion of New York do you think *t* is my opinion of Amsterdam?  
 (den Dikken 2006:92)

Bangla also disallows A’ extraction from equatives (15), providing evidence for an inverse pred-

<sup>4</sup> The null pro-predicate in the reduced relative clause has to be licensed because it has an empty head. The complement in (12b) does not need to obligatorily undergo predicate inversion as it has a full relative clause. I refer the reader to den Dikken (2006:46) for details.

ication analysis for Bangla equatives.

- (15) a. *ami monekori New York-er proti tomar momobhaab holo Amsterdam-er*  
 I think.PRES.1 New York-GEN towards your attitude COP Amsterdam-GEN  
*proti amar monobhaab*  
 towards my attitude  
 ‘I think my attitude towards New York is your attitude towards Amsterdam.’
- b. \**Amsterdam-er proti kar monobhaab tumi monekOro New York-er*  
 Amsterdam-GEN towards whose attitude you think.PRES.2 New York-GEN  
*proti amar monobhaab*  
 towards my attitude
- c. \**New York-er proti kar monobhaab tumi monekOro Amsterdam-er*  
 New York-GEN towards whose attitude you think.PRES.2 Amsterdam-GEN  
*proti amar monobhaab*  
 towards my attitude

An anonymous reviewer pointed out that the *wh*-examples in (15) do not have the copula *holo*, which could potentially explain their ungrammaticality. However, note that the absence of *holo* cannot be the reason for the ungrammaticality as the quirky copula, in general, is incompatible with *wh*-questions and Bangla allows zero-copula interrogative structures (16).

- (16) a. \**ke holo Superman*  
 who COP Superman  
 Intended: ‘Who is Superman?’
- b. *ke Superman*  
 who Superman  
 ‘Who is Superman?’

I shall use den Dikken’s insight and conclusion, as affirmed by the Bangla data, and consider the underlying predicates in equatives to be reduced relative clauses that require predicate inversion to be licensed as well. In the next sections we will see that unlike in English, they are not licensed in SpecTP but in the CP domain.

#### 4.2. Embedded equative constructions in Bangla

I will investigate embedded equative clauses with the complementisers *je* and *bole* to provide empirical evidence for the claim that *holo* or *hochche* occurs in the C domain. These complementisers provide suitable contexts to tease apart the position of the quirky copula.

The position of *je* in the C domain of the subordinate clause is not uniform across the pre-verbal and post-verbal alternations, according to the analysis in Hsu (2016). Interestingly, embedded equative clauses with *je* preceding the main verb block *holo* while embedded clauses with *je* following the main verb show optionality with respect to *holo*. I will connect the distribution of *holo* with the position of *je* in the C domain in the following subsection.

My purpose is to show that the quirky copulas are unable to appear when a lower complementiser position is unavailable and their distribution under *je* will be used as evidence to suggest that these quirky copulas occur in the CP domain. As we will see, post-verbal struc-

tures,<sup>5</sup> where the quirky copulas can appear optionally, spell out *je* in Force (allowing *holo* to optionally occur in Fin). On the other hand, pre-verbal structures, where the quirky copulas are blocked, spell out *je* in Fin (thus leaving no complementiser position for *holo*).

The other complementiser, *bole*, only allows pre-verbal embedded structures (Bayer 1999), where the quirky copulas do not appear. In the literature *bole* is deemed to be a *verbum dicendi* and not regarded as a ‘full complementiser’. In section 4.4 I will attribute the incompatibility of the quirky copula and *bole* to the inability of *bole* to project a complementiser position for *holo* to occupy. The following pattern of the distribution of *holo* will emerge in the next two-subsections.

pre-verbal <i>je</i>	not possible (18)
post-verbal <i>je</i>	optional (19)
<i>bole</i>	not possible (24)

Table 1. Occurrence of *holo* in the environment of *je* and *bole*

#### 4.3. With *je*

Sentences (17), (18) and (19) illustrate the distribution of *holo* when an equative clause is embedded under *je*. In pre-verbal equative clauses with *je*, *holo* **cannot** occur.

- (17) Clark Kent *je* Superman *ami jan-i*  
 Clark Kent COMP Superman I know.PRES-1  
 ‘I know that Clark Kent is Superman.’
- (18) \*Clark Kent *je holo* Superman *ami jan-i*  
 Clark Kent COMP COP Superman I know.PRES-1  
 Intended: ‘I know that Clark Kent is Superman.’

In post-verbal clauses, *holo* can occur **optionally**.

- (19) *ami jan-i je* Clark Kent (*holo*) Superman  
 I know.PRES-1 COMP Clark Kent COP Superman  
 ‘I know that Clark Kent is Superman.’

This pattern can be explained by the structural analysis of embedded clauses with *je* in Hsu (2016).<sup>6</sup> He uses a cartographic framework with ForceP and FinP as possible positions for *je* (Figure 3) and deems that the position for the instantiation of *je* is determined by the word order. While an elaborate recounting of the analysis of *je* in Hsu (2016) would be orthogonal to my purposes, I would like to highlight some of the salient points. First, pre-verbal and post-verbal embedded clauses with *je* have the same underlying structure (Figure 3). Second, the entire embedded CP (including *je*) moves to the CP domain of the matrix verb in pre-verbal structures (Figure 4).

The theoretical explanation is substantiated by the copy theory of movement: *je* is merged in FinP and its copy is internally merged in ForceP. The higher copy in ForceP is pronounced

<sup>5</sup> I will be using the terms ‘pre-verbal’ and ‘post-verbal’ to refer with respect to the matrix verb.

<sup>6</sup> Hsu (2016) investigates embedded clauses with lexical verbs.

except when it is at the edge of an intonational phrase, such as pre-verbal contexts (17).<sup>7</sup> The lower copy in FinP is pronounced in the latter context. The empirical justification behind this distribution was given through the behaviour of A' domain elements in these two contexts which will be discussed below.

$$[_{\text{ForceP}} (\mathbf{je}) [_{\text{TopicP}} (\text{XP-Top}) [_{\text{FocusP}} (\text{XP-Foc}) [_{\text{FinitenessP}} (\mathbf{je}) [_{\text{TP}} \dots$$

Figure 3. Structure of *je* in a cartographic tree (from Hsu 2016:52)

$$\begin{array}{ccccccc} [_{\text{ForceP}} & [_{\text{TopicP}} & [_{\text{ForceP}} \dots & \text{FinP} (\mathbf{je}) \dots & ] & [_{\text{FocusP}} & [_{\text{FinitenessP}} [_{\text{TP}} \text{XP}_{\text{subj}} \dots [_{\text{VP}} \text{V} [_{\text{ForceP}} \dots \\ (\text{matrix}) & & \uparrow & & & & \end{array}$$

Figure 4. Structure of pre-verbal *je* (from Hsu 2016:52)

To summarise, following theoretical and empirical considerations, Hsu's conclusion is that *je* does not occupy the same position in pre-verbal and post-verbal embedded clauses — the pre-verbal *je* (17) spells out in FinP while the post-verbal *je* (19) spells out in ForceP.

It is instructive that the instantiation of *je* in FinP in the pre-verbal embedded clause is not compatible with the quirky copula (18). The complementary distribution of *holo* and pre-verbal *je* can be used to make a case for the claim that the quirky copula occupies Fin and cannot occur in pre-verbal clauses where *je* is already in Fin. In the post-verbal construction, *holo* can be in Fin while *je* occupies the Force position making (19) a grammatical structure. This indirect evidence is backed by empirical evidence with A' domain positions such as Topic and Focus, which appear in different orders for pre-verbal and post-verbal embedded clauses.

As per the cartographic framework, topics and focus elements precede Fin and follow Force. Thus, the prediction is that topics and focus elements *precede* *je* (in Fin) in pre-verbal contexts (Figure 5).

$$\text{ForceP} \text{ — TopP}(\text{two students}) \text{ — FocP} \text{ — FinP}(\mathbf{je})$$

Figure 5. Order of topic and *je* in pre-verbal embedded clauses

Similarly, topic and focus elements would *follow* the complementiser *je* (in Force) in post-verbal contexts (Figure 6).

$$\text{ForceP}(\mathbf{je}) \text{ — TopP}(\text{two students}) \text{ — FocP} \text{ — FinP}$$

Figure 6. Order of topic and *je* in post-verbal embedded clauses

Hsu (2016) shows that this prediction bears out as topicalised<sup>8</sup> and focalised elements precede *je* when it heads a pre-verbal clause (20). This implies that TopP and FocP precede *je*, which

<sup>7</sup> Hsu (2016) shows that this restriction is imposed by the phonological rules in Bangla.

<sup>8</sup> The diagnostic for topicalisation used here is the sequence NP-Number-Classifier 'student-two-CL', which always indicates a definite DP in Bangla and such DPs are usually topics.

could only happen if *je* occupies Fin. Similarly, topicalised and focalised elements follow *je* in post-verbal embedded clauses as they spell out the *je* in Force (21). Again, this is expected since TopP and FocP follow ForceP according to the cartographic framework.

- (20) John chatro du-to-ke je dadubhai dekh-eche bol-lo  
 John student two-CL-ACC that grandfather see-PERF say-PST  
 ‘John said that grandfather saw the two students.’ (Hsu 2016:46)

- (21) John bol-lo je chatro du-to-ke dadubhai dekh-eche  
 John say-PST that student two-CL-ACC grandfather see-PERF  
 ‘John said that grandfather saw the two students.’ (Hsu 2016:46)

When we look at embedded equative clauses, we see that the observed patterns hold for copular constructions as well. The *i* particle marks emphasis as we saw in section 2 and it precedes *je* in pre-verbal constructions and follows *je* in post-verbal constructions.

- (22) ami jan-i je Clark Kent-i (holo) Superman  
 I know-1 COMP Clark Kent-FOC COP Superman  
 ‘I know that Clark Kent (emphasis) is Superman.’

- (23) Clark Kent-i je Superman ami jan-i  
 Clark Kent-FOC COMP Superman I know-1  
 ‘I know that Clark Kent (emphasis) is Superman.’

Thus, the evidence from the left periphery supports the claim that the pre-verbal *je* is in Fin, which disallows the occurrence of *holo*. In Figure 7 the structure of a pre-verbally embedded equative clause with *je* is provided.

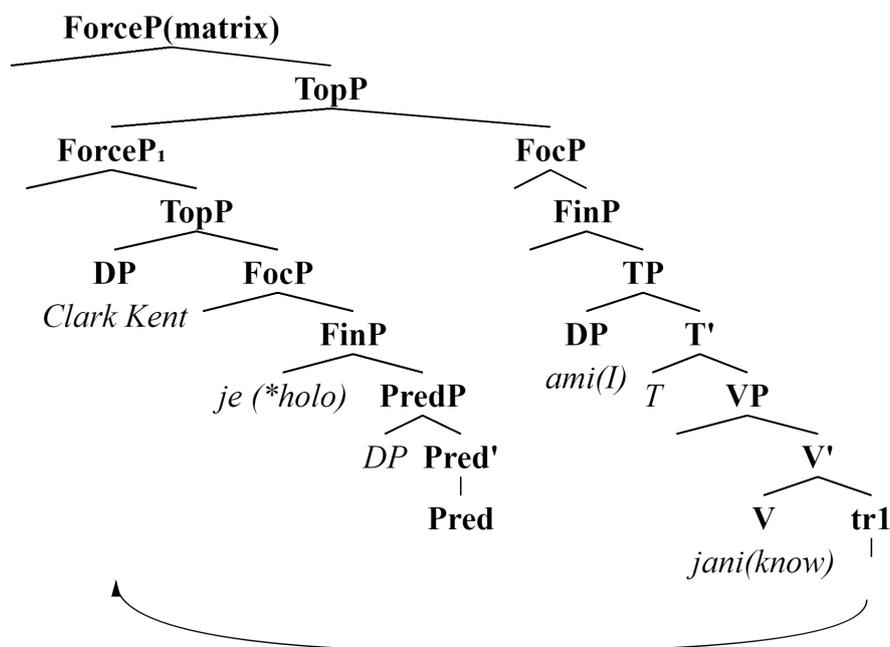


Figure 7. Pre-verbal embedded equative clause with *je* (adapted from Hsu 2016)

In the next subsection we will see that the incompatibility of *holo* with *bole* will also be at-

tributed to the unavailability of a complementiser position. Going back to the main point of this exploration: the ungrammaticality of pre-verbal equative *je* clauses with *holo* (18) can be explained if *holo* and *je* are in complementary distribution because both occupy Fin (Figure 7). In post-verbal clauses (19), *je* spells out in Force, allowing *holo* to occur in Fin.<sup>9</sup>

#### 4.4. With *bole*

The complementiser *bole* can only be selected by weak factive verbs such as *hear*, *think* and *know* (Kidwai 2014). Since it is derived from a *verbum dicendi*, it is not regarded as a regular complementiser (Balusu 2020; Kidwai 2014). Clauses embedded by *bole* always occur before the matrix verb (pre-verbal) and do not allow the quirky copula. I will claim that *holo* does not appear in these clauses as a lower complementiser position (such as FinP) is not available in such clauses.

- (24) Clark Kent (\*holo) Superman *bole* ami shunechh-i  
 Clark Kent COP Superman COMP I heard-1  
 ‘I heard that Clark Kent is Superman.’

Balusu (2020) describes *bole* as a quotative complementiser and it is characterised as an adjunction to the vP of the main clause as it does not extend its own projection (Kidwai 2014; Balusu 2020). Thus, while *je* is a complement to the matrix verb and unfurls its own projection, *bole* merely adjoins the main clause, extending the vP. Balusu (2020) also suggests that strong factive verbs (such as *see*) in Bangla are not lexically specified to embed Speech Act Phrases which explains the inability of *bole* to accompany strong factives (26). I interpret this as *bole* lacking the full range of illocutionary force that *je* does, since the latter can take strong factives as in (25), as *bole* is probably not a full complementiser.

- (25) ami dekhechhi je John bari-te achhe  
 I see.PST COMP John house-LOC COP  
 ‘I saw that John is home.’
- (26) \*John bari-te achhe *bole* ami dekhechhi  
 John house-LOC COP COMP I see.PST  
 Intended: ‘I saw that John is home.’

Moulton (2019) also provides a number of empirical paradigms where *je* and *bole* differ as he calls *bole* a ‘verby complementiser’. He shows that *bole* is more ‘transparent’ as it allows case-marked subjects in the embedded clause, unlike *je*. As an anonymous reviewer pointed out, the case-marked subject in the embedded clause is a case of exceptional case marking (ECM) and ECM cases are only seen with weak complementisers (*for*, in English).

- (27) Ram Sita-ke brilliant *bole* mone-korto  
 Ram Sita-ACC brilliant COMP think.PST.3  
 ‘Ram thought Sita brilliant.’ (Moulton 2019:59)

<sup>9</sup> The tense inflection and the person inflection seen on the copula is not incompatible if *holo* emerges in Fin as the lower complementiser position is known to exhibit tense features in languages such as Irish (Adger 2007).

- (28) \*Ram mone-korto je Sita-ke brilliant  
 Ram think.PST.3 COMP Sita-ACC brilliant  
 Intended: ‘Ram thought that Sita was brilliant.’

Owing to these diagnostics I will assume that unlike *je*, the complementiser *bole* does not have a projection for a lower complementiser position as it is not a ‘full’ complementiser. Though for different reasons, both pre-verbal *je* and *bole* are unable to bear the copula because of a lack of a lower complementiser position.

Thus, the incompatibility of *holo* in the absence of access to a complementiser position can be taken as further evidence that *holo* occupies the lower complementiser position. The inference from this section is that the quirky copulas are not part of the lower PredP or TP and emerge in the CP domain.

### 5. Copular constructions as states

In this section I will try to determine the nature of the present tense in copular clauses which will help us in understanding the interaction of Utterance Time, Assertion Time (or Topic Time) and Event Time in such clauses and see how the present tense manifests in Bangla (discussed in the next section). The utterance time (UT-T) is the time of speech, while the assertion time (Ast-T) or Topic Time is ‘the time for which the particular utterance makes an assertion’ (Klein 1994:37) and Event Time (Ev-T) is the time that embodies the span of the event or state depicted by the predicate (Klein 1994; Demirdache & Uribe-Etxebarria 2007).

Following Maienborn (2005) and O’Neill (2016) I will treat copular clauses as states<sup>10</sup> and extend the mechanisms of temporal anchoring posited for states to copular constructions. Zagona (1992), Wyngaerd (2005) argue that for states the simple present tense holds the present-moment meaning (or, a ‘point duration’), as opposed to a plausible generic or habitual meaning. While this might seem counter-intuitive, Wyngaerd (2005) argues that though a sentence like ‘John knows French’ could apply to time periods beyond the utterance time, it is merely an implication derived from the predicate and not from the temporal structure of statives, which basically gives John the property of knowing French at the utterance time.

This also aligns with Maienborn’s description of copular clauses as property exemplification of an entity at a given topic time. In other words, while these attributes can be predicated of the referred object for any amount of time in the real world, these clauses depict the predication at the time of the utterance. A simple present tense form (which is usually the canonical copular form, such as the English *is*) can have different tense interpretations that can vary across languages. Zagona (1992) lists four uses of the simple present in Figure 2.

Mary sings tomorrow.	future
What can she do? She sings.	deontic
Mary (always) sings.	generic / habitual
Mary sings. (right now)	present moment

Table 2. Present tense interpretations (Zagona 1992:498)

<sup>10</sup> Verbs such as *know*, *resemble*, *like* etc. depict states.

Though the present moment interpretation is not available in English, Zagona (1992) notes that in Spanish this meaning can be derived from the simple present form.

- (29) Maria canta (en este momento).  
 Maria sing.PRES.3 (in this moment)  
 ‘Mary is singing at this moment.’ (Spanish; Zagona 1992:498)

Zagona (1992) distinguishes between *generic* present and *present moment* present tense with the help of the simple present clauses in English and Spanish. Only the generic reading is available for the English present tense for activity verbs (31) while the Spanish present tense can have both present moment and generic readings available (30), as she demonstrates through the following activity verbs.

- (30) Maria canta.  
 Mary sing.PRES.3  
 ‘Mary sings (always).’  
 ‘Mary sings (right now).’ (Spanish; Zagona 1992:498)
- (31) a. Mary sings (always).  
 b. \*Mary sings (right now). (English; Zagona 1992:498)

I am following the referential and relational approach (Bjorkman 2022) to tense as depicted in Zagona (1992) and Demirdache & Uribe-Etxebarria (2007) in this paper.<sup>11</sup> The temporal arguments are thus referential elements in CP, TP and VP and tense (and aspect) interpretation is yielded through their interactions.

Leveraging the relations between these temporal arguments, Zagona (1992) explains the distinction between generic present tense and the present moment reading through the possibility of a binding relation between C and V. The present moment reading is argued to emerge when the external temporal argument (the utterance time in C) can bind the internal temporal argument (the event time in VP),<sup>12</sup> following the latter’s (covert) movement to the TP domain. Since the verb does not move to T in English (as attested by the need for do-support for negation of lexical verbs), it remains beyond the binding domain of C, disallowing the present moment interpretation.

Since English stative verbs do not undergo V-to-T movement either, Zagona (1992) posits that stative predicates inherently undergo quantifier raising (QR) to be in the binding domain of C. This is possible since states hold for every moment in the interval of VP, unlike activities, allowing universal quantification. Following raising, the event argument in the VP is in the binding domain of CP and present-tense interpretation is thus possible in English statives.

Since I follow the literature in assuming that copular constructions are stative by nature, I will also assume that the simple present tense copular form (such as, the English *is*) entails the present moment sense and not the generic present sense. This also aligns with Maienborn’s description of copular clauses as property exemplification of an entity at a given topic time (Ast-T). In case of present tense, this Ast-T will be equal to UT-T, following Klein (1994). However, the mechanism for achieving the present moment reading for English copular constructions is

<sup>11</sup> There are two broad ways of looking at tense: referential and existential. In the referential approach tense interpretations are derived through the interaction of the referential temporal arguments while in the existential approach they are treated as quantificational variables (see Bjorkman 2022 for details).

<sup>12</sup> The binding approach follows from the referential characterisation of temporal arguments.

not the same as for statives. Copular constructions in English do not need QR for the copulas because overt V-to-T movement is allowed for auxiliaries in English, which can be exemplified with the order of negation in copular constructions: negation follows the copula in (32) unlike in the case of lexical verbs.

(32) Clark Kent is not Superman.

Here we saw that the present tense form in copular constructions is of the nature of present moment sense, which is embodied by the UT-T. This can be achieved by V-to-T raising as in the case of Spanish verbs and English copular verbs and by QR in English statives.

### 6. The 'present tense' copula in Bangla

As we saw in the previous section, languages encode different temporal interpretations in the simple present forms. In this section I will argue that the Bangla present form does not express the present moment reading. Similar to (31) in English, Bangla does not allow present moment interpretations for activity verbs (34).

(33) Mary gaa-e  
Mary sing.PRES-3  
'Mary usually sings.'

(34) \*Mary gaa-e  
Mary sing.PRES-3  
Intended: 'Mary sings right now.'

This shows that covert V-to-T movement is not available for Bangla lexical verbs (like English). The present form of the copula *hoWa*, *hOe*, which cannot occur with property exemplifying copular constructions (35) can, however, be found in generic sentences (36).

(35) \*oi chhele-Ta lOmba hO-e  
that boy-CL tall be.PRES-3  
Intended: 'That boy is tall.'

(36) chhele-ra lOmba hO-e  
boys-PL tall be.PRES-3  
'Boys are usually tall.'

This juxtaposition indicates the present form of the copula can be used for generic present tense but not for the present moment sense. In other words, *hOe* can occur when the tense interpretation does not require C to bind V.

Thus, it seems that V-to-T movement is unavailable for copulas in Bangla, unlike English. The option of quantifier raising is also not available for such constructions because they are a part of property exemplification and do not have any lexical content unlike stative verbs to quantify over.

Another noteworthy thing about Bangla is that it lacks an overt present tense morpheme in general. This can be established by comparing present and past progressives. The present progressive sentence only has a progressive morpheme (37) and the same form can be used in

the past progressive construction (38) by the addition of the past morpheme.

- (37) Mary bhaat kha-chch-e  
 Mary rice eat-PROG-3  
 'Mary is eating rice.'
- (38) Mary bhaat kha-chch-il-o  
 Mary rice eat-PROG-PST-3  
 'Mary was eating rice.'

Negation data also shows that the verbal form remains the same across present and past tenses while the difference is obvious only in the form of the negation marker.

- (39) Mary bhaat kha-e na  
 Mary rice eat-3 NEG  
 'Mary does not eat rice.'
- (40) Mary bhaat kha-e ni  
 Mary rice eat-3 NEG.PST  
 'Mary did not eat rice.'

I interpret the absence of change in the verbal form as the absence of an overt present tense. What is remarkable in case of Bangla copular constructions is not the unavailability of a tense marker but the inability of the verb *hOwa* to manifest itself at all. Following the above discussion, this seems to be the case because the verb *hOe* is unable to express present moment tense either by covert V-T movement or quantifier raising.

As indicated in section 3, except matrix equatives, copular constructions in Bangla do not have an overt copula. Moreover, the copulas become either optional (19) or ungrammatical, as seen in examples (18) and (24), in embedded contexts. The manifestation of the quirky copular forms (the perfect *holo* and the progressive *hochche*) thus does not seem to be related to the tense interpretation of the clause, but rather seems to be a syntactic reflex for something else, which will be explored in the next section.

The takeaway from this section is that copular constructions entail the present moment sense that requires the temporal argument from the lower domain to be within the binding domain of C. The other noteworthy point is that the utterance time (UT-T) is the substantial temporal argument here, rather than the topic time (Ast-T), since the latter gets its value from the former in the present moment context. With respect to the Bangla data, we saw that the copula only occurs in the generic present tense contexts and not in predicative contexts where present moment sense is involved. In the next section I will use the model with temporal arguments in Demirdache & Uribe-Etxebarria (2007) to derive the present tense interpretation in Bangla copular constructions and the distribution of the quirky copulas.

### 7. Interaction of temporal arguments in copular constructions

Demirdache & Uribe-Etxebarria (2007) (henceforth D&U-E 2007) propose a model of temporal arguments to present an isomorphic representation of tense and aspect. Their model derives tenses and aspects from three temporal arguments with the help of three possible types of ordering between them. As explained above, these three temporal arguments are Utterance Time

(UT-T), Assertion Time (Ast-T) and Event Time (Ev-T). These temporal arguments<sup>13</sup> occupy SpecTP, SpecAspP and SpecVP respectively. The three possible ways to order them is WITHIN, BEFORE and AFTER.

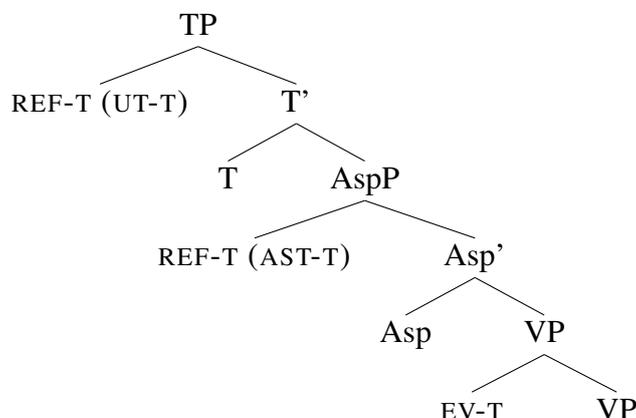


Figure 8. Temporal arguments (from D&U-E 2007:333)

Tense is captured by the relation between the UT-T and Ast-T: WITHIN refers to UT-T being inside Ast-T (yielding present tense), BEFORE refers to UT-T preceding Ast-T (yielding future tense), AFTER refers to UT-T following Ast-T (yielding past tense).

#### 8. Interaction of temporal arguments in copular constructions

In the last section we saw that Zagona (1992) claims that the VP has to be within the binding domain of CP for present moment sense. In terms of D&U-E's model it would mean that the UT-T has to bind the Ev-T. D&U-E (2007) interpret the the binding relation to involve either co-reference or anaphoric binding.

Since the only temporal argument relevant for present moment interpretation is UT-T, it is easily conceivable that UT-T binds Ast-T in copular constructions. Similarly, we can think of Ast-T binding Ev-T since Asp does not play a role in these cases. There is indeed precedence for this kind of a characterisation in D&U-E's model for simple tenses without aspect. For simple tenses without overt morphological aspect, they propose an anaphoric relation (that can be fulfilled either by covaluation or by binding) between Ast-T and Ev-T. The covaluation relation yields perfective viewpoint as both temporal arguments overlap, while a binding relation can yield both perfective and imperfective viewpoints (which is called a neutral viewpoint). I will leverage the binding relation they have depicted to explain the possibility of the perfective and the imperfective forms in the Bangla copula.

D&U-E (2007) show that when Ast-T binds Ev-T in the absence of an aspectual specification, there are two possibilities: the Ast-T can include or be co-temporal with the interval of the event (perfective; Figure 9) or it can be a part of the interval in which the event takes place (imperfective; Figure 10). In Figure 9 the outer brackets indicate the the assertion time while the inner brackets indicate the event of crying and vice-versa for Figure 10.

<sup>13</sup> D&U-E point out that T also hosts a separate specifier position for DPs to receive nominative case as functional heads can project multiple specifier positions to fulfil multiple functions.

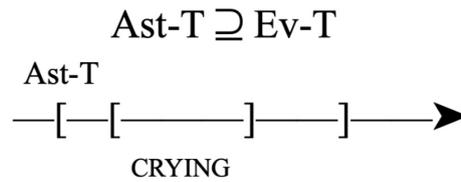


Figure 9. Perfective form (from D&U-E 2007:342)

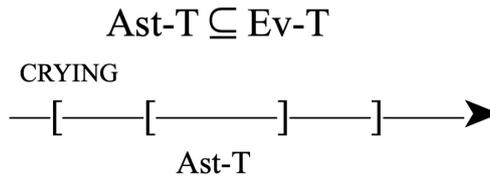


Figure 10. Imperfective form (from D&U-E 2007:342)

For Bangla copular clauses I will assume that UT-T is the only available temporal argument with a value and that Ast-T is bound by UT-T. The justifications for this assumption are: a) the present tense morpheme is not overt; b) when it comes to the present moment sense the value of Ast-T is dependent on the UT-T so the topic time does not necessarily have to have an independent value.<sup>14</sup> Thus, I will assume that the Ast-T does not have a value for a time but is a variable that is bound by UT-T.

Since Ast-T does not have its own reference in copular constructions it cannot bind Ev-T and only co-reference is possible. Thus we get a relation that tells us  $\text{Ast-T} = \text{Ev-T}$ , though a referential value is not available.

Since UT-T has a binding relation with Ast-T, in effect, the way UT-T relates to Ast-T could be extended to Ev-T as well. Thus, though a binding relation is not achieved by the movement of the internal temporal argument to TP, UT-T binds Ast-T, which is co-referential with Ev-T. This way I am trying to connect Zagona's C-binding-V operation for present moment interpretation to D&U-E's model: the covaluation relation (between Ast-T and Ev-T) allows UT-T to indirectly have a binding relation with Ev-T, which is the premise for the present moment sense in the model in Zagona (1992). This binding relation can yield imperfective as well as perfective forms though they are not realised morphologically in T. However, the only semantic interpretation available will be that of present moment sense since UT-T is the only substantial temporal argument.

### 9. Analysis and future research

In the above sections I have tried to provide: a) empirical evidence for the occurrence of the quirky copulas in the CP domain, b) theoretical background for the underlying structure for equatives to explain why they might behave differently from other types of copular constructions, c) the nature of present tense in copular sentences, where we see the quirky copulas in Bangla, d) how the interaction of temporal arguments yield the unexpected aspectual forms for

<sup>14</sup> Languages with overt tense morpheme in copular constructions could have an Ast-T argument that completely overlaps with the UT-T, yielding present-moment sense from the WITHIN relation itself.

present tense. In this section I will bring the insights from the above sections to: a) understand why the copulas are mandatory only for matrix equative clauses, b) to justify why the quirky copulas show up in CP / FinP.

As we saw in section 4, the predicates in equatives need to undergo predicate inversion to license the silent pro-predicate. Since T is vacuous in Bangla copular constructions (as analysed in section 6), it is unable to license the pro-predicate in matrix clauses. When the predicate moves to SpecFinP to be licensed, Fin is possibly forced to realise overtly as a means to support the silent pro-predicate. Fin realises in the perfect or the progressive form, upon the interaction of its temporal features with T, as both relations can be realised in T for present moment sense in Bangla, as shown in section 5. This realisation is syntactically motivated, akin to phenomena like the case of do-support in English. However, embedded contexts still pose a problem as the copula becomes redundant for equatives in embedded contexts as in (19) reproduced here.

- (41) ami jani je Clark Kent (holo) Superman  
 I know COMP Clark Kent COP Superman  
 ‘I know that Clark Kent is Superman.’

I have no theoretical explanation for this in terms of licensing at this point. In fact, this pattern deviates from the behaviour of English inverse copular constructions as noted in den Dikken (2006) where the copula is mandatory even in embedded contexts.

- (42) Imogen considers the best candidate \*(to be) Brian.

The reason *to be* is obligatory in (42) is because it has to license the inverted predicate *best candidate*. Equatives in embedded copular constructions in Bangla should also mandatorily require the copulas going by the premise of predicate inversion.

One way of explaining this could be: since the left peripheral structure is already available from the matrix verb with the *je* complementiser, the clause structure allows some other mechanism for licensing pro-predicates, allowing in-situ equatives. The English examples contain a non-finite embedded clause and that could play a role in the obligatoriness of the copulas. Future work will look into the connection between the size of clause structure and licensing of pro-predicates in equatives.

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### Abbreviations

ACC	accusative	PERF	perfect
CL	classifier	PRES	present
COMP	complementiser	PROG	progressive
COP	copula	PST	past
GEN	genitive		

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# On the paradigmatic morphosyntax of *wh*-elements

Giuseppe Rugna

This paper discusses the distribution of *wh*-elements across different constructions. In particular, it attempts to develop an account for the observation that *wh*-elements do not distribute freely across different syntactic environments; rather, their distribution is paradigmatic or construction-specific. Such distribution raises issues for current minimalist frameworks, as *wh*-elements are expected to undergo Merge irrespective of the particular construction being derived. The proposed account captures the relevant distribution by means of language-specific lexical properties of *wh*-elements in accord with a licensing mechanism operating at the Sensory-Motor interface. This paper moreover discusses the licensing of *wh*-elements in the contexts of interrogative, free and headed relative constructions.

## 1. Introduction

Recent developments in Minimalism have emphasized the simplicity of Merge, the sole structure-building operation underlying human linguistic competence (e.g., Chomsky 2013, 2015, 2021; Chomsky et al. 2019). Unlike previous versions of Minimalism (e.g., Chomsky 1995, 2001, 2008), Merge is no longer assumed to be a ‘last resort’ operation, i.e., triggered by requirements of valuation and/or deletion of uninterpretable/edge features. Rather, Merge is free to apply when it can. The burden of explanation for linguistic phenomena has thus increasingly fallen onto ‘third-factor’ principles (e.g., computational efficiency; Chomsky 2005) and the interfaces with which narrow syntax (Merge) interacts: the Sensory-Motor (S-M) interface, responsible for the vocal and gestural aspects of language, and the Conceptual-Intentional (C-I) interface, broadly concerned with the semantico-pragmatic aspects of language.

Minimizing the complexity of the Merge operation is a central goal of Minimalism, as envisaged by the Strong Minimalist Thesis (SMT), satisfied ‘to the extent that the structures of I-language are generated by the simplest operations’ (Chomsky 2021:12). A free-Merge system is intuitively simpler than a system requiring extra syntactic machinery to trigger applications of Merge (e.g., syntactic Agree). In fact, free Merge is the simplest combinatorial operation imaginable, recursively combining objects in a binary fashion with no linear order among them (Chomsky et al. 2019).

Against this backdrop, the present paper discusses some distributional properties of *wh*-elements that *prima facie* seem to be incompatible with the SMT. In particular, it attempts to develop an analysis for the observation that the distribution of *wh*-elements appears to be

restricted to particular morphosyntactic paradigms or constructions. The construction-specific distribution of *wh*-elements can be briefly illustrated with English *what* and *who*, which despite their availability in different constructions, are ruled out in specific environments; e.g., *what* in Headed Relatives (HRs) (1d) and *who* in Free Relatives (FRs) (2b-c) (Patterson & Caponigro 2016; Chomsky 2013:fn. 44); see section 2 for further discussion.

- |     |    |  |                     |
|-----|----|--|---------------------|
| (1) | a. | <i>What</i> did you do?                            | Q                   |
|     | b. | <i>What</i> Glenn said didn't make much sense.     | FR <sub>SUBJ</sub>  |
|     | c. | I love <i>what</i> I do.                           | FR <sub>OBJ</sub>   |
|     | d. | *The book <i>what</i> you read.                    | *HR                 |
| (2) | a. | <i>Who</i> did you see?                            | Q                   |
|     | b. | * <i>Who</i> Glenn married didn't make much money. | *FR <sub>SUBJ</sub> |
|     | c. | *I love <i>who</i> I married.                      | *FR <sub>OBJ</sub>  |
|     | d. | The girl <i>who</i> Glenn married                  | HR                  |

Under the assumption that Merge is free nothing in principle prevents the generation of the ungrammatical sentences in (1d) and (2b-c). In other words, *what* and *who* (or whatever underlies their featural composition in the syntactic computation) are expected to undergo External Merge — i.e., to be drawn from the (pre-syntactic) lexicon — irrespective of the particular construction in which they ultimately surface. In fact, this is expected on the natural assumption that derivations lack any knowledge about the type of construction that is being derived (e.g., Chomsky 1981:7).

In line with minimalist assumptions, I take the above to be desirable, and assume that (1d) and (2b-c) (as well as other comparable cases) can indeed be generated by narrow syntax. The source of the paradigmatic distribution of *wh*-elements must then be individuated elsewhere. In this paper, I argue that the type of distributional asymmetries in (1)-(2) are best accounted for by the lexical properties of the *wh*-elements operating in conjunction with conditions holding of the S-M, rather than the C-I, interface (cf. Rugna 2023:ch. 2).

The present paper is structured as follows. After providing a more articulated survey of the empirical domain in section 2, I argue in section 3 in favor of the hypothesis that *wh*-elements lack any intrinsic semantic specifications, as a consequence of which they behave as variables that may be bound by various operators (Heim 1982; Nishigauchi 1990; Postma 1994) at the C-I interface. Their lack of semantic specifications in turn militates against an explanation of the paradigmatic distribution of *wh*-elements in terms of C-I-related conditions. In section 4, I develop the proposal that *wh*-elements bear, as part of their lexical entries, the information about the particular environment in which they can surface. This information is ultimately licensed at the S-M interface under specific morphosyntactic conditions, such as the presence of particular semantic operators (e.g., Q,  $\sigma$ ). I moreover discuss the conditions regulating the licensing of *wh*-elements in the Q, FR and HR paradigms. Finally, section 5 concludes the discussion.

## 2. Main data: paradigmatic gaps and paradigmatic allomorphy

The paradigmatic distribution of *wh*-elements encompasses a wide range of morphosyntactic phenomena. In this paper, we focus on two related phenomena: paradigmatic gaps and paradigmatic allomorphy.<sup>1</sup>

Paradigmatic gaps occur when a *wh*-element fails to be licensed in particular constructions despite expectations. For instance, the absence of *what* in HRs as seen in (1) can be considered to be a paradigmatic gap on the basis of both intra- and cross-linguistic considerations. For starters, HRs in English do not categorially reject *wh*-elements (3); hence the unavailability of *what* in HRs cannot be imputed to a general ban against *wh*-elements.

- (3) a. A book \**what/which* you should read is Syntactic Structures.  
 b. The girl \**what/who* John invited to the party is Mary.

Cross-linguistically, moreover, the equivalents of *what* are clearly available in HRs. This point can be illustrated with both the closely-related German *was* (4) and Dutch *wat* (5), and, more forcefully, with data like (6), from dialects/varieties of English that can license *what* in HRs.

- (4) Das Beste, *was* Microsoft heute tun kann, ist, Yahoo zu kaufen.  
 The best what Microsoft today do can is Yahoo to buy  
 ‘The best that Microsoft can do today is to buy Yahoo.’  
 (German; Brandt & Fuß 2014:301)

- (5) Dat is het meisje *wat* die mensen heeft geropen.  
 That is the girl what those people have called  
 ‘That is the girl who called those people.’  
 (Dutch; Boef 2012:53)

- (6) The girl *what*’s coming over.  
 (Dialectal English; Edwards 1993:228)

Based on the above considerations, (standard) English *what* may be said to be missing from the HR paradigm (which instead includes *which* and *who*).<sup>2</sup>

The same conclusion can carry over to English *who* in FRs. Many speakers find the status of *who* to be degraded or altogether ungrammatical in FRs, irrespective of whether the FR surfaces in object (7a) or subject (7b) position (see in particular Patterson & Caponigro 2016; cf. Chomsky 2013:fn. 44.). Similarly to what we observed for *what* above, intra- and cross-linguistic considerations would lead one to expect *who* to be available in the FR paradigm. In particular, *what* is grammatical in FRs (cf. (1b-c) above), as are the counterparts of *who* in other

<sup>1</sup> Construction-specific morphosyntactic properties are not discussed here. See Rugna (2023a, 2023b:ch. 3) for an analysis of the paradigmatic properties of the Italian relativizer *che* under the hypothesis that it is a DP (e.g., Manzini & Savoia 2003), and Rugna (2023b:ch. 4) for an analysis of the paradigmatic distribution of relativizers in English and Romance (non-)tensed and (non-)restrictive headed relative clauses.

<sup>2</sup> English *what* is also absent from the Indefinite paradigm (e.g., \*I ate *what bad*; cf. I ate *something bad*), as evidenced by the availability of the closely-related German *was* and Dutch *wat* in the relevant paradigm. I abstract away from the Indefinite paradigm in this paper; see Rugna (2023:12f.) for discussion of gaps in the Indefinite paradigm and further parametric differences between German and Dutch (cf. Postma 1994; Hachem 2015).

languages, such as Italian *chi* (8), Spanish *quién* (9), and German *wer* (10) (taken from Patterson & Caponigro 2016:342).

- (7) a. \*I love *who* I married.  
 b. \* *Who* Glenn married didn't make much money.
- (8) Hanno            premiato            solo *chi*            è            arrivato            primo.  
 have.3P            award.PRF.3P            only            who            is            arrive.PRF            first  
 'They gave an award only to the person who arrived first.'
- (9) Le            dí                            las            gracias                            a            *quién*            me            ayudó.  
 3S            give.PST.1S            DET            thanks                            to            who            1S            help.PST.3S  
 'I thanked the person who helped me.'
- (10) *Wer*                            diese            Tat            verübt    hat, sollte            nie            wieder frei  
 who.NOM                            this            crime            commit.PRF.3S    has, should            never            again            free  
 kommen.  
 get  
 'The person/people who committed this crime should never be let free.'

A comparable situation can be observed in Italian. In this case, it is the *wh*-element *che* 'what' that is not available in FRs (11), at least not in the standard language.<sup>3</sup>

- (11) a. \*Amo *che*            faccio.  
 love.1S            what            do.1S  
 'I love what I do.'
- b. *Che* dici                            non            ha            senso.  
 what say.2S                            NEG            has            sense  
 'What you're saying doesn't make sense.'

Turning now to paradigmatic allomorphy, the phenomenon may be illustrated by Italian (12) and Slovenian (13). As can be seen, Italian and Slovenian (among other languages) make use of morphophonologically specialized forms for *wh*-elements occurring in specific constructions. Thus *cui* (an oblique form of the element corresponding to *who/what*) is restricted to HRs in Italian, whereas Slovenian *kar* 'what' is confined to FRs (13b) and so-called light-headed relatives (13c) (adapted from Šimík 2018:ex. (7)).

- (12) a. A            *chi*/\**cui*                            hai                            dato            il            libro?  
 To            who                            have.2S                            given            the            book  
 'Who did you give the book to?'

<sup>3</sup> Caponigro (2003:26) points out that some varieties of Italian license *che cosa* (lit. 'what thing'), a variant of *che*, in FRs. I do not know whether *che* (without *cosa*) is allowed by these speakers in FRs. Manzini (2012:299) judges (i) as grammatical (her ex. (7)), which illustrates the possibility for variation in the use of free relative *che* in (non-standard) varieties of Italian ((i) is deviant in my own Italian).

(i) %Fai            *che*            ti            pare.  
 Do            what            you            likes  
 'Do as you like.'

- b. Gianni parla solo con *chi/\*cui* vuole parlare  
 G. speaks only with who wants speak-INF  
 ‘Gianni speaks only to those he wants to speak with’
- c. L’uomo a *cui/\*chi* hai dato il libro  
 The man to who have.2S given the book  
 ‘The man to whom you gave the book.’
- (13) a. Vem, *kaj/\*kar* je Maja skuhala.  
 Know.1SG *what* AUX.3S Maja cooked  
 ‘I know what Maja cooked.’
- b. Pojdem sem, *kar/\*kaj* je Maja skuhala.  
 Ate AUX.1S what AUX.3S Maja cooked  
 ‘I ate what Maja cooked.’
- c. Pojdem sem vse / nekaj / tisto, *kar/\*kaj* je Maja skuhala.  
 Ate AUX.1S everything / something / that what AUX.3S Maja cooked  
 ‘I ate everything / something / that thing that Maria cooked.’

It should go without saying that paradigmatic allomorphies also imply paradigmatic gaps (e.g., the Q paradigm of Italian lacks *cui*; cf. (12a)). The two phenomena thus seem to be strictly connected and should ideally find a unifying explanation. In particular, the question arises as to how the relevant grammars can ‘know’ that a particular *wh*-element belongs to a specific (set of) paradigm(s).

### 3. *Wh*-elements in the lexicon and their status as variables

Under the minimalist framework assumed in this paper (Chomsky 2013, 2015, 2021; Chomsky et al. 2019), the locus of explanation for morphosyntactic phenomena falls onto third-factor principles and/or interface conditions. Therefore a crucial preliminary question that must be addressed with respect to the distribution discussed above is how *wh*-elements should be formally represented in the lexicon and at the interfaces. In other words, what sort of features are *wh*-elements underlyingly composed of?

There are two alternative views on the matter. According to one hypothesis, referred to here as the *multiple-entries hypothesis*, lexica may redundantly specify the association of a phonological exponent with different semantic specifications. In particular, the multiple-entries hypothesis postulates that a lexicon may contain such objects as ‘interrogative’ or ‘relative’ *wh*-pronouns. Although it was not explicitly formulated as such, this hypothesis is effectively taken by such early works as Chomsky (1964), Katz & Postal (1964), Baker (1970), among others, insofar as they treat *wh*-elements in Qs as inherently endowed with Q semantics. More recently, the multiple-entries hypothesis is taken by some authors working under the cartographic framework (see, e.g., Bacsai-Aktari & Dékány 2021, who assume that [+rel]/[+wh] features are relevant for clause-typing).

On the other hand, proponents of the *single-entry hypothesis* (e.g., Postma 1994; Manzini & Savoia 2003; Barbiers et al. 2010; Boef 2012; Roussou 2020; a.o.) claim that a redundant lexicon should be disfavored upon empirical considerations. For instance, the observation that morphophonological syncretisms between interrogative and (free) relative pronouns are quite wide-spread cross-linguistically (cf., e.g., Smits 1989; Caponigro 2003; Bhat 2004; a.o.) is taken to cast doubt on the postulation of multiple homophonous lexical entries. More

specifically, if the interrogative reading associated with *what* in (1) is triggered by some intrinsic property of *what*, then it would become a purely accidental fact that the lexical entry for interrogative *what* is homophonous with the entry for *what* in FRs (2). What would also be missing is an explanation for why such syncretisms are cross-linguistically wide-spread.

According to the single-entry hypothesis, the lexicon contains a single representation for a given *wh*-form that underlies its uses across different constructions. To capture the different ‘functions’ a *wh*-element may perform, the lexical entry of a *wh*-element is assumed to be rather underspecified from a semantic point of view. In particular, such underspecification would make *wh*-elements act as variables (in the sense of Heim 1982) at C-I (cf. Nishigauchi 1990; Postma 1994), where they may ultimately be bound by various operators independently merged in the syntactic structure.

The behavior of *wh*-elements as variables can be illustrated clearly by the following examples from Japanese (Nishigauchi 1990; cf. Cheng 1991 for the same conclusion with arguments from Mandarin Chinese). As can be seen in (14), the same morphophonological form of the *wh*-element *dare* ‘who’ is associated with a variety of readings, depending on the type (and structural position) of the operator independently merged in the structure. Thus *dare* in (14a) receives an interrogative interpretation as it is bound by the operator *ka* occupying a sentence-peripheral position; in (14b), *dare* is instead read in the scope of the universal operator *mo*, thus receiving universal quantification; in (14c), *dare* receives an existential interpretation by virtue of the operator *ka* occupying a phrase-internal position.

- (14) a. *Dare-ga*      *ki-masu*      *ka*  
           who-N        come            Q  
           ‘Who’s coming?’
- b. *Dare-ga*      *ki-te mo,*      *boku wa*      *aw-a-nai.*  
           who-N        come Q,        I        T        meet-want  
           ‘For all x, if x comes. I want to meet (x).’ Or  
           ‘Whoever comes in, I will mit (him).’
- c. *Dare-ka-kara* *henna*              *tegami-ga*      *todoi-ta.*  
           Who-Q-from    strange            letter-N        arrived  
           ‘A strange letter came from somebody.’

Such behavior of *wh*-elements can also be illustrated with Indo-European languages. Postma (1994) explicitly argues, independently of Nishigauchi (1990), that *wh*-elements in German and Dutch should be treated as open variables that acquire their readings configurationally. Thus, for instance in (15) the interpretation of Dutch *wat* ‘what’ is disambiguated syntactically: the interrogative reading is associated with movement of *wat* to a left-peripheral position (15a), while the existential reading arises when *wat* remains in situ (15b).

- (15) a. *Wat*    *heb*    *je*      *gedaan?*  
           What    have    you     done?  
       b. *Jan*    *heeft* *wat*    *gedaan.*  
           John    has     what    done  
           ‘John has done something.’

In sum, according to Postma (1994), the interrogative and indefinite readings of *wat* are not lexically encoded as such: they are the result of the interaction between the semantic property

of *wat* as an open variable and the syntactic structure in which it occurs (see also Barbiers et al. 2010).

As another empirical piece of evidence from Indo-European for the behavior of *wh*-elements as variables, consider Italian *chi* ‘who’ in (16)-(17), where it acquires rather different interpretations. Specifically, in the FR in (16a), *chi* is interpreted as a definite description, as in the paraphrase in (16b); in the Existential Free Relative (also known as Modal/Irealis Free Relatives or indefinite constructions in the literature; cf. Caponigro 2003; Šimík 2011) in (17a), *chi* is instead interpreted in the scope of an existential quantifier, as in the paraphrase in (17b).

- (16) a. Amo *chi* ho sposato.  
 love.1S who have.1S married  
 (lit.) ‘I love who I married.’
- b. Amo *la persona* che ho sposato.  
 love.1S the person that I married  
 ‘I love the person I married.’
- (17) a. Ho con *chi* parlare quando sono triste.  
 have.1S with who speak-INF when am sad  
 ‘I have somebody to talk to when I am sad.’
- b. Ho *qualcuno* con cui parlare quando sono triste.  
 have.1S somebody with whom speak-INF when am sad  
 ‘I have somebody to talk to when I am sad.’

(Italian; Caponigro 2003:86)

Insofar as it avoids a redundant lexicon and increases explanatory and descriptive adequacy, the single-entry hypothesis is favored on minimalist grounds. At the same time, the assumption that *wh*-elements have underspecified lexical entries does not predict the sort of paradigmatic distribution presented in §2. In this case, the multiple-entry hypothesis seems to have an advantage, as it might account for paradigmatic gaps and allomorphy via the assumption that semantic information is directly encoded on the lexical entry. As such, the absence of *who* from the FR paradigm, for instance, might be explained away by the lack of an association between the phonological exponent /hu/ and the semantic features associated with the FR paradigm (whatever these may be; cf. §4.2).

Nonetheless, in this paper I essentially side with proponents of the single-entry hypothesis in assuming that *wh*-elements do not bear any intrinsic quantificational force as part of their lexical entries, allowing them to act as open variables at C-I. This assumption makes more transparent the availability of *wh*-elements across different constructions, as well as why such cross-constructural syncretisms should hold in several languages.

More concretely, I assume that the semantic underspecification of *wh*-elements is encoded on their lexical entries in the form of a [wh] feature. Taking the standard position that *wh*-elements project DPs, I moreover assume that the [wh] feature corresponds to a particular value associated with the D category. This value, I suggest, is what distinguishes *wh*-elements from other exponents of the D category, such as definite determiners, at C-I (which may perhaps be valued as [u] or [σ], expressing, e.g., uniqueness and/or maximality).

Apart from the [wh] feature, I assume further that *wh*-elements may lexicalize  $\phi$ -features,<sup>4</sup> which encode such familiar specifications as gender, number, person and animacy (cf. Déchaine & Wiltschko 2002). At C-I, I assume that some  $\phi$ -features may act as restrictors on the range of the variable introduced by *wh*-elements (e.g., Heim & Kratzer 1998:244; Heim 2008). This is particularly the case of the animacy feature, whose specification as [human] restricts the range of the variable to human entities.

Given these assumptions, the lexical entry for *wh*-items like *what* and *who* may be minimally represented as in (19a) and (19b), respectively. These entries are meant to represent the association of a phonological exponent with a particular set of features computed by narrow syntax and interpreted as variables (potentially restricted by  $\phi$ -features) at C-I. For concreteness, I assume in line with realizationist/Late Insertion approaches to the syntax-morphology interface (e.g., Distributed Morphology; Halle & Marantz 1993; Arregi & Nevins 2012) that this association happens post-syntactically, at S-M, on the basis of the abstract features received from narrow syntax.<sup>5</sup>

- (19) a. [DP D: [wh],  $\phi$ : [∅]] → /wat/  
 b. [DP D: [wh],  $\phi$ : [human]] → /hu:/

As in the single-entry hypothesis, such entries as those in (19) allow us to capture in a straightforward way why *wh*-elements often occur across different syntactic environments cross-linguistically. Quite simply, the featural composition underlying a *wh*-element can undergo Merge in different constructions and receive different interpretations depending on the operator that ultimately binds it at C-I. Regardless of these different interpretations, the same phonological exponent may be associated with the underlying abstract features at S-M, thereby accounting for cross-constructural syncretisms.

However, such minimal entries are clearly insufficient to capture the paradigmatic distribution of *wh*-elements. Without further specifications, it remains unclear why, e.g., the entry in (19a) should be ruled out in HRs, especially considering the potential availability of (19b) in these contexts. A possible solution to this issue, which I explore in the remainder of this paper, is that the entries in (19) be enriched so as to contain the instructions for their licensing environments at S-M. In other words, I propose that while *wh*-elements spell out the abstract features interpreted as variables at C-I (as under the single-entry hypothesis), they can do so only if an appropriate context or licensing environment is met at S-M. Therefore the entries in (19) must be enriched so as to also contain *contextual features*, as illustrated in (20) (contextual features will be marked with a preceding '+' throughout).

- (20) a. [DP D: [wh],  $\phi$ : [∅]] → /wat/    <sub>-</sub>+Q/+FR  
 b. [DP D: [wh],  $\phi$ : [human]] → /hu:/    <sub>-</sub>+Q/+HR

It is important to note that the sole purpose of contextual features as understood here is to inform the S-M interface that a phonological exponent can be associated with a set of abstract features only if the relevant context is satisfied. Lacking a specification for, e.g., the +HR or

<sup>4</sup> At least in the case of nominal *wh*-elements. I abstract away from the internal featural composition of *wh*-adverbs such as *where* and *how*.

<sup>5</sup> Little hinges on this assumption for our present concerns, however. As far as I can tell, the conclusions reached in this paper are also compatible with the idea that the association between phonological exponent and abstract features takes place prior to transfer of syntactic material to the interfaces, as in lexicalist/Early Insertion approaches (e.g., Manzini & Savoia 2018; Collins & Kayne 2020).

+FR features will make the lexical entry crash in the relevant contexts at S-M. By assumption, this is what characterizes, for instance, (standard) English *what* and Italian *che*, respectively (cf. §2). On the other hand, the fact that, e.g., the lexical entry for *what* bears the +Q and +FR features allows the entry to be licensed in the contexts of interrogatives and free relatives.<sup>6</sup>

Given the cross-linguistic variation in the paradigmatic distribution of *wh*-elements, moreover, the contextual features must be associated idiosyncratically with a lexical entry for each particular I-language. This allows us to understand the cross-linguistic variation as a facet of the lexicon and of the S-M interface, as is desired from a minimalist standpoint (e.g., Berwick & Chomsky 2011; Chomsky et al. 2019).<sup>7</sup>

The postulation of contextual features on the lexical entries of *wh*-elements raises the question of what these should amount to, or, in other words, how S-M can interpret them. The issue is particularly acute considering the ban against construction-specific statements. I propose to understand contextual features as a form of selection, in particular one for specific semantic operators present in the portion of structure that is accessible at S-M. The gist of the proposal is that the relevant morphosyntactic context is evaluated at S-M after transfer from narrow syntax and the contextual/selection feature can be licensed accordingly. Thus, while the notion of construction remains unavailable to the grammar, the relevant construction-specific distribution is accounted for in terms of operators merged in the syntactic structure that are accessed and interpreted by the interfaces independently of the facts described here. The next section attempts to develop this analysis by focusing on the licensing environment for the +Q, +FR and +HR features.

#### 4. On the licensing of contextual features at S-M

##### 4.1. On +Q

I assume that the contextual +Q-feature on the lexical entries of *wh*-elements is licensed by a Q-operator. More specifically, I assume that the spell-out of *wh*-elements specified as +Q may be licensed if a Q-operator is present in the portion of syntactic structure that is accessible at S-M. Let me stress that +Q refers to a morphosyntactic contextual/selection feature, i.e., it does not refer to the spell-out of the Q-operator, which may remain covert or be spelled out independently of the *wh*-element, depending on language-particular rules. Therefore, the independently merged Q-operator on the one hand binds the open variable introduced by the *wh*-element, giving rise to its interrogative reading at C-I; on the other hand, the Q-operator licenses the contextual +Q-feature at S-M.

I assume further, as is standard, that the Q-operator is part of the left periphery of the clause, notated here as a value on C (i.e., [C: [Q]]). In languages like Japanese, Tlingit and others, the

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<sup>6</sup> I assume that a single lexical entry can contain more than one contextual feature as part of its featural composition. Hence in the case of (20a), for instance, both +Q and +FR are present on the lexical entry for *what* at all times. The implications of this assumption are left open to future research. I thank an anonymous reviewer for raising this point.

<sup>7</sup> An anonymous reviewer wonders what exact motivation/mechanism leads to the assignment of different contextual features in different languages on present assumptions. As with any other type of parameter, the reason has to do with idiosyncratic aspects of the S-M interface (which may in turn be described on diachronic/functional grounds). As the reviewer correctly points out, this leads to a descriptive mechanism for the assignment of contextual features rather than to an independent/predictive one. At the same time, it is difficult to see at present how the facts described in this paper can be accounted for from independent properties of specific languages. Indeed, to the best of my knowledge there are no known properties that can be independently correlated with the availability of *wh*-forms in particular paradigms.

Q-operator may be overtly manifested as a particle (cf. (21a) and (21b)). In languages like English and Italian, among other languages, the Q-operator is covert, though its effects are present at both C-I (triggering the interrogative semantics; cf. Dayal 2017 for recent discussion) and at S-M (in the form of, e.g., a specific prosodic contour, T-to-C movement, etc.; cf. also Bruening 2007:143 for pertinent remarks).

- (21) a. Dare-ga ki-masu ka  
 who-N come Q  
 ‘Who’s coming?’  
 (Japanese; Nishigauchi 1990:18)

- b. Wáa sá sh tudinookw i éesh?  
 how Q he.feels your father  
 ‘How is your father feeling?’  
 (Tlingit; Cable 2010:1)

I therefore propose that *wh*-elements such as *what* can be licensed in Qs not only because of their underspecified semantics, ‘rescued’ by the Q-operator at C-I (Beck 2006:12), but also because they meet the contextual specification that is part of their lexical entry; see (22), which is meant to illustrate the structure of (the edge of) an interrogative sentence at S-M and the subsequent mapping of the phonological exponent /wat/ licensed by the satisfaction of the +Q-feature by the Q-operator.

- (22)
- 
- CP  
 / \  
 DP C  
 [D: [wh], φ: [∅]]  
 → /wat/ \_ +Q/+FR C[Q]

Conversely, if the lexical entry did not bear the +Q specification, it could not be licensed in Qs, as I assume is the case for *wh*-elements such as Italian *cui* (cf. (12)).

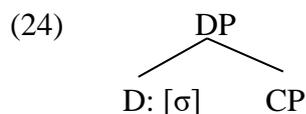
#### 4.2. On +FR

Similarly, to what I took to be case for +Q above, I assume that +FR refers to the presence of a structurally present semantic operator, which I dub  $\sigma$  following Hinterwimmer (2008) (cf. Caponigro’s 2003  $\delta$ ). The role of  $\sigma$  is to trigger the reading of FRs such as (23a) as definite descriptions at C-I, informally as in the paraphrase in (23b) (Jacobson 1995; cf. Šimík 2018 for recent discussion on the semantics of FRs).

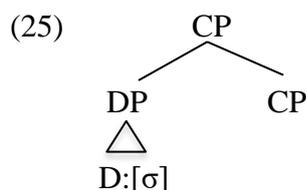
- (23) a. I ordered *what* he ordered for dessert.  
 b. I ordered *the thing* he ordered for dessert.

On the syntactic side, I assume that  $\sigma$  projects a DP. The presence of the  $\sigma$ -operator is thus compatible with different competing analyses of FRs that assume the presence of a D-layer. For instance, it is compatible with accounts such as those of Groos & van Riemsdijk (1981),

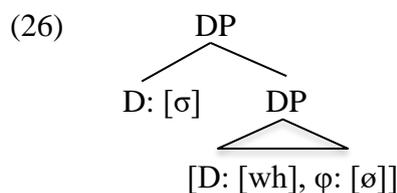
Caponigro (2002), Citko (2004), among others, which assume a structure of FRs along the lines of (24), where a DP selects the CP of the FR.



It is also compatible with the account in Caponigro (2003), where  $\sigma$  ( $\delta$ , in his terms) is included in a left-peripheral projection in the CP-layer of the Free Relative, as in (25).



The presence of a DP-projecting  $\sigma$ -operator can also be made compatible with more recent accounts that assume special syntactic processes to derive the DP-like distribution of FRs, such as Donati (2006), Donato & Cecchetto (2011) and Ott (2011). Without entering into details, Donati & Cecchetto argue that what differentiates FRs from other *wh*-clauses, such as Qs, is the fact that in the former type of construction the *wh*-element can assign its D-label to the entire CP, in a process they dub relabeling. In Ott's (2011) proposal, the DP-like distribution of FRs is instead obtained under a phase-based framework (e.g., Chomsky 2001, 2008) by assuming that the C-head of the FR is 'removed' from the computation after the syntactic structure is transferred to the interfaces, thereby leaving only the *wh*-DP at the next phase. I refer the reader to the cited works for further details. Under such accounts, where no DP other than the *wh*-element is involved,  $\sigma$  could be assumed to undergo Merge directly with the *wh*-DP, forming a complex syntactic object with the underlying structure illustrated in (26).<sup>8</sup>



Some empirical support for the structure in (26) comes from the Greek data in (27), where the determiner *o-* is prefixed to the *wh*-elements *pjus* 'who' and *pja* 'what' (these unprefixated *wh*-forms are otherwise available in the Q paradigm, among others; cf. Roussou & Vlachos 2022 for recent discussion).

- (27) a.    *ðjaleksa*        *opjus*            *protines*  
          chose.1S        the-who.M.PL    recommended.2S  
          'I chose who you recommended.'

<sup>8</sup> To be precise, the structure in (26) would have to be treated as atomic under Donati & Cecchetto's proposal, since they do not allow for relabeling by phrases. I leave open the question of how such atomicity could be obtained. Under Ott's proposal, there are no requirements on the phrasal status of the *wh*-element.

- b.     đjaleksa     opja     protines  
 chose.1S     the-what.N.PL     recommended.2S  
 ‘I chose what you recommended.’

(Greek; Daskalaki 2020:282)

As evidence for the fact that *o-* in Greek directly contributes to the semantics of FRs in (27) — and that it thus spells out  $\sigma$  under the present approach —, Daskalaki (2020) shows how *wh*-elements prefixed with the determiner *o-* fail to introduce Existential FRs (28). One of the distinctive characteristics of Existential FRs (among others) is that they cannot be paraphrased by a definite description (recall the contrast in Italian between (16) and (17) in §2.1). Crucially, Existential FRs in Greek must be introduced by bare *wh*-elements (i.e., those unprefixed by *o-*), as shown by the contrast in (28), suggesting the direct implication of *o-* in the semantics of FRs like (27).<sup>9</sup>

- (28) a.     \*đen   exo           se   opjon       na   miliso.  
           NEG   have.1S       to   the-who     SBJV   talk.1S  
       b.     đen   exo           se   pjon   na   miliso.  
           NEG   have.1S       to   who   SBJV   talk.1S  
           intended: ‘I don’t have anyone to talk to.’

The above data suggest that  $\sigma$  can be spelled out in some languages and that  $\sigma$  can Merge with *wh*-elements directly (i.e., without the mediation of CP). Given these considerations, I will therefore assume that  $\sigma$  may either undergo Merge with CP or with the *wh*-DP, leaving open the consequences of this assumption for the semantic analysis of FRs. What is crucial for our purposes is that S-M can make reference to the context of FRs in order to license *wh*-elements bearing the +FR specification. This result can be achieved if reference is made to a structurally present  $\sigma$ -operator that is responsible for the definite reading of FRs at C-I.

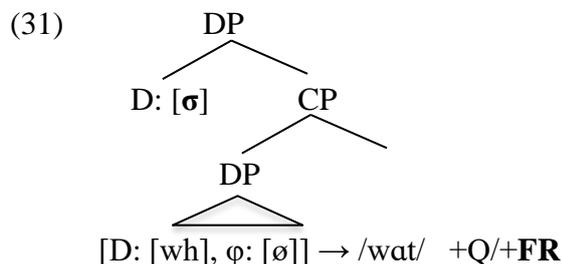
If this is on the right track, then we can understand the unavailability of such items as English *who* and Italian *che* ‘what’ in FRs (§2.1) by assuming that, for the relevant speakers, their lexical entries do not specify +FR (i.e., the  $\sigma$ -operator) as a possible licensing environment; cf. (29)-(30).

- (29) English lexical entries:
- |    |                                |         |         |
|----|--------------------------------|---------|---------|
| a. | [DP D: [wh], $\phi$ : [∅]]     | → /wat/ | _+Q/+FR |
| b. | [DP D: [wh], $\phi$ : [human]] | → /hu/  | _+Q/+HR |
- (30) Italian lexical entries:
- |    |                                |        |         |
|----|--------------------------------|--------|---------|
| a. | [DP D: [wh], $\phi$ : [∅]]     | → /ke/ | _+Q     |
| b. | [DP D: [wh], $\phi$ : [human]] | → /ki/ | _+Q/+FR |

Thus, consider for instance (31), which is meant to represent the relevant portion of structure of a FR available at the S-M interface (irrelevant details omitted; I assume for simplicity that the  $\sigma$ -operator selects the CP of the FR, though, as noted, this analytical choice is not crucial for our present concerns). In (31) the DP at the edge of the CP can receive phonological content

<sup>9</sup> Giannakidou & Cheng (2006) as well assume that *o-* contributes to the semantics of FRs (in their terms, as the spell out of an iota operator, following Jacobson 1995). However, in their analysis, *o-* takes the entire CP projected by the FR as a complement, rather than just the *wh*-element.

because the English lexicon contains a suitable entry that matches its featural specifications; moreover, the contextual feature (+FR) is met, on current assumptions, by the structural presence of the  $\sigma$ -operator.



### 4.3. On +HR

The licensing of the contextual +HR feature at S-M is assumed here to depend on the presence of an antecedent.<sup>10</sup> The presence of an antecedent is a good candidate for the licensing of the +HR feature as it can sufficiently distinguish between Q and FR environments, among others, as well as generalize over different types of headed relative clauses (e.g., restrictive vs. non-restrictive). That the +HR feature makes reference to an antecedent, rather than to the presence of any DP in the structure, is evidenced by such FRs as Italian (32), where the +HR-element *cui* is excluded.

- (32) Ho            dato    il        premio a        \**cui/chi*        se        lo        è meritato.  
 Have.1S        given the        award to        whom        REFL    it        is deserved  
 ‘I gave the award to those who deserved it.’

The question that arises is how the notion of ‘antecedent’, which is strictly connected to that of binding/coreference, can be made accessible to the S-M interface. Part of the problem has to do with the Inclusiveness Condition, which prevents the introduction of properties not intrinsic to lexical items into the narrow syntactic derivation (Chomsky 1995; Chomsky et al. 2019). This thus casts out of the derivation ‘extraneous’ objects assumed under previous frameworks (e.g., Chomsky 1981), such as bar-levels, traces, and, crucially for our purposes, indexes. Furthermore, under the standard Y-model of grammar, the C-I and S-M interfaces are assumed to work independently of one another, so that the S-M interface cannot directly probe into representations available at C-I (see Chomsky 1995:219f.).

One possible solution to this issue, which I explored in Rugna (2023a), is to exploit the (Reverse) Agree operation (Zeijlstra 2012; Bjorkman & Zeijlstra 2019). Without entering into the details of that analysis, the essence of the proposal there is that if Agree can be invoked as a means of establishing a dependency between the antecedent and the relativizer,<sup>11</sup> and if S-M

<sup>10</sup> Alternative hypotheses one may entertain for the licensing of +HR are: (i) that +HR is licensed by some sort of D-operator, similarly to what I argued to be case of +FR in §4.2; and (ii) that +HR is licensed by movement or deletion of the relativizer’s NP complement as postulated in the Raising (e.g., Kayne 1994; Bianchi 1999) or Matching (e.g., Sauerland 1998; Citko 2001) analyses of headed relative clauses. I do not discuss these hypotheses here for reasons of space, though see Rugna (2023b:§2.3.3.2 and §2.3.3.3) for further discussion and arguments against these alternatives.

<sup>11</sup> The dependency established in DP-binding has been captured via (syntactic) Agree by various researchers, e.g., Kratzer (2009); Reuland (2011); Landau (2015); among several others.

recognizes whether Agree has taken place or not, then, by assumption, +HR *wh*-elements can be licensed just in case Agree has taken place (see also Brandt & Fuß 2014; Furuya 2017; cf. Rooryck & Vanden Wyngaerd 2011 for a similar proposal applied to the empirical domain of reflexives). Assuming further that Agree is a different operation than DP-internal Concord (Chomsky 2001: fn. 6; Norris 2014; Baier 2015, among others), this analysis can account for the contrast in (33). In particular, the +HR feature of *cui* can be licensed under Agree with the antecedent in (33b), though not in the interrogative in (33a), where no antecedent is present and hence no Agree relation can take place.

- (33) a. \*Di *cui*<sub>[+HR]</sub> uomo parli?  
 Of what man speak.2S  
 ‘What man are you talking about?’
- b. L’ uomo di *cui*<sub>[+HR]</sub> parli è Gianni.  
 The man of what speak.2S is G.  
 ‘The man you are talking about is Gianni.’

One question that arises is why Agree between the *wh*-element *cui* and the NP *uomo* ‘man’ should take place in (33b), though not in (33a). The intuition that I would like to pursue is that the type of Agree connecting relativizers to their antecedent should be conceived of as a general operation by which elements come to be part of the same chain — i.e., as part of the same discontinuous referential object. In cases like (33a), the *wh*-determiner and the nominal complement both belong to the same DP phrase; hence no chain relation is established between them. In cases like (33b), on the other hand, the NP ‘head’ of the relative requires to be somehow connected to the relativizer, so that it can receive an interpretation in the gap position. If such a connection is established via some form of Agree, as I am suggesting, then the contrast between (33a) and (33b) in the application of Agree between the *wh*-element and the NP can follow straightforwardly.

Although Agree is in current practice thought of as an asymmetric valuation operation between two independently merged elements — i.e., a (valued) Probe and a (unvalued) Goal —, note that in the original formulation in Chomsky (2000: 122) Agree is stated simply on the basis of identity in some feature of the probe-goal pair.<sup>12</sup> In this sense, Agree between the antecedent and the relativizer is essentially a weak form of the Matching operation postulated as part of the Matching analysis of HRs (e.g., Sauerland 1998; Citko 2001): it establishes a connection between different elements of the syntactic workspace, though it crucially lacks the further intrinsic requirement that the internal representation of the antecedent be deleted at S-M.

Rather than Agree, then, we might call this general operation connecting elements in a chain ‘FormCopy’ (FC), following Chomsky (2021). FC is a non-structure building operation that applies between two objects in the syntactic workspace; it is subject to locality constraints (c-

<sup>12</sup> As Chomsky (2000:122) states: ‘Matching is a relation that holds of a probe P and a goal G. Not every matching pair induces Agree. To do so, G must (at least) be in the domain D(P) of P and satisfy locality conditions. The simplest assumptions for the probe-goal system are shown in [i]

- (i) a. Matching is feature identity.  
 b. D(P) is the sister of P.  
 c. Locality reduces to closest c-command.

Thus, D(P) is the c-command domain of P, and a matching feature G is closest to P if there is no G’ in D(P) matching P such that G is in D(G’). Hence no requirements of (un)interpretability/(un)valuation are demanded on the Probe-Goal pair under this formulation of Agree (Manzini & Savoia 2018:9ff.).

command, minimality); and, I assume, it is mapped at both C-I and S-M — i.e., the application of FC can be interpreted at both interfaces. I moreover assume that, as any other operation, FC is optional, applying when it can. As such, it is not strictly limited to conditions of featural identity between the members of the copy-pair. Whether the application of FC can be licensed, i.e., whether elements can indeed be interpreted as part of the same chain is a matter that must ultimately be established at the interfaces (in line with the SMT). I therefore propose that FC between the antecedent and the relativizer (or relativizing phrase, depending on the analysis of HRs one adopts; see below) takes place in the syntactic workspace and is mapped at both C-I — licensing their co-indexation — and at S-M — licensing the +HR-feature on *wh*-elements.

I would moreover like to suggest that the licensing of +HR via FC is compatible both with the more traditional ‘head-external’ class of analyses of HRs (e.g., Chomsky 1977; Boef 2012), as well as with the ‘head-internal’ class of analyses — so called because the relative clause contains a representation of the antecedent NP as a complement of the relativizer that is either further moved to its surface position (as in the Raising analysis; e.g., Kayne 1994; Bianchi 1999) or deleted by the Matching operation with an identical independently merged representation of the antecedent located in its surface position (e.g., Sauerland 1998; Citko 2001).

As Chomsky (2021) discusses, the application of FC is fundamentally blind to previous derivational stages (what he calls the Markovian property of derivations). In other words, the syntactic derivation keeps no record of whether two items are drawn independently from the lexicon, by External Merge (EM) or whether they are related via Internal Merge (IM). The operation FC therefore has no way of distinguishing elements generated via IM or EM, and can potentially apply in both cases. Antecedent and relativizer can thus be connected via FC, irrespective of whether they are copies generated via IM (as in the Raising analysis) or whether they are generated independently via EM (as in the Matching and the head external analyses). The licensing of the +HR feature via FC can then be roughly sketched as in (35) under the head external analysis and as in (36) under the head internal analyses of the HR in (34).

(34) The man *who* John saw.

(35) a.  $[CP [NP \text{man}] [DP \text{who}]_j C [John [v_P \text{saw} [DP \text{who}]_j]]$   


b.  $\langle \text{man}, \text{who}_{+HR} \rangle \rightarrow$  Copy-pair mapped at S-M, licensing +HR

(36) a.  $[CP [NP \text{man}]_{(k)} [DP \text{who} [NP \text{man}]_{(k)}]_j C [John \text{saw } t_j]]$   


b.  $\langle \text{man}, \langle \text{who}_{+HR}, \text{man} \rangle \rangle \rightarrow$  Copy-pair mapped at S-M, licensing +HR

Under the present characterization of FC, we can moreover make sense of the licensing on the +HR feature in the case of appositives like (37) and (38), where there is no strict featural identity between the relativizing phrase and its antecedent.

- (37) a. Ha raggiunto la fama con *Il giardino dei Finzi-Contini*, *il quale romanzo* ha poi anche avuto una riduzione cinematografica.  
He became famous with *Il giardino dei Finzi-Contini*, *which novel* was then also made into a film.  
(Cinque 2008: 16)
- b. Mark belongs to the Knights of Columbus, *which organization* has been condemned by the Jewish Defense League.  
(Cinque 2008: 28, citing McCawley 1981)
- (38) a. Carlo lavora troppo poco. *La qual cosa* verrà certamente  
C. works too little. Which thing will certainly  
notata.  
be noticed  
(Cinque 2008: ex. (20a))
- b. Oxygen and fire are related, *which fact* I long ago pointed out.  
(Fabb 1990: 75)

Assuming that FC is not subject to conditions on featural identity, nothing in principle prevents its application between non-identical phrases in narrow syntax. Despite the featural/categorial non-identity between the relativizing phrase and its antecedent, then, these can be connected, provided that the connection can be licensed at the interfaces.

## 5. Conclusion

This paper assumed with proponents of the single-entry hypothesis that *wh*-elements spell out Heimann indefinites, i.e., open variables without intrinsic quantificational force. As noted above, this assumption allows us to capture in a rather straightforward way why the same *wh*-element can appear in different constructions and acquire rather distinct interpretations — an observation that would be rendered obscure if such interpretations arose as a consequence of multiple homophonous lexical entries with intrinsic quantificational force.

At the same time, the lexical entry of *wh*-elements as open variables has been argued to be inadequate in its most minimal form to capture their paradigmatic distribution. Thus, the relevant entries have been enriched with contextual/selection features that are exclusively licensed at the S-M interface (in line with the SMT); they are moreover idiosyncratically associated with each particular *wh*-element, within and across different languages.

I then attempted to formulate the relevant licensing conditions for the contexts of Qs, FRs and HRs, proposing that they can be individuated in the structural presence of a Q-operator, a  $\sigma$ -operator, and an antecedent respectively. These elements have been assumed to be merged in narrow syntax independently of the (sets of features underlying) *wh*-elements, as they can be taken to contribute directly to the semantic interpretation of *wh*-elements in their relevant functions.

However, this paper did not seek to offer a fine-grained analysis of the functioning of the licensing mechanism operating at S-M, nor did it discuss the licensing environments of *wh*-elements in other contexts, such as indefinite and exclamative constructions, universal FRs (of the *wh*+ever type) and correlatives, among others. These and related matters are left open to future inquiry.

### Acknowledgements

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# Investigating German multimodal requests in instant messaging

Lisa Lubomierski

The current study quantitatively analyses the strategies employed by German native speakers when producing a request in instant messaging. Additionally, the multimodal resource of emoji available to users of messaging services is qualitatively analysed to outline its functions within requests. The data is collected from 68 Germans using a discourse completion task as an elicitation device. The results show that speakers seem to have a clear preference for *conventionally indirect* phrasing of requests. Over half of the requests included emoji fulfilling *frame, mitigation, and relationship* functions.

## 1. Introduction

Communication and languages are ever changing entities. Many aspects can influence the development and the Web 2.0 and its various new ways for communication are one way in which change comes about. Smartphones and the internet have become an essential part of everyday life and nowadays a lot of communication is mediated through technology (Flores-Salado & Castineira-Benitez 2018:79).

In a representative survey in Germany, Schlobinski & Siever (2018) investigate communication in the digital world. Their survey shows that the most frequently used mode of communication are messenger apps like *WhatsApp, Facebook-Messenger, or Threema* (89%), followed by phone calls (81%) and E-Mails (74%), which are used daily or several times a week. The numbers are amplified when age is factored in: 96% of younger participants (under 25) use messenger apps daily or several times a week. People under 25 communicate even less via E-mail (62%) or telephone (55%) (Schlobinski & Siever 2018:2).

In the recent years, a lot of research in computer mediated communication (CMC) has been focused on E-Mails and one of the most frequent speech acts realised in them: requests. However, as illustrated by Schlobinskis & Siever's (2018) survey, E-mails are no longer the main communication channel when it comes to computer mediated communication. Instead, a large majority of people use messenger apps for communicating and they are used across all age groups (Hoffmeister 2021:180). As requesting is an essential part of communication (Rosari 2020:1), it can be assumed that a lot of requests are uttered in this medium daily. This emphasises that research in CMC requests should also focus on messenger apps as a mode of communication. The current study aims at contributing to this research area by investigating

requests produced by German speakers in instant messaging. One example of such an instant message request can be found below:

- (1) Kannst du bitte meine Pflanze gießen? Bin  
 can.3SG.PRS you.2SG.NOM please my.ACC plant.ACC water.INF be.1SG.PRS  
 nächste Woche away ✈️  
 next week away airplane-emoji  
 ‘Could you please water my plant? I’m away next week ✈️’

This example is a request elicited in the current study. Here, the speaker did not only use linguistic means to realise their request. Instead, the message is contextualised and embellished with a little picture of an airplane, making the request multimodal. This is a unique feature of CMC which is particularly prevalent in instant messaging. Based on this observation, two research questions arise:

- (2) How do native speakers of German make requests in instant messaging?
- (3) Which functions do emojis have in these requests?

To investigate these research questions, this paper starts by giving a brief introduction to the speech act of requesting. This is followed by an overview of computer-mediated communication with special attention paid to previous research analysing requests produced in this medium. To investigate requesting behaviour of German speakers, a discourse completion task (DCT) is employed. 68 German native speakers are asked to compose instant messages asking a close friend to water their plants while they are on vacation. The messages are compiled into a corpus for further investigation. For the analysis, a mixed-method approach is selected. First, the requests are coded according to the established coding scheme for requests by Blum-Kulka et al. (1989), slightly modified by Flores-Salgado & Castineira-Benitez (2018). This allows for comparison with previous and potential future studies. The requests are analysed for head act strategies and internal as well as external modifications. These strategies are quantitatively studied answering the first research question. The results are further contextualised in a comparison with Wargal’s (2008) study investigating spoken German requests. The comparison shows interesting tendencies for German CMC requests that provide ideas for further research. As a final step, the discussion explores the second research question, arguing that emojis used in requests uttered through instant messages fulfil a variety of functions such as building and referring to relationships, the mitigation of requests, and the establishment of topical frames. This is done by investigating selected examples qualitatively, illustrating the aforementioned functions.

## 2. Literary review

### 2.1 Speech act: Request

Searle (1976) coined the term illocutionary acts to describe different functions of language as verbal acting. Illocutionary acts can be subdivided into different categories depending on the communicative function they fulfil (Searle 1976:1-16). Consequently, Searle (1976) categorised requests as *directives* since ‘they are attempts [...] by the speaker to get the hearer to do something’ (Searle 1976:11). Directives in general are efforts to make ‘the world match the words’ (Trosborg 1995:14). In the case of requests, the speaker will benefit from the future

action requested from the hearer, while this demanded future act delimits the hearer's 'freedom of action' (Warga 2008:246). For this reason, requests are face-threatening acts that require mitigation on the part of the speaker.<sup>1</sup> At the same time, the face of the speaker may be threatened if the hearer does not comply (Warga 2008:246). As mentioned above, requests pose an imposition on the hearer. The degree of imposition can vary and requests can be everything from small favours to burdensome acts (Trosborg 1995:188). To distinguish requests from neighbouring speech acts the features 'benefit to speaker [and] cost to hearer' (Trosborg 1995:188) are decisive.

Requests can have three components, namely, *alerts*, a *head act*, and *modifications*. The core is the head act, which creates the minimal unit to realise a request, making it obligatory. Blum-Kulka et al. (1989) introduced three different levels of directness available for speakers to realise the head act of the request: *direct*, *conventionally indirect*, and *non-conventionally indirect*. Alerts and modifications can be part of the requesting sequence but are not required (Flores-Salgado & Castineira-Benitez 2018:81). Modifications can be used to mitigate the illocutionary force of the request. They can be subdivided into internal and external modifications. While the former are syntactic and lexical downgraders modifying the head act, the latter are located outside the head act, placed either before or after.<sup>2</sup>

Which request strategies are employed by speakers highly depends on the cultural norms and values existing in a community of practice (CofP) (Flores-Salgado & Castineira-Benitez 2018:82). This makes the investigation of request strategies in different languages and CofPs an interesting field of research. Studies specifically investigating request strategies of German native speakers have been conducted in the past. Some studies, for example, compare requests uttered by English native speakers with German requests. They show that Germans tend to be more direct in their requesting strategies than English speakers (House & Kasper 1981). Blum-Kulka et al. (1989) investigate requests in five different languages as part of the CCSARP, including German. On the scale of directness across these five languages, Germans are rather in the centre. In the study, they used 20% direct, 77% conventionally indirect strategies, and only 3% non-conventionally indirect strategies (Blum-Kulka et al. 1989, cited in Warga 2008:246–247). Furthermore, it has been shown that Germans produce less downgraders and more upgraders when compared with English native speakers (Warga 2008:247).

However, the aforementioned studies are concerned with spoken requests. Research on written requests in German are sparse, especially in the relatively new field of CMC. In the following, a brief general introduction of CMC is followed by a compact presentation of some relevant studies of requests in CMC.

## 2.2 Computer-mediated communication

Humans communicate in several different ways. Traditionally, spoken and written discourse comes to mind. However, since the rise of technology, more and more communication happens through the means of digital channels. '[T]he scientific study of all manifestations of language in the electronic medium' (Crystal 2011:2) is commonly referred to as *computer-mediated communication* (CMC) or *Internet Linguistics*.<sup>3</sup> This area of research is relatively new and can

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<sup>1</sup> The scope of this paper does not allow for a closer investigation of the notion of face. The interested reader is referred to Goffman (1967), who coined the term, and Brown & Levinson (1987), who further developed the notion of face.

<sup>2</sup> See section 3.2 for further explanation and examples illustrating the different components of a request.

<sup>3</sup> For a discussion of the different terms for this field of study refer to Crystal (2011: 1–3).

be subdivided into different fields. Herring (2007) has formulated technological facets characterizing the medium as well as social facets that describe the people using the medium.

It is interesting and promising to investigate the employment of speech acts in different areas of CMC. Currently, much attention has been paid to request strategies employed in communication via E-Mail, especially in an academic setting. It has been found that many E-Mails sent to faculty staff are requests (Merrison et al. 2012:1076) and these have been extensively studied (see among many others Chang & Hsu 1998; Merrison et al. 2012; Félix-Brasdefer 2012; Economidou Kogetsidis, M. et al. 2020). It is not possible to categorize CMC as a solely written medium. Rather CMC requests are hybrid in nature. Crystal (2011:32) characterizes CMC as a ‘new medium’, sharing features of both, written and spoken language. Therefore, E-Mails share some features with face-to-face communication. According to Félix-Brasdefer (2012:88) both are, among others, informal in style and turns are relatively short and adjacent. Additionally, once sent an E-Mail cannot be edited anymore. Some features shared with written discourse are that the message can be carefully crafted and edited, information is durable, and language cannot be conveyed emotionally. One relevant difference between E-Mail requests and requests uttered in face-to-face communication is the impossibility of building a request over several turns. Instead, speakers have to balance the task of formulating a request and attempting to limit any offence in the same E-Mail (Merrison et al. 2012:1081). Moreover, the requester has no possibility of using paralinguistic devices to mitigate the request (Merrison et al. 2012:1081).

Besides E-Mail interactions, investigations of requests in other areas of CMC are sparse. There have been some studies examining requests in specific messenger apps. Flores-Salgado and Castineira-Benitez (2018), for example, study requests produced by Mexican speakers of Spanish in WhatsApp groups. They examine openings and closings, directness, and modification used in WhatsApp requests. The results show that the participants used conventionally indirect strategies employing considerable syntactic modifications. Another study by Wang (2021) analyses politeness judgments of requests and responses made by Chinese college students on WeChat. Using a discursive approach, it was found that various strategies are utilized by speakers to achieve politeness in instant messages. Among others, the participants used indirect speech, offered suggestions, or uttered questions.

I am not aware of any studies investigating German requests in instant messaging. The following study aims at contributing to the closing of this research gap.

### *3. Methodology*

A quantitative and qualitative mixed-method approach is used to investigate requests uttered by German speakers in instant messaging. The posed research questions are addressed eliciting requests in an online questionnaire study. For this the traditional discourse completion task (DCT) was slightly modified to fit the layout of instant messaging. To make the message writing process as natural as possible and to avoid a ‘clinical’ feeling of a scientific test, the participants wrote their message in a text field that resembled a WhatsApp chat.<sup>4</sup> This text field can be seen in figure 1 below.

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<sup>4</sup> Furthermore, throughout the questionnaire the participants were addressed in a casual tone to avoid a mismatch in registers when being asked to produce a request to a friend.

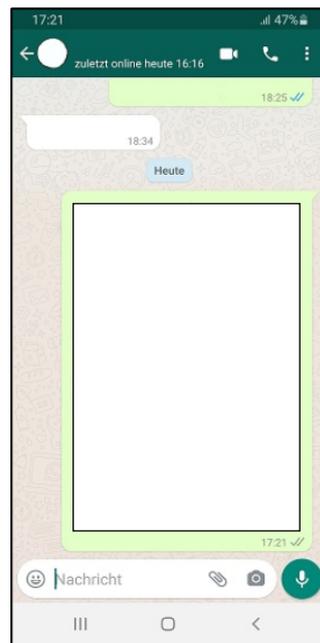


Figure 1. Text field in questionnaire resembling a WhatsApp chat

The participants were asked to imagine themselves in a situation in which they are about to go on a vacation and have to ask a friend to water their plants while they are gone. This scenario was chosen as it was hoped that it was a relatable problem for different age groups. In this scenario the microsocial factors are indirectly manipulated in the description to ensure that they are constant across participants. The participants were asked to imagine a good (distance = close) friend (power = equal) as their interlocutor. The task to water the plants can be seen as having either medium or high imposition. This aligns with the definition of requests as ‘the act may be a request for non-verbal goods and services, i.e. a request for an object, an action or some kind of service, etc.’ (Trosborg 1995:187). As requests are ‘initiating moves’ (Barron 2008:40) and ‘pre-event acts’ (Blum-Kulka et al. 1989:11), the messages constructed by the participants are the first in the conversation and do not follow any artificial preceding dialog.

### 3.1 Strengths and limitations

DCTs are an established method for the elicitation of requests. This is a clear strength as a similar method enables comparisons across studies. Furthermore, it is an efficient way of data collection that was especially useful during the Covid 19-pandemic as it enabled research without endangering the participants or the researcher. Research has shown that utterances elicited using this type of task yield prototypical requests (Hill et al 1986:353). This characteristic of elicited requests must be kept in mind when analysing and comparing findings.

One limitation of this study is the small number of request-scenarios. The participants only produced one request each and there was no variation in microsocial factors. However, although interesting, the influence of microsocial factors is not investigated in the current study. This study only aims at a first glance at German requests in instant messages and further research is required to get a better understanding of the phenomenon.

As an additional limitation, some features of instant messaging were not included in the DCT, for example: GIFs, sticker, and voice notes offered by some instant messenger apps. Therefore,

participants did not have the full multimodal repertoire of instant messaging at their disposal. Furthermore, while the sample is rather balanced for gender, it is not balanced for age. As it cannot be ruled out that age may play a significant role in the production of CMC requests, this limitation has to be kept in mind and future studies should investigate this issue in depth. A last limitation is the fact that the coding was only done by one researcher. In a larger project, multiple linguists should code the data individually to avoid biases and to allow control for inter-rater reliability.

### 3.2 Coding scheme

As mentioned in section 2.1, different strategies can be employed by the requester to reach the communicative goal and formulate an effective request. The different strategies are analysed using the coding scheme proposed by Flores-Salgado & Castineira-Benitez (2018:84), as their object of research are WhatsApp requests as well. The coding scheme is based on the proposal of strategies by Blum-Kulka et al. (1989) and modifications made by Trosborg (1995) and Yu (1999) and an overview can be found in table 1 below. The strategies are illustrated using examples from the data collected in this study. The strategies that are not represented in the corpus are illustrated by fabricated examples.

Request strategy	Sub-strategy	Examples
Direct	Imperatives	<i>kümmere dich um meine Pflanzen</i> ‘take care of my plants’
	Performatives	<i>ich [würde] dich bitten mal nach meinen Pflanzen zu schauen</i> ‘I would ask you to look after my plants’
	Obligations	Du must meine Pflanzen gießen. You must/have to water my plants.
	Wishes	Ich will, dass du meine Pflanzen gießt. I want you to water my plants.
	Needs	Ich brauche dich zum Pflanzengießen. I need you to water my plants.
Conventionally Indirectness	Ability	<i>Könntest du die vielleicht ab und an gießen?</i> ‘Could you perhaps water them from time to time?’
	Willingness	<i>würdest du für mich in meinem Urlaub meine Blumen gießen?</i> ‘Would you water my plants for me during my vacation?’
	Suggestory formulae	Wie wäre es, wenn du meine Pflanzen gießen würdest? How about watering my plants?
Non-conventionally indirectness	Hints	<i>Hast du nächste Woche ein bisschen Zeit? Ich bin ja dann weg und bräuchte jemanden, der auf meine plant friends aufpasst 😊</i> ‘Do you have a bit of time next week? I’m gonna be away and would need someone to look after my plant friends 😊’

Table 1. Request strategies adapted from Flores-Salgado & Castineira-Benitez (2018) with own examples

Request strategies can be seen to be on a continuum from direct to indirect. The coding scheme used here splits the head act strategies into three categories: direct, conventionally indirect, and non-conventionally indirect. Each category can be further divided into sub-strategies as depicted in table 1.

These head acts can be modified using different up- and downgraders. This is called *internal modification* as it modifies the head. *Downgraders* can be either syntactic or lexical in nature they are used by requesters to ‘mitigate the impositive force of the request’ (Blum-Kulka 1989:273). *Syntactic downgraders* identified by Blum-Kulka et al. (1989:283–285) are interrogatives, subjunctives, conditionals, aspect, tense, and conditional clause. *Lexical* or *phrasal downgraders*, on the other hand, are politeness markers, understaters, hedges, subjectivizers, downtoners, cajolers, and appealers (Blum-Kulka et al. 1989:283-285). Modifications that ‘increase the impact of the request’ (Blum-Kulka et al. 1989:285) are called *upgraders*. Several elements can have this function: intensifiers, commitment indicators, expletives, time intensifiers, lexical uptoners, determination markers, repetitions of request, orthographic emphasis, emphatic addition, and pejorative determiners (Blum-Kulka et al. 1989:285-286).

Additionally, in this paper *external modifications* will be analysed. These are modifications, which are placed outside of the head act, either preceding or following it. Drawing on Flores-Salgado & Castineira-Benitez (2018), a distinction between alerts and supportive moves is made. *Alerts* can be defined as elements that alert the attention of the requestee (Blum-Kulka 1989:277). While Flores-Salgado & Castineira-Benitez (2018:84) found six alert categories in their data, only two are represented in the current dataset: greetings and names. Derived from the collected data, the alerts *nicknames* and *emojis/emoticons* were added as sub-categories (see Table 2).

*Supportive moves* are modifications outside of the head act that reduce or increase the impositive force of the speech act (Flores-Salgado & Castineira-Benitez 2018:86). The participants used various supportive moves illustrated by the sub-categories in table 2 below. These are taken from Blum-Kulka et al. (1989:287–288). However, drawing on Flores-Salgado & Castineira-Benitez (2018:84), the category grounder is called *supportive reason* in the coding scheme below, to make the category names more intuitive. Furthermore, Flores-Salgado & Castineira-Benitez’s (2018:84) category of *expressions of gratitude* was added. Additionally, based on the findings of the current study, two further categories had to be added: *return of favour* and *thanking in advance*.

Emojis will be analysed as an additional category of internal and external modification. It will be claimed and discussed in section 4.4 that the employment of emojis can serve as modification, alerts, and supportive move.

External modifications	Sub-category	Examples
Alert	Greetings	<i>Heyyo</i>
	Name	<i>Birgit</i>
	Nickname	<i>Meister</i> ‘Master’
	Emojis Emoticon	 :)
Supportive move	Preparators	<i>habe mal nh frage</i> ‘I have a question’
	Getting a pre commitment	<i>könntest du mir einen Gefallen tun?</i> ‘could you do me a favour?’
	Supportive reason	<i>Wäre echt gut, glaube kaum das sie es sonst überstehen</i> ‘Would be great, I don’t think they would make it otherwise’
	Promise of reward	<i>ich bring dir auch was süßes für den süßen mit</i> ‘I’ll bring you something sweet for the sweetie’
	Imposition minimizer	<i>Wenn’s dir nicht passt, sag einfach Bescheid, dann frage ich meine Mama...</i> ‘Just let me know if it doesn’t work for you, I’ll ask my mom then...’
	Expressions of gratitude i. hypothetical ii. phrasal	<i>Wäre voll lieb von dir</i> ‘Would be very kind of you’ <i>Daaankeee!</i> ‘Thaaanksss!’
	Return of favour i. past ii. future	<i>ich hab doch letztes Jahr auf deine Tiere während des Urlaubs aufgepasst</i> ‘I took care of your animals last year during the vacation’ <i>im Gegenzug würde ich auch auf Deine Katze beim nächsten Mal aufpassen!</i> ‘in return I would take care of your cat next time!’
	Thanking in advance	<i>Danke im Voraus!</i> ‘Thanks in advance!’
	Threat	[...] <i>meine alte bringt uns beide um</i> ‘my old lady kills us both’
	Emoji	

Table 2. External modifications adapted from Blum-Kulka et al. (1989), with own additions

Additional features of the text messages produced by participants are aggravators and closing formulae. *Aggravators* are defined by Merrison et al. (2012) as requests for a reply. One example would be *sag mit [sic!] bitte bescheid ob du Zeit dafür hättest* ‘please let me know if you have time for this’, which is an explicit imperative. Furthermore, some participants used *closing formulae* as a sign off, e.g. *LG* ‘kind regards’. However, due to the limited scope of this paper, a closer analysis is omitted.

### 3.3 Participants

The link to the online questionnaire was distributed via different instant messenger to German native speakers and the participants were asked to complete the survey using their mobile phones. In total, 77 people completed the questionnaire. Nine participants had to be excluded from the data due to a different mother tongue or failure of completing the production task.

Therefore, the answers of 68 participants are analysed in the following sections. Approximately half of the participants identify as male (31), and half as female (36). One participant did not disclose their gender. The participants range in age between 17 and 63. The majority of participants are under 36 years old and with 27 participants the largest age group is 22-26 years old. Two participants did not state their age.

#### 4. Results

##### 4.1 Head act strategies

To answer the first research question investigating how German speakers build their requests, the data is quantitatively analysed in the following. In total, participants employed five of the nine different request sub-strategies identified in the literature. This is illustrated in table 3 below.

Request strategy	Sub-strategy	Frequencies	Percentages
Direct	Imperatives	6	8.9
	Performatives	2	2.9
	Obligations	0	-
	Wishes	0	-
	Needs	0	-
Conventionally Indirectness	Ability	52	76.5
	Willingness	6	8.8
	Suggestory formulae	0	-
Non-conventionally indirectness	Hints	4	5.9

Table 3. Request strategies

In building the requests, speakers can utilize more than one head act. In the current dataset, two participants used two different strategies to construct their request, which explains the total of 70 request strategies employed. The overwhelming majority (85.3%) used a *conventionally indirect* strategy, illustrated by the following two examples:<sup>5</sup>

(4) sag mal könntest du nächste Woche 1-2 mal bei  
 say.2SG.IMP PCPT can.2SG.COND you.NOM next week 1-2 times at  
 mir vorbei kommen und meine Pflanzen gießen?  
 me.1SG.DAT over come.INF and my.ACC plant.PL.ACC water.INF  
 ‘say, could you come over 1-2 times next week and water my plants?’

(5) Wärst du so nett vielleicht wieder auf meine  
 be.2SG.COND you.NOM so kind maybe again on my.ACC  
 Pflanzen aufzupassen  
 plant.PL.ACC take.care.INF  
 ‘Would you maybe be so kind to take care of my plants again’

<sup>5</sup> In the examples, grammar, spelling, and punctuation are not corrected as it reflects the way in which participants produced their requests.

The request in (4) exemplifies the sub-strategy *ability*. This sub-strategy that was used in 76,5% of the requests. The requester formulates a question regarding the ability of the requestee to fulfil the task of coming over and watering the plants. This is usually done by utilizing the verb *können* ‘to be able to’. The second conventionally indirect strategy is *willingness*. This sub-strategy is demonstrated in (5): The requester inquires after the willingness of the recipient to do the task. This sub-strategy occurs six times in the corpus. The category *suggestory formulae* identified by Flores-Salgado & Castineira-Benitez (2018) was not found in the current dataset.

The second largest strategy utilized by the participants are *direct requests*. Two examples can be found below.

(6) versorge meine Pflanzen  
take.care.IMP my.ACC plant.PL.ACC  
‘Take care of my plants’

(7) ich würde dich bitte [sic!] die nächste woche ein zweimal  
I will.1SG.COND you.ACC ask.INF the next week one twice  
in meiner Wohnung vorbei zu schauen und nach dem rechten zu  
in my.DAT flat.DAT stop.by.INF and after the.DAT right.DAT to  
sehen (Blumen gießen etc.)  
see.INF flowers water.INF etc.  
‘I would ask you to stop by my flat once or twice next week and to check if everything is in order (water plants etc.)’

While Flores-Salgado and Castineira-Benitez (2018) identify five different direct sub-strategies, only two are represented in the dataset: *imperatives* and *performatives*. The former is illustrated in example (6), in which the verb *versorgen* ‘to take care of’ is used in its imperative form. The latter example (7) shows the employment of the performative verb *bitten* ‘to ask’. Six people used an imperative while performatives occur twice in the corpus.

With 5.9%, the *non-conventional indirect* request strategy was the strategy participants used the least. Only two participants solely used a hint to build their request, one of which can be found in example (8).

(8) Hast du nächste Woche ein bisschen Zeit? Ich bin ja  
have.2SG you.2SG.NOM next week a little time I be.1SG.PRS PCPT  
dann weg und bräuchte jemanden, der auf meine plant  
then away and need.1SG.COND somebody.ACC who.ACC on my.ACC plant  
friends aufpasst  
friends look.after.INF  
‘Do you have some time next week? I’ll be away and need someone to look after my plant friends’

In this example, the requester only hints at the fact that the recipient could water the plant because someone would be needed to do this task. The other two participants employing a hint combined it with a subsequent conventionally indirect request.

## 4.2 Internal modification

As mentioned above, requesters have the option to internally modify their request by using up- or downgraders. While *downgraders* serve the function of lessening the impositive force, *upgraders* can increase said force. Due to the scenario given to the participants, mostly downgraders are used in the requests. Table 4 below lists the different internal modifications and their occurrences in the dataset.

Internal Modifications	Strategies	Frequencies	Percentages
Syntactic downgraders	Aspect	36	52.9
	Tense	15	22.1
	Conditional clause	16	23.5
Lexical and phrasal downgraders	Politeness marker	8	11.8
	Understater	15	22.1
	Downtoner	16	23.5
Upgraders	Commitment indicator	3	4.4

Table 4. Frequency of internal modifications

The analysis of internal modifications within the head act is based on the CCSARP Coding Manual utilised in the study done by Blume-Kulka et al. (1989). However, many internal modifications identified in their data are not found in the current dataset, therefore, they are omitted here.

Several *syntactic downgraders* can be employed by requesters. In the corpus, speakers used aspect, tense, and conditional clauses. In total, 67 syntactic downgraders are used. The most frequently used syntactic downgrader is *aspect*. One example can be found below:

- (9) Nun wollte ich dich fragen ob du meine  
 now want.1SG.COND I.NOM you.ACC ask.INF if you.NOM my.ACC  
 Wohnung hüten könntest während ich weg bin.  
 flat.NOM housesit.INF can.2SG.COND while I.NOM away be.1SG.PRS  
 ‘Now I wanted to ask you if you could watch my apartment while I am gone.’

As Blum-Kulka et al. (1989:282) note, something can be regarded as downgrading if it is possible to substitute the verb with a ‘simple form’. In this case, the speaker uses the conjunctive II of the verb *können* ‘to be able to’ instead of the indicative. The participants in the current study employed this modification frequently, 36 times in total.

The participants used *conditional clauses* 16 times to mitigate their requests.

- (10) Hey bro ich wollte fragen, ob du eventuell nächste  
 hey bro I.NOM want.1SG.COND ask.INF if you.2SG.NOM maybe next  
 Woche Zeit hast meine Pflanzen zu Gießen  
 week time have.2SG.PRS my.ACC plant.PL.ACC to water.INF  
 ‘Hey bro, I wanted to ask you if you maybe have time to water my plants next week’

In example (10) the conditional clause *ich wollte dich fragen, ob [...]* ‘I wanted to ask you, if [...]’ is used as a syntactic downgrader.

The last strategy of syntactic downgrading is *tense*. This strategy was used 15 times by participants.

- (11) Hey du, ich wollte dich fragen, ob du  
 hey you.NOM I.NOM want.1SG.COND you.2SG.ACC ask.INF if you.2SG.NOM  
 meine Pflanzen gießen könntest wenn ich nächste Woche  
 my.ACC plants water.INF can.2SG.COND when I.NOM next week  
 in den Urlaub fahre.  
 in the.ACC vacation.ACC drive.1SG.PRS  
 ‘Hey you, I wanted to ask you if you could water my plants when I go on vacation next week.’  
 (Added emphasis)

However, these are almost all the same instances as the conditional clauses. Blum-Kulka et al. (1989:283) state that these instances should be coded as ‘downgrading only if they are used with present time reference’. However, it can be argued that in these cases, the phrase *ich wollte dich fragen* ‘I wanted to ask you’ has become standardized and the present tense phrase *ich will dich fragen* ‘I want to ask you’ is marked.

Participants used *lexical and phrasal downgraders* in their requests as well. The only *politeness marker* used by participants is *bitte* ‘please’, which occurs eight times in the dataset. One participant used the English term *please* instead of *bitte* in their request.

Adverbial modifiers can be used as *understaters* in which the requester underrepresents the imposition of the task (Blum-Kulka et al. 1989:283). Understaters occur 15 times in the corpus. The utterance (12) below illustrates a common phrasing:

- (12) ich wollte dich mal fragen, ob du vielleicht ein  
 I.1SG.NOM want.1SG.COND you.2SG.ACC PCPT ask.INF if you maybe a  
 bisschenZeit hast dich um meine Pflanzen in der Zeit  
 little time have.2SG.PRS you.2SG.ACC about my.ACC plant.PL.ACC in the time  
 zu kümmern.  
 to care.for.INF  
 ‘I wanted to ask you if you might have a little time to look after my plants for this time.’

The use of *ein bisschen* ‘a little bit’ makes the task seem small and undemanding. This example illustrates another lexical downgrader as well: the *downtoner*. These are ‘[s]entential or propositional modifiers which are used by a speaker in order to modulate the impact his or her request is likely to have on the hearer’ (Blum-Kulka et al. 1989:284). Words like *vielleicht* ‘maybe’, *mal* ‘sometime’, or *eventuell* ‘possibly’ can have this function. In total, 16 instances of downtoners are found in the corpus. One interesting observation is that in this category over one third of the instances are produced as abbreviations.<sup>6</sup> Example (12) illustrates that various downgraders can be combined in a single request.

Furthermore, it was found that humour was used as a downgrader. This is illustrated below.

- (13) könntest du vielleicht nächste Woche unsere Katzen giessen  
 can.2SG.COND you.NOM maybe next week our.ACC cat.PL.ACC water.IN  
 und die Balkonpflanzen füttern?  
 and the.ACC balcony.plant.PL.ACC feed.INF  
 ‘Could you maybe water our cat and feed our balcony plants next week?’

<sup>6</sup> Different variations found for *vielleicht* ‘maybe’: *vl, vllt, vllt.*, and for *eventuell* ‘possibly’: *evtl, evtll, evtl.*

In this instance, the requester used a humorous mix match of nouns and tasks: *Katzen giessen* ‘to water the cats’ and *Balkonpflanzen füttern* ‘to feed the balcony plants’. This serves the purpose of making the request more fun and thus less imposing.

Due to the scenario and the task given to the participants, not many *upgraders* ‘increase[ing] the impact of the request’ (Blum-Kulka et al. 1989:285) are found. Only *commitment indicators* are represented in the corpus, and they only occur three times. One example can be found below:

- (14) Wäre           daher   ganz geil,           wenn Du           Dich -           wie  
 be.3SG.COND hence quite awesome if you.NOM you.2SG.ACC like  
*besprochen* - um die Pflanzen in meiner Rumpelbude kümmern  
 discussed about the.ACC plant.PL.ACC in my.DAT shack.DAT care.for.INF  
 könntest  
 can.2SG.COND  
 ‘It would be rather awesome if you could look after the plants in my shack *like we discussed*’

(*Added emphasis*)

Here, the requester refers back to a commitment already made, making it more difficult for the recipient to decline the request.

#### 4.3 External modification

As mentioned above, external modifications are modifications outside of the head act and they will be subdivided into alerts and supportive moves in the following analysis. The table below shows that almost every participant used an *alert* in their request sequence. The largest category are *greetings*, which occur in 60 of the 68 requests. As the task is to write an initiating message and the WhatsApp chat shows no immediate message that needs a reply, this result is not surprising (see also section 4.4.3 Relationship).

Alerts	Frequencies	Percentages
Greetings	60	88.2
Names	12	17.7
Nicknames	12	17.7
Emojis	8	11.8
Emoticons	3	4.4

Table 5. Alerts

Names, nicknames, and emojis/emoticons, with one exception, exclusively occurred in combination with greetings. These greetings seem to be quite formulaic, with participants drawing from nine different alert strategies. The *hey* strategy is the one that participants used most frequently (27x). To exemplify the different possible combinations of alerts mentioned above, a closer look on *hey* is useful. *Hey* and its various modifications can either occur in isolation or be combined with the name of the recipient *Hey Franzi*, a nickname/term of affection *Heyho mien Jung* ‘Heyho my guy’, an emoji *Hey* ✨, or an emoticon *Heyyo* :).

Participants used placeholder like *<adressat>* ‘addressee’ and *Freund* ‘friend’. These are coded as names because it can be assumed that the participants would have used the real name

of their recipient in a naturally occurring message. This feature illustrates the limitation of the naturalness of the dataset and calls the prototypical nature of elicited requests to mind.

The second type of external modification under investigation here are *supportive moves*. Table 6 provides an overview of the supportive moves produced by participants.

Supportive moves	Frequencies	Percentages
Preparators	2	2.9
Getting a pre commitment	6	8.8
Supportive reason	3	4.4
Promise of reward	9	13.2
Imposition minimizer	7	10.3
Expressions of gratitude		
i. hypothetical	22	32.4
ii. phrasal	9	13.2
Return of favour		
i. past	3	4.4
ii. future	2	2.9
Thanking in advance	7	10.3
Threat	1	1.5
Emojis	20	29.4

Table 6. Supportive moves

In total, 91 supportive moves can be found in the dataset of requests. The largest category is *expression of gratitude* with 31 instances. Here, it was decided to implement a distinction between a hypothetical gratitude and phrasal expression of gratitude.

(15) Wäre auf jeden fall sehr nice  
 be.3SG.COND on any.ACC case very nice  
 ‘Would be definitely very nice’

(16) Danke dir  
 thank you.2SG.DAT  
 ‘Thank you’

The former example (15) shows what is classified as a hypothetical expression of gratitude. These instances are characterised by the conjunctive – in this case *wäre* ‘would be’. This phrasing is used as the recipient has not yet confirmed the request, but if they were to confirm it, the requester states that this would be nice. This is a distinct feature of CMC, as the requester is forced to combine what would have been multiple turns in spoken interaction into a singular message. Choosing the conjunctive allows the requester to already express gratitude and keep a friendly tone without actually having received a confirmation yet. The latter example (16) shows a prototypical phrasal expression of gratitude employed by the participants. Note that these two expressions of gratitude are often combined as in (17) below:

(17) Das wäre super lieb 🥰  
 That.NOM be.3SG.COND super nice face throwing a kiss emoji  
 Danke schön ❤️  
 thanks nice red heart emoji  
 ‘That would be very nice 🥰’  
 Thankyou ❤️’

The second largest category of supportive moves are *emojis*. These will be discussed in more detail in section 4.4 below, as they can fulfil a broad variety of functions. Participants often used a *promise of reward* as a supportive move to convince their interlocutor. Several different promises can be found ranging from sweets to an invitation to a glass of wine. This supportive move is represented nine times in the corpus. *Imposition minimizer* and *thanking in advance* are both used seven times in the requests. Utterances are categorized as the former when they lessen the illocutionary force of the request. This is the case in the instance (18) below:

- (18) wenn's gerade nicht geht kann ich auch  
 if.it right.now not go.3SG.PRS can.1SG.PRS I.1SG.NOM also  
 jemand anderes fragen!  
 somebody.ACC else ask.INF  
 'I can also ask someone else, if it's not possible right now!'

The speaker offers to ask someone else in case the recipient does not have time to water the plants. This makes declining the request easier as the requester has already assured their interlocutor that it would not be much of a problem.

Thanking in advance, on the other hand, increases the force of the request as it is harder to decline something one has already received thanks for. It could be argued that thanking in advance is not a supportive move. However, it as it presumes the agreement of the recipient, it influences the request and is therefore analysed as a supportive move in the present study.

*Getting a pre commitment* is employed by six different speakers in the corpus:

- (19) Könntest du mir bitte einen Gefallen tun?  
 can.2SG.COND you.2SG.NOM me.DAT please a.INDEF favour.ACC do.INF  
 'Could you do me a favour, please?'

Note, however, that speakers do not really get a pre commitment in these cases as it is inherent in the task that the request is constructed as one single message. Therefore, the recipient cannot agree to the favour without knowing what the request will be. Five times, requesters referred to a *return of favour*. These are subdivided into past and future favours. In the first instance, speakers refer back to a previous favour done by them, for example having watched the cat of their interlocutor. This increases the force of the request as the recipient 'owes' a favour. The second instance, on the other hand, is a promise of returning the favour in the future.

The strategies that are used the least are supportive reasons, preparators and threats. The category *Supportive reasons* covers the reasoning provided by the speaker for making the request. One example would be the fact that the plants need a lot of care. *Preparators* precede the head act and prepare the recipient that a request will be uttered next. An additional pattern emerging is that many people are referring back to having already told the recipient about the travel plans, making the request less sudden and unexpected.

Only one participant used a *threat* as a supportive move to increase the illocutionary force of their request:

- (20) Vergiss die Pflanzen nicht, meine alte bringt uns  
 forget.IMP the plant.PL.ACC not my.NOM old.lady.NOM kill.3SG.PRS us.ACC  
 beide um.  
 both.ACC PTCP  
 'Do not forget the plants, my old lady will kill us both.'

However, in doing so, they constructed themselves as part of a team, and the requestee and requester would both suffer from the consequences of neglecting the plants. Potentially upsetting a third person – the partner of the requester – makes it more difficult for the requestee to decline the request.

#### 4.4 Special features of CMC request

Observing examples like (17), one additional feature of the requests produced in this study is prevalent: Over half of the participants used emojis in their messages.<sup>7</sup> ‘Emoji are little pictographs that are added to electronic messages’ (Sampietro 2016:92). They can be seen as having developed from emoticons which consist of a combination of punctuation marks representing facial expressions (Sampietro 2016:92). Instead of typing the various punctuation marks for emoticons, emojis are pictographs that are already designed and can simply be selected from a list. The Unicode Consortium updates the pre-defined set of emojis available periodically. Emojis are widely used and are available for a large number of different programs and applications such as social networks and instant messages. They ‘add flavour, color, and emotion’ and it is claimed that emojis ‘make up for the lack of gestures, facial expressions, and intonation that are found in speech’ (Davis & Holbrook 2021).

In the current dataset, 73 emoji-tokens can be found. Of those emojis, 48 different types can be identified. This shows that emojis are undoubtedly popular among instant messenger users, which suggests that they might meet some communicative need of speakers (Grosz et al., 2023:2).<sup>8</sup> Previous literature has pointed out various functions of emojis in context. The following qualitative analysis of the emojis employed by speakers in this study focuses on their functions within requests. Examples illustrating three prevailing functions in the current dataset – *frame*, *mitigation*, and *relationship* – are discussed to answer the second research question inquiring into the functions fulfilled by emojis. As these results are qualitative in nature, the examples in this section are discussed and reflected on to a greater extent.

##### 4.4.1 Frame

Emojis can be used by speakers to construct reference to topical frames. This is done metonymically by means of emojis associated with the theme of the message (Sampietro 2016:102, Siever 2015:296). This function can be seen in various examples in the corpus. Participants utilized emojis belonging to the category of plants and vacation.

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<sup>7</sup> 41 Speakers used emojis in their messages.

<sup>8</sup> Similar to Busch’s (2021) study, emojis are significantly more frequent than emoticons in the current dataset. Therefore, emoticons will be omitted in the following analysis due to the limited scope of this paper.

- (21) Hallo  
 hello  
 Es ist bald soweit [sic!]. Ab nächste Woche bin ich ja  
 it be.3SG.PRS soon so far from next week be.1SG.PRS I.NOM PCPT  
 im Urlaub 😊 🌴  
 in.the.DAT vacation.DAT beaming face with smiling eyes emoji palm tree emoji  
 🏖️  
 beach with umbrella emoji  
 Es wäre super wenn du dich um meine Blumen  
 it be.3SG.COND amazing if you.NOM you.2SG.ACC for my.ACC flower.PL.ACC  
 🌺 kümmern könntest 😘  
 hibiscus emoji care.for.INF can.3SG.COND face throwing a kiss emoji  
 Den Schlüssel bringe ich dir dann am Freitag mit  
 the.ACC key.ACC bring.1SG.PRS I.NOM you.DAT then on Friday with  
 😊  
 smiling face with halo emoji  
 LG 😘  
 kind.regards face throwing a kiss emoji  
 ‘Hello  
 It’s almost time. From next week on I am on vacation 😊 🌴 🏖️  
 It would be great if you could take care of my flowers 🌺 😘  
 I’ll bring you the key on Friday 😊  
 Kind regards 😘’

In message (21), it can be seen that three emojis do not fulfil any pragmatic functions but serve topical classifications. The depiction of a palm tree and a beach is a metonym for vacation. Furthermore, the hibiscus emoji is used directly after the word *Blumen* ‘flowers’, being visually related to the message (Siever 2015:297). These instances show that emojis do not necessarily exclusively act at the social level, but instead can also be linked to the verbal content (Sampietro 2016:103). Some researchers argue that these emojis are utilized as embellishments, which add amusing and euphoric elements to the content of the message (Pappert 2017:204). In the context of requests, they could be used to entertain the requestee, potentially making them more compliant. Additionally, the request is visually appealing, which is potentially a way of making it look less harsh and in turn less face threatening. These emojis are combined with internal as well as external modification by the speaker. Of all emojis used in the corpus, 13 are utilized as frames.

#### 4.4.2 Mitigation

Sampietro (2016:103) states that ‘in some cases emoji, especially the popular yellow faces, do not refer in such a specific way to words or ideas, but may carry out discursive functions on their own’. Emojis can act at the pragmatic level and can be used as mitigation devices (Sampietro 2016:104). This is reflected by multiple instances in the data:

- (22) Heyho mien [sic!] Jung, ich hab doch letztes Jahr auf  
 hey my.NOM guy.NOM I.NOM have.1SG.PRS PCPT last year on  
 deine Tiere aufgepasst als du im Urlaub  
 your.ACC animal.PL.ACC take.care.PST when you2.SG.NOM in.the.DAT vacation  
 warst. Sei doch so freundlich und kümmer dich um meine  
 be.2SG.PST be.IMP PCPT so friendly and care.for.SG.IMP you about my.ACC  
 Pflanzen solange ich im Urlaub bin  
 plant.PL.ACC while I in.the.DAT vacation.DAT be.1SG.PRS



face throwing a kiss emoji

‘Heyho my guy, I took care of your pets last year when you were on vacation. Be so kind and take care of my plants while I am on vacation 🙄’

In this message, the speaker uses an imperative as the head act strategy. This strategy is the most direct one that is available to speakers. To mitigate a potential face threat and get the requestee to comply, multiple mitigation strategies are employed by the speaker in this example. First, the message starts with a greeting and a nickname, referring their close relationship. Further, the favour of watching the pets last year is mentioned by the speaker. This serves as a reminder, that the requestee ‘owes’ a similar favour. Lastly, an emoji is used after the request as an additional external modification. The emoji 🙄 ‘face throwing a kiss’ is used as a downgrader, making the request seem less demanding and harsh. This modification is termed ‘tone modification’ by Herring & Dainas (2017:4). The usage of the emoji directly modifies the accompanying text. The emoji functions as ‘cue as to how the text should be interpreted’ (Herring & Dainas 2017:4). A ranking of emoji sentiment shows that this kissing emoji is perceived as very positive by the majority of speakers (Kralj Novak et al. 2015) and it can therefore be argued that the intention of this emoji is mitigation and giving the request a friendly undertone. This makes it harder for the requestee to deny the speaker this request. The emoji can also be used to clearly signal social closeness (Imo 2015:110) and refer to the relationship between the interlocutors. As can be seen in table 6, participants in this dataset used emojis 20 times as a supportive move.

In some cases, emojis are not used as a mitigation device on their own but instead co-occur with other supportive moves. One example can be seen below:

- (23) Heyhey 😊 ich bin ja ab  
 Heyhey smiling face with smiling eyes emoji I be.1SG.PRS PTCP from  
 nächster Woche im Urlaub,  
 next.DAT week in.the.DAT vacation  
 würdest du evtl. ein zwei mal nach meinen Pflanzen  
 will.2SG.COND you.NOM perhaps one two times after my.ACC plant.PL.ACC  
 sehen in der Zeit? Das wäre super lieb 😊  
 see.INF in the time that be.3SG.COND super nice hugging face emoji

‘Heyhey 😊 I am on vacation from next week on, would you perhaps look after my plants once or twice? That would be very kind 😊’

In this utterance, the head act is downgraded by the supportive move of hypothetical expression of gratitude. This external mitigation is immediately followed by the emoji 😊 symbolising a hug. In this instance, the emoji is not analysed as a separate unit but instead as a strengthening device for the downgrader. It underlines the gratitude by an additional hug and therefore makes

the supportive move more expressive. This is quite frequent as 32 emojis fulfil this function in the corpus.

Interestingly, the three emojis utilized in the two examples occur either at the beginning as a greeting or at the very end of the messages. This illustrates an additional function of emojis and the last function under investigation in this paper: the reference and building of relationship. This function is introduced in the next section.

#### 4.4.3 Relationship

As noted above, emojis are able to establish and reference personal relationships between interlocutors (Pappert 2017:192). This function can be interrelated with the previous functions. For example, an emoji can strengthen the message of a supportive move while simultaneously maintaining reference to the relationship of the interlocutors as the hugging face in example (23) above. As the emoji is additionally placed at the end of the message, it further can serve the function of a farewell.

It can be observed that many emojis belonging to the category of relationship are used together with salutations or farewells. As it has been mentioned before, participants almost always greeted their interlocutor, while most utterances in the corpus do not include an explicit farewell. The missing farewells may be due to what Pappert (2017:189) termed *Endlosdialoge* ‘endless dialogue’, in which messages are sent without typical starting or end sequences, as the dialogue can be taken up again anytime even though longer breaks from the communication are occurring. In the specific case of the elicited messages in this study, the participants are asked to start a conversation and the message template provided clearly shows that no preceding messages were sent on this day. It seems that speakers deem greetings appropriate in this case. However, as they are awaiting timely responses, no farewells are employed by most participants. To end their messages on a friendly tone nonetheless, many participants chose to end their message with an emoji, most of which are smiling face-emoji or hearts.

Referring back to table 5, it can be seen that emojis are used eight times in combinations with greetings and names. One example of this is illustrated below:

- (24) Hallöschen 😊  
 Hello beaming face with smiling eyes emoji  
 Alles gut bei dir?  
 all good with you.2SG.DAT  
 ‘Hello 😊  
 Everything good with you?’

The grinning emoji is part of the greeting sequence, helps to establish a friendly tone, and signals a good relationship between the two interlocutors. In many cases, emojis like this promote connectedness between interlocutors and it has been shown that they “are expressions of the intersubjective connection with others” (Noverini Djenar & Ewing 2020:24). This is important in the case of requests, as the interlocutor may be more likely to be compliant.

Answering the second research question, although further research is required, the findings of the current study clearly indicate that emojis can fulfil various functions and they can do so simultaneously. They can be coded as traditional mitigation devices. Moreover, they can reference and build interpersonal relationships and reference the topical frame of the message.

Interestingly, it seems possible for a single emoji to fulfil more than one function, making them a powerful tool in communication.

### 5. Discussion

Answering the first research question of how Germans build requests, the results point towards clear tendencies in requesting strategies employed by the native speakers of this study for the given request scenario. They are most likely to produce indirect requests using one of two conventionally indirect head act strategies. The majority of requests are realised using the sub-strategy of ability. This replicates findings of previous studies. A study done by Warga (2008) investigated spoken requests produced by German high school students. Similar to the current study, the requests were elicited using a production task.<sup>9</sup> In contrast to the current study however, multiple situations were described and there was a variance in social power. Warga (2008:252) showed that the most frequent head act strategies for German requesters are conventionally indirect strategies<sup>10</sup>, with 53.57% of the participants using this strategy to realise their request. This tendency is replicated in the current study as participants mainly used sub-strategies belonging to this category (85.3%). In Warga's (2008) study, the sub-strategy ability (73.33%) is the largest of the conventionally indirect strategies, followed by willingness (11.67%) (Warga 2008:253). In the current dataset, 76.5% of the conventionally indirect requests are categorised as ability and 8.8% as willingness, resembling the tendencies of the spoken request strategies.

When comparing findings, it has to be kept in mind that the participants in the current study only produced one singular request to one specific scenario. This explains the tendencies of participants further. The microsocial factors deliberately chosen here will most likely have influenced participants to behave a certain way. In addition to an indirect head act strategy, participants used a lot of internal as well as external modifications which shows that even though the social distance was close, the imposition of the task was seemingly perceived as high. Participants deemed it necessary to minimize the force of the request to avoid any potential face threat.

Due to the medium, written requests in instant messages exhibit some distinctive features in comparison to spoken language. One the one hand, like in other CMC communication, the request is carefully constructed in one turn. The speaker has the opportunity to reread and restructure their request carefully to convince their interlocutor. This is a feature highlighted by Merrison et al. (2012:1080), who state that students constructing E-Mails to faculty are in a 'situation where the requester can attempt to construct a more idealised locution in order to get [the recipient] to be maximally compliant'. This notion is reinforced in the current study by the nature of the task eliciting one singular message. It is possible that in natural discourse requests are constructed over several turns in instant messages. Interestingly, contrary to the assumption that requests will be carefully constructed, some of the text messages like example (7) exhibit spelling errors and possible autocorrections of certain words (Busch 2021:252). Additionally, in many cases just like *Fall* 'case' in example (15), the capitalisation of nouns was neglected (Busch 2021:259) and punctuation marks are missing like in example (21) where most

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<sup>9</sup> Please note however, that the students are only asked to imagine the scenarios and write down what they believe they would say (Warga 2008: 251). Therefore, technically the requests produced are prototypical spoken requests that have been written down.

<sup>10</sup> Warga (2008) terms this category 'query preparatory'.

sentences end in emojis, omitting any punctuation marks. The latter might be a conscious choice, however, as messages ending in full stops can be perceived as unfriendly by some (Hilte et al., 2019:216). In a study comparing written text in a school setting with text written on the messenger app *WhatsApp*, Busch (2021:310) showed that participants tended to omit punctuation marks in CMC. This is also evident in the current corpus, in which few punctuation marks can be found. It has been shown by Sampietro (2016) that emojis can fulfil similar functions as punctuation marks, usually being placed at the end of utterances and this is evident for the elicited messages in this study as well.

The requests produced in writing included four modification devices not existing in the dataset of spoken requests: *getting a pre commitment* (example 19), *thanking in advance* (Table 2), *threat* (example 20), and *emojis* (example 21). These differences, not only in the type but also in the number of supportive moves, can potentially be explained by the difference in medium. Each medium has specific conditions and these seemingly influence the production of requests. As outlined above, sometimes written requests have to be constructed in one single turn and speakers do not have any paralinguistic features available to mitigate their request. Therefore, speakers have to solely rely on linguistic mitigation devices and tend to use multiple strategies in their instant messages. In addition, there is a strong tendency as to which supportive moves are used by speakers. Almost half of the requests included some form of expression of gratitude. On the other hand, this only occurs in 8.04% of total instances in the spoken corpus of Warga (2008). One hypothesis for this difference could be the turn construction. An expression of gratitude would usually follow the agreement of the requestee. However, this is not possible in the type of written requests elicited here, and therefore it has to be included in the same message. This can also be seen by the distinction established in the current coding scheme: Expressions of gratitude can be hypothetical or phrasal. As could be seen in example (15), hypothetical expressions are used because the requestee has yet to agree. Lastly, features of instant messaging that are not available in spoken discourse are employed to mitigate the requests: Over half of the participants used emojis to circumvent a potential face threat.

Sampietro (2016) investigated the emoji usage of Spanish speakers in WhatsApp requests and the study illustrates that emojis can have a variety of pragmatic functions expressing informality and can be an indication of illocutionary force. The various functions of emojis are further illustrated by additional studies investigating CMC. Pappert (2017) analyses German WhatsApp conversations, categorizing the emojis in nine categories. Herring & Dainas (2017) investigate emoji usage in Facebook comments and attribute five different functions to the different emojis utilized by users. The collected data of the current study support the results of these studies showing that emojis can fulfil various functions in instant text messages of which three are dominant in the current dataset: frame, mitigation, and relationship. In the context of the current study, these functions are prevailing because participants are trying to convince a close friend to comply to their request. This leads them to reference the existing positive relationship by using friendly smiling face-emojis or hearts at the beginning and end of their messages (example 24). Furthermore, the illocutionary force of a requests with high imposition is mitigated by use of emojis (example 22). Lastly, some participants embellished their messages with topical emojis (example 21), potentially entertaining their interlocutor which serves to give the request a fun and friendly undertone, again helping the speakers to achieve their communicative goal. This answers the second research question inquiring into the functions of emojis in the context of instant messaging requests.

## 6. Conclusion

The study at hand investigated the requesting strategies employed by German native speakers when requesting in the CMC medium of instant messaging. In addition to the traditional strategies employed in speaking, the paper inquires into one multimodal aspect of text messaging, namely emojis. It considers which functions emojis can assume and whether they can act as mitigation devices.

To investigate these research questions, the study uses a mixed-method approach, quantitatively investigating request strategies and qualitatively looking at examples to analyse the different functions of emojis in context. The elicitation tool used for data collection was a DCT. 68 native speakers of German were asked to imagine themselves in a situation in which they are going on vacation and are in need of someone looking after their plants. They were asked to formulate a request to a close friend using instant messaging. The collected data were compiled into a corpus and coded according to existing coding schemes for spoken requests.

Overall, the study shows that speakers seem to employ similar strategies in instant messages and in spoken requests. Nevertheless, some differences can be identified, and further contrastive research is necessary in determining whether this variance is due to the mode of communication or other factors. It can be established, however, that as with spoken requests, speakers seem to follow clear patterns in constructing CMC requests. Request head acts can be either direct, conventionally indirect, or just hinting at the issue. Here, speakers seem to have a clear preference for conventionally indirect phrasing, especially asking questions regarding the ability of the hearer to do the requested task. It is most likely that speakers alter their requests syntactically regarding aspect and use understaters and downtoners as lexical downgraders. The majority of speakers uses a greeting to alert their interlocutor, in many cases paired with a name or a nickname. Finally, almost half of the elicited requests contained some form of expression of gratitude as supportive move.

In more than half of the requests, speakers used emoji to modify their request in some way. Previous literature has pointed out several different functions of emojis and the current analysis extends these functions underlining the role of emojis as mitigation devices. Therefore, it is argued that emojis can serve as supportive moves in requests. Furthermore, they can strengthen other external mitigation devices underlining their intention. In doing so, some emojis can relate to the relationship of the two interlocutors, establishing a friendly tone. Lastly, some emojis do not seem to have any social function or express any emotion. One example is the airplane-emoji in the first example of this paper. These emojis are found to have an embellishing nature and give a topical frame to the text message, potentially entertaining the interlocutor.

When interpreting the results of this study, some limitations must be kept in mind. The sample is a convenience sample and not balanced. Age and gender were not factored in the analysis due to the limited scope of this paper although they potentially have an effect on communication in this medium as previous research suggests. Furthermore, only one request scenario was investigated, therefore no generalisations are possible.

Although this paper indicates some general trends for German CMC request strategies, further research is necessary. One aspect that needs to be taken into account in a future study is the influence of age and gender on the request production, as it can be hypothesized that especially age might have a significant influence on instant messaging as older people have only acquired these skills as adults while younger people grew up with this technology. A comparison between spoken and written requests could potentially reveal a great deal about the nature of requests. For this, comparable datasets are essential. A future study could elicit requests using the same stimuli only having the medium as an independent variable.

### Abbreviations

1SG	first person singular	INDEF	indefinite
2SG	second person singular	INF	infinitive
3SG	third person singular	NOM	nominative
ACC	accusative	PL	plural
COND	conditional	PST	present
DAT	dative	PTCP	particle
IMP	imperative		

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