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The marking of polar interrogatives in Catalan Sign Language

A first attempt to solve the puzzle

Sara Cañas Peña

Polar interrogatives in Catalan Sign Language (LSC) are obligatorily marked with a specific combination of nonmanual marking features and optionally marked with a question particle. Given that, at least, the eyebrow position feature does not remain constant, LSC shows different combinations of nonmanuals to mark this structure. Data points towards an analysis in which each combination of nonmanuals conveys a different bias and a novel feature-based description system would explain and predict that. Therefore, each combination of nonmanuals, as well as the appearance of the question particle, is shown to not only mark sentence type but also to encode pragmatic meaning.

1. The background

1.1. Catalan Sign Language

Catalan Sign Language (LSC) is a natural language of gestural-visual modality used by the population of deaf and deaf-blind signing people in Catalonia. LSC is the language in which signers usually interact with people in their immediate family and social environment. The Catalan Federation for the Deaf (FESOCA) estimates that LSC is used by 25.000 signers in Catalonia, 12.000 of them are deaf.

Basic word order in LSC is SOV, even though there can be instances of SVO utterances which may be in part due to the influence of other languages. Like all living languages, LSC does not remain isolated and interacts with other sign languages, as well as the spoken languages of the area (Catalan and Spanish). LSC, as any other sign language, fulfills all the possible communicative functions and, as a natural language, possesses some characteristics that make it unique and distinguish it from other languages.

1.2. Polar interrogatives in sign languages

All natural languages can ask questions, ergo sign languages can ask questions too. However, the way a sign language user would interpret an utterance as a question and, therefore, would perform a question is quite different from how a spoken language user would do it. Language modality defines the articulators and, thus, the mechanisms a language will use to mark a structure. Sign languages are usually described as “languages of the hands” (Pfau & Quer 2010:381), but this term is not the most accurate. Hands are not the only articulator for sign languages to perform an utterance: nonmanual markers (or nonmanual features) also play a primordial role, since they also encode grammatical information. Nonmanual markers consist of any movement of the upper part of the body, as well as any facial expression that contributes to the meaning of the utterance.

Sign language’ mechanisms to signal a polar interrogative can be manual (through a question particle or any other syntactic mechanism that involves the hands) or nonmanual (by any particular combination of nonmanual features: facial expression, head and body movements, eye gaze, etc. but the hands). While manual mechanisms to mark a polar interrogative have been proved to be optional in most sign languages, nonmanual marking turns out to be obligatory (Zeshan 2004). In most of the cases, only the nonmanual features can distinguish a polar interrogative from a declarative sentence. According to Zeshan (2004:19), “nonmanual signals marking polar questions tend to be very similar across signed languages”; and Cecchetto (2012:294) supports the idea: “nonmanual marking in polar questions shows relatively minor variation”. Therefore, polar interrogatives in sign languages involve a combination of several features.

(1) Nonmanual marking features described for polar interrogatives:

- eyebrow raise
- eyes wide open
- eye contact with the addressee
- head forward position
- forward body posture

(Zeshan 2004; Cecchetto 2012)

Nonmanual marking is also responsible for distinguishing polar interrogatives from WH-interrogatives. Cecchetto (2012) highlights the importance of the “eyebrow raise” feature, considering it as the most salient feature in the structure under study. Eyebrow furrowing is, therefore, a feature reserved for WH-interrogatives. Nonmanual marking scope typically extends over the whole clause, that means that nonmanual features co-occur with all the manual signs that compound a polar interrogative.

Other than nonmanual marking, polar interrogatives can also be marked manually through a question particle. Question particles, however, are optional or “used in particular subtypes of polar interrogatives” (according to Zeshan 2004:21). Be that as it may, question particles always co-occur with nonmanual features. The most preferred position to place a question particle is clause finally (2), although it can sometimes be found clause initially or occurring in both positions.¹

(2) Hong Kong Sign Language

pol-q
INDEX₂ SICK QUESTION-PARTICLE
‘Are you sick?’

(Zeshan 2004:35)

Any other syntactic mechanism to mark a polar interrogative is also considered optional. Changing constituent order or doubling constituents are not found to be extended mechanisms among sign languages to mark the structure. Still, it has been shown that pronouns tend to be repeated at the end of the clause (3), or directly place it there (4).

(3) French Sign Language

$\overline{\text{INDEX}_2 \text{ STAY HOME INDEX}_2}$ ^{pol-q}
 ‘Are you staying home?’

(Moody et al. 1983:91)

(4) Thai Sign Language

$\overline{\text{SMOKE INDEX}_2}$ ^{pol-q}
 ‘Do you smoke?’

(Zeshan 2004:21)

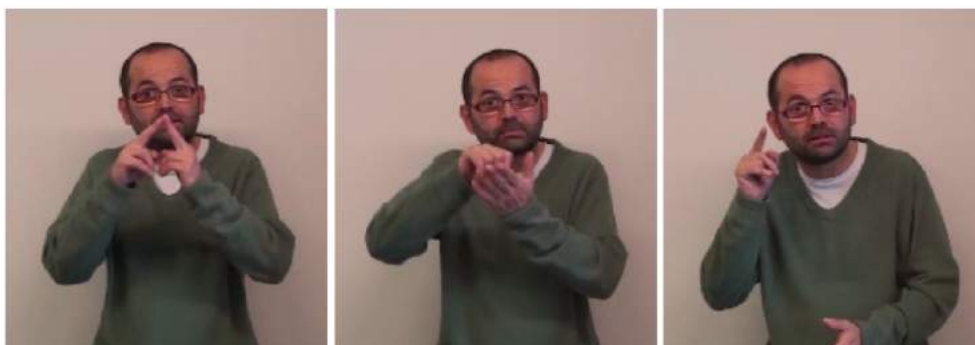
2. The LSC puzzle

LSC is not an exception: as previously mentioned for sign languages, LSC uses a specific combination of nonmanual features to perform a polar interrogative. Nonmanual markers are an obligatory mechanism to mark this structure in LSC, and, in fact, that is the only mark that discriminates a polar interrogative from a declarative sentence.

(5) $\text{INDEX}_2 \text{ BREAD EAT}$
 ‘You eat bread.’

(6) $\overline{\text{INDEX}_2 \text{ BREAD EAT}}$ ^{pol-q}
 ‘Do you eat bread?’

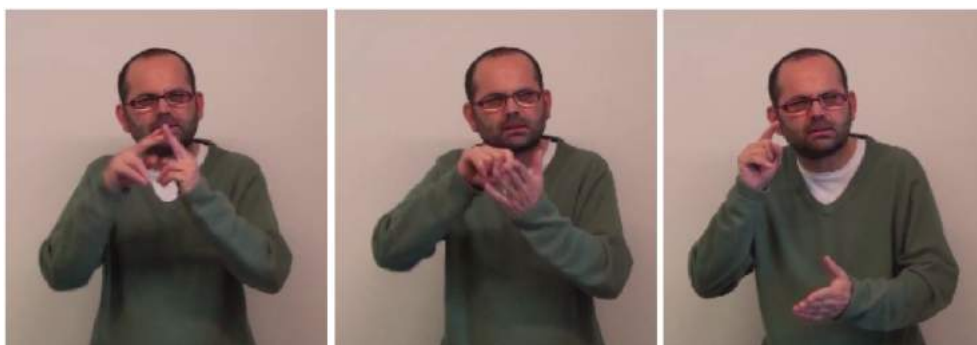
It has been claimed that LSC most prominent feature for marking polar interrogatives is eyebrow raise (br) (Quer et al. 2005), as can be seen in (7). Further data examination shows, however, that the structure may be performed with a combination of nonmanual features with eyebrow furrowing (bf) as the most salient one, as can be seen in (8).



(7) $\overline{\text{PARIS CAPITAL FRANCE}}$ ^{br}
 ‘Is Paris the capital city of France?’

(Cañas-Peña 2015:29)

¹Nonmanual markers from examples (2–4) and (6) are simply marked as ‘pol-q’, meaning that a specific combination of nonmanual features is used over those signs to perform the utterance in its respective sign language.



- (8) $\overline{\text{PARIS CAPITAL FRANCE}}$ ^{bf}
 ‘Is Paris the capital city of France?’

(Cañas-Peña 2015:29)

Thus, eyebrow position feature in polar interrogatives is not constant in LSC. Eyebrow furrowing, the most prominent feature to mark WH-interrogatives in this language (9), can also be used to mark a polar interrogative. These findings goes against some of the generalizations made so far: eyebrow furrowing is not specific to WH-interrogatives, but, therefore, neither is eyebrow raise to polar interrogatives.

- (9) $\overline{\text{INDEX}_2 \text{ SLEEP WHERE}}$ ^{bf}
 ‘Where do you sleep?’

Moreover, other nonmanual markings not listed neither in Zeshan (2004) nor in Cecchetto (2012) are found to be used to mark polar interrogatives in LSC, such as ‘squinted eyes’, ‘head upward position’, and ‘backward body posture’. The final list of nonmanual features that can be combined to mark the structure is, consequently, longer for LSC.

- (10) LSC nonmanual marking features for polar interrogatives:

- eyebrow raise / eyebrow furrowing
- eyes wide open / squinted eyes
- eye contact with the addressee
- head forward / upward position
- forward / backward body posture

In addition, LSC seems to add optionally a question particle, known as the YES-NO Q-sign, positioned at the very end of the utterance:

- (11) $\overline{\text{INDEX}_2 \text{ PARTY GO (YES-NO)}}$ ^{bf}
 ‘Are you going to the party?’

Zeshan (2004) already claimed that question particles are, in fact, pragmatically marked and, therefore, not used optionally, but in very constrained contexts. In her research, question particles appeared in specific contexts and added a special meaning to the utterance. This is exactly what seems to be happening in LSC, since the informants rejected to place the Q-sign in some of the sentences: even describing the fact of placing the Q-sign in a specific utterance as “non-sense”. Given that, the following question arises: in which situation are each combination of nonmanual features performed and when is it allowed to place the YES-NO Q-sign, since it seems to appear in very constrained contexts?

3. Analysis

Preliminary data suggests that the availability of information that a signer may have is what seems to influence on how a polar interrogative is marked, since there is always a bias towards a particular answer. On the following section, the theoretical background in which the analysis is sustained is presented. Sudo's (2013) feature-based theory of biases can potentially explain why LSC displays different nonmanual markers or the YES-NO Q-sign to mark polar interrogatives. The methodological issues are also presented in order to provide a broad picture on how the data for the analysis was collected. Finally, an analysis of polar interrogatives in LSC is introduced: a first glimpse at the meanings of its intricate marks through Sudo's (2013) fine-grained system.

3.1. Theoretical background

According to traditional literature (Hamblin 1958; Hamblin 1973; Karttunen 1977; Groenendijk & Stokhof 1984; Krifka 2001), the truth-conditional meaning of a question is determined by the truth-conditional meaning of its (possible) answers. However, Sudo (2013:276) reveals an interesting fact: 'distinct forms of PQs [polar questions] may have the same truth-conditional meaning, [i.e.] they can be used to ask about the same thing.' He illustrates it with (12).

- (12) a. Did John come to the party?
 b. Didn't John come to the party? (Sudo 2013:276)

Both questions in example (12) are asking whether John went or not to the party. Why would the English language, for instance, have two different forms to ask exactly about the same thing? Sudo's answer is quite simple: questions do carry information about the questioner's bias towards a particular answer. No one would discuss whether the information asked in examples (12a–b) is the same (i.e. whether John went or not to the party), but one would note that in terms of interpretation both examples do not intend to mean the same. Therefore, 'this difference should lie in a non-truth-conditional aspect of their meanings' (Sudo 2013:276).

What he attempts from here is to formally characterize the inferences that may be encoded in polar interrogatives. Thus, Sudo (2013:275) proposes a 'novel feature-based description system [...] fine-grained enough' to characterize the inferences regarding biases that can be encoded in distinct forms of polar interrogatives in natural languages. Moreover, he shows that grammar is, in fact, capturing these biases in polar interrogatives. Sudo (2013) considers positive polar interrogatives, outside-negation negative polar interrogatives, inside-negation negative polar interrogatives; and a combination of these structures with specific question particles, as the resulting mechanisms of grammar to encode biases within a polar interrogative in a natural language. Sudo's proposal concerns two qualitatively distinct types of biases, namely the 'epistemic bias' and the 'evidential bias'.

- (13) Types of biases:
- 'Epistemic bias' is described as the evidence, inherently public, mutually available to all the participants in the current conversational context.
 - 'Evidential bias' is described as the private state of beliefs or expectations a speaker may have. This information is not public and needs to be shared with the other participants.

Through specific examples of two unrelated languages (English and Japanese), Sudo (2013) demonstrates that both notions of biases are necessary and sufficient to 1) explain the biases associated with polar interrogatives and, therefore, to 2) give an answer to the question of why there are different types of polar interrogatives in natural languages.

In his analysis, Sudo (2013) assigns different variables, i.e. ‘values’, to each particular type of polar interrogative, regarding the epistemic and evidential bias they carry. Therefore, he can conclude that each distinct form of polar interrogative is expected to exist in the language, since each one of them do carry different biases (that can be made explicit through the values assigned). Both epistemic and evidential bias can be associated with a positive or negative value. Moreover, the evidential bias can, in addition, demand another specific value: requirement (+) or incompatibility (–), gradually increasing the combinations that would end up triggering distinct flavors of biases. Below, I am presenting the meaning of each of the values that, according to Sudo (2013), can be assigned to a polar interrogative.

(14) Regarding the evidential bias:

- [+positive]: A polar interrogative requires contextual evidence suggesting its positive answer in order to be performed.
- [+negative]: A polar interrogative requires contextual evidence suggesting its negative answer in order to be performed.
- [–positive]: A polar interrogative is incompatible with contextual evidence suggesting its positive answer.
- [–negative]: A polar interrogative is incompatible with contextual evidence suggesting its negative answer.
- [none]: Contextual evidence suggesting either answer does not affect the performance of the polar interrogative.

(15) Regarding the epistemic bias:

- [positive]: A polar interrogative can be performed iff the questioner expects a positive answer.
- [negative]: A polar interrogative can be performed iff the questioner expects a negative answer.
- [none]: If the questioner have or do not have any expectations towards the answer, that does not affect the performance of the polar interrogative.

To define the values of a particular type of polar interrogative, he proves to fit it into different discourse contexts that have been built considering the values described for the two kind of biases. If a polar interrogative works in a particular context, it means that obligatorily is carrying the pragmatic information related to the biases. Sudo (2013), therefore, can assign those specific values to the polar interrogative. This way, he is showing that grammar contains specific types of polar interrogatives to encode unique information.

Note how, for English, the following outside-negation negative polar interrogative² only works in specific contexts.

²Sudo (2013) firstly makes a distinction between outside-negation negative polar interrogatives and inside-negation negative polar interrogatives. By using a negative polarity item and a positive polarity item, he demonstrates that although both polar interrogatives may at first seem to have the same form, both diverge in terms of interpretation. Therefore, both can encode different biases, and, consequently, have different values assigned.

- (16) [Context: For a psychological experiment, we are looking for some left-handed subjects. We have asked some of our friends, but only Mary was left-handed so far. To my surprise, John is using a pencil with his left hand.]

a. # Isn't John left-handed too?

b. Isn't John right-handed too? (Sudo 2013:280)

This context provides positive evidence for (16a), while provides negative evidence for (16b). The fact that (16a) is infelicitous in the given context indicates that outside-negation negative polar interrogatives in English are incompatible with positive evidence; therefore this type of polar interrogative encodes a [–positive] evidential bias. However, this is not the only bias this type of polar interrogative is obligatorily associated with.

- (17) [Context: We just learned that Mary is left-handed, and are wondering who else is. I think John, who is not here, is probably left-handed too, but I am not sure.]

Isn't John left-handed too? (Sudo 2013:280)

- (18) [Context: We just learned that Mary is left-handed, and are wondering who else is. Given its rarity, I believe that Mary is the only left-handed person among us, so I think it's very likely that John, who is not around, is right-handed.]

Isn't John left-handed too? (Sudo 2013:281)

As one can derive from examples (17–18), [–positive] is not the only bias this type of polar interrogative is encoding. Outside-negation negative polar interrogatives in English seem to work only in those contexts where the speaker has an expectation for the positive answer. Example (19) contains a context in which the speaker's epistemic state is neutral and that is incompatible with a positive expectation. An outside-negation negative polar interrogative, therefore, sounds odd, but the speaker is allowed to perform a positive polar interrogative, since it does not encode an epistemic bias.

- (19) [Context: You told me that you went to the party yesterday. I have no idea who else did.]

a. Did John go to the party too?

b. # Didn't John go to the party too? (Sudo 2013:281)

Sudo (2013) proves this way that a positive expectation is an obligatory component encoded in English outside-negation negative polar interrogatives. Therefore, this type of polar interrogative encodes two kinds of bias: [–positive] (evidential bias) and [positive] (epistemic bias).

3.2. *Methodology*

The analysis in this paper relies on new elicited data obtained through three different tasks conscientiously designed to control the factors that can influence the informants' behavior. Such factors involved the amount of information that the informants have about the fact that is being questioned, the previous experience they could probably have in relation to that fact (which

will be questioned), the kind of relation they share with their interlocutor and what they are able to observe and infer from the actual context of the conversation. The informants were two deaf native LSC signers who are used to working in a linguistic research environment. All the elicitation tasks were presented in LSC, although our informants are proficient in Spanish. This decision was made to avoid any influence from the spoken language and to place the informants in a more realistic communicative situation, with the aim of eliciting more natural data.

The informants undertook different tasks in order to contrast the resulting data: each result from each task was compared to each result from the other two tasks. Therefore, the results presented here are only those that appeared to be consistent in all the tasks. The informants completed a context elicitation task, a grammaticality and truth-value judgement task, and were later asked to discuss all the collected data.

3.2.1. *First task: context elicitation task*

During the first task, slightly different contexts, regarding different levels of knowledge of the informant about some fact and the evidence in the communicative situation suggesting the negative or the positive answer (evidential and epistemic bias), were proposed. The informants were asked to perform a polar interrogative as a continuation of the situation, taking into account the particularities of the context (20–21). The contexts were constructed and based on the classification of Sudo's proposal and, at least, three contexts were proposed and examined for each combination of evidential and epistemic biases' values. The signs of the outcome were provided to the informants in this task: they were supposed to add only the nonmanual markers to accommodate the utterance to the communicative situation.³

- (20) [Context: Your friend loves travelling. He is always looking forward to the summer. He has visited more than forty countries in the past fifteen years. Ask him if he is going to go on holidays this summer.]

Outcome:

br
INDEX₂ HOLIDAY GO

'Are you going on holiday?'

- (21) [Context: Your friend is always working. He also works in the summer. He has not gone on holidays for more than fifteen years. Ask him if he is going to go on holidays this summer.]

Outcome:

bf
INDEX₂ HOLIDAY GO

'Are you going on holiday?'

This task was bidirectional, since it was considered useful to also present a polar interrogative and ask for a real context in which it could be used. In this case, at least, three different polar interrogatives with the same specific combination of nonmanuals were provided and were asked to be placed in a context. This provided a qualitative corpus to work with.

³In examples (20–21), the informants were provided with the signs we see at the outcomes. This was done for the purpose of having a better control over the contexts and eliciting data that later on were more likely to be compared in terms of the nonmanual markers. This helped to also control the factors, previously described, that could influence the informants' behavior.

3.2.2. Second task: grammaticality and truth-value judgement task

A grammaticality and truth-value judgement task was later designed, using the same contexts and polar interrogatives from the first task, in order to compare the outcomes of both tasks and have more accurate results. This task was presented to the informants one month after the first task was completed. This amount of time was given to the informants to not remember the exact items that were used in the first task and the outcomes they provided.

In this grammaticality and truth-value judgement task, a conversational context was provided, followed by a polar interrogative with a specific combination of nonmanuals. The informants were asked to spot whether that polar interrogative was ‘good’, ‘strange’ or ‘bad’ in the given context. All the contexts and polar interrogatives that appeared in this task were extracted from the first task: both the contexts based on Sudo’s proposal and the ones provided by the informants were included. The task was designed in a way that each context (one for each combination of evidential and epistemic biases’ values, according to Sudo 2013) was paired at least one time with a polar interrogative that was considered ‘good’, one time with a polar interrogative that was considered ‘strange’ and one time with a polar interrogative that was considered ‘bad’ (in accordance with the outcomes of the first task). The contexts were randomly paired with a polar interrogative with a specific combination of nonmanual features for the ‘bad’ cases. The results obtained in this task were compared to the ones obtained in task two. This was a helpful device to distinguish those combinations of nonmanuals that appeared consistently in very restrictive and constrained contexts from those that did not. This leads us to the third task, which consisted of a discussion with the informants.

3.2.3. Third task: discussion of the data

The latter task consisted on a discussion of the data with the informants to verify all the results found. The discussion was carried out in several sessions. Each session lasted two hours approximately and the idea was to jointly discuss the results in a participatory and not controlled dialogue. The discussion started one month after the second task. This was considered to be a reasonable amount of time for the informants to be fresh again about the topic and not to be biased towards the previous results. The first session was devoted to verify the most consistent results. The next four sessions were devoted to analyse the weakest results. During the sessions, I would provide the results and ask about their opinion: they would tell me whether they agree or not. Discussions were started as they brought other examples to the table and connected the results to their language experience.

3.3. Solving the puzzle

LSC polar interrogatives presented in this paper share the truth-conditional meaning (they are used to ask about the same thing), yet the natives of this sign language clearly perceived interpretive differences among them. I argue, based on Sudo’s (2013) feature-based theory of biases, that each different combination of nonmanual features as well as the appearance of the question particle do carry different flavors of biases in LSC polar interrogatives. Therefore, the nonmanual markers, just as the YES-NO Q-sign, are shown to not only mark sentence type, but to encode unique pragmatic meaning.

The combinations of markers on which I focus in this paper are those that consistently arise in constrained contexts with the same specific biases, so it is more likely that they are, in fact, conveying a specific pragmatic meaning. The analysis focuses specifically on the eyebrow movement feature, since it has been claimed to be the most salient feature for this structure and the one that distinguish polar from WH-interrogatives. Other features are also analysed and proved to influence on the biases encoded in the question. The combinations analysed in this paper contained the following features:

- eyebrow raise (br) / eyebrow furrowing (bf)
- forward body posture (fb) / backward body posture (bb)
- head forward position (hf)
- YES-NO Q-sign

3.3.1. ‘eyebrow furrowing’+ ‘body backward posture’

This combination of nonmanual markers encodes two different kind of biases at the same time. It carries a strong [negative] epistemic bias, meaning that the signer has an expectation towards the negative answer. Although there is no evidence in the context for either answer, example (22) implies that the questioner expects a negative answer, since s/he thinks that the interlocutor probably does not play cards. Examples (22–24) show that another bias must be associated to this combination of nonmanual markers: since they are not allowed to appear in a context with negative evidence, this polar interrogative encodes a [–negative] evidential bias.⁴

- (22) [Context: You have never seen me playing cards and you wonder if I ever do.]

bf+bb
INDEX₂ CARDS PLAY
‘Do you play cards?’

- (23) [Context: You enter home and find me playing cards in the dinning room. You thought I did not like playing cards and that I did not even know how to play.]

bf+bb
INDEX₂ CARDS PLAY
‘Do you play cards?’

- (24) [Context: I have just told you that I have never played cards because I do not like it. You already thought that: I do not like playing any board game.]

bf+bb
INDEX₂ CARDS PLAY
‘Do you play cards?’

⁴Please note that the English translations of the LSC examples provided from this point are very approximate since the biases involved in LSC interrogatives do not correspond to the ones involved in English interrogatives.

3.3.2. ‘eyebrow raise’+‘body backward posture’

A polar interrogative marked with ‘eyebrow raise’+‘body backward posture’ does also carry a [negative] epistemic bias. Examples (25–27) suggest that the questioner is expecting the negative answer to be true. In this sense, both combinations presented so far, encode the same epistemic bias. However, the contrast between example (23) and example (26) tell us that, in fact, both combinations do carry an evidential inference, but it is not the same one. In this case, the [–positive] and [–negative] values stem from ‘eyebrow raise’+‘body backward posture’ features, since a polar interrogative marked with this combination is infelicitous in the presence of any contextual evidence. Note that [–positive] and [–negative] biases are not incompatible, having both of them means that the polar interrogative is only licensed in neutral contexts, when there is no evidence for either of the answers.

- (25) [Context: You have never seen me playing cards and you wonder if I ever do.]

br+bb
 $\overline{\text{INDEX}_2 \text{ CARDS PLAY}}$
 ‘Do you play cards?’

- (26) [Context: You enter home and find me playing cards in the dinning room. You thought I did not like playing cards and that I did not even know how to play.]

br+bb
 # $\overline{\text{INDEX}_2 \text{ CARDS PLAY}}$
 ‘Do you play cards?’

- (27) [Context: I have just told you that I have never played cards because I do not like it. You already thought that: I do not like playing any board game.]

br+bb
 # $\overline{\text{INDEX}_2 \text{ CARDS PLAY}}$
 ‘Do you play cards?’

3.3.3. ‘eyebrow furrowing’+‘head forward position’+‘body forward posture’

Contrary to what we have seen so far, this combination obligatorily carries a [positive] epistemic bias: the polar interrogative is only felicitous if the signer expects the positive answer to be true. Given the examples (28–30), this combination of nonmanual markers does also encode a [+positive] evidential bias: the polar interrogative is only felicitous in a context with positive evidence. Whenever there is a context that suggests evidence for the negative answer (30) or a context that do not provide evidence for either of the answers (28), ‘eyebrow furrowing’+‘head forward position’+‘body forward posture’ is not used.

- (28) [Context: We meet some days ago and you do not know a lot about me. You would like to know whether I travel or I am staying in town during summer.]

bf+hf+fb
 # $\overline{\text{INDEX}_2 \text{ TRAVEL}}$
 ‘Do you travel?’

- (29) [Context: You know I was travelling with the whole family this month. You met me at the bus station, I have my suitcase and the bus ticket prepared, all my family is also there.]

$\frac{\text{bf+hf+fb}}{\text{INDEX}_2 \text{ TRAVEL}}$
‘Do you travel?’

- (30) [Context: You know I was travelling with the whole family this month. You met me at the bus station, but I do not have my suitcase and neither my bus ticket, all my family is also there.]

$\# \frac{\text{bf+hf+fb}}{\text{INDEX}_2 \text{ TRAVEL}}$
‘Do you travel?’

3.3.4. ‘eyebrow raise’ + ‘head forward position’ + ‘body forward posture’

In LSC, a polar interrogative signaled with these nonmanual features is obligatorily associated with a [positive] epistemic bias. If the signer is expected to be answered with a negation, this combination of nonmanual markers is not licensed. In order to be able to perform this interrogative, the signer can also decide to ask in accordance to what s/he beliefs in. So, in example (31), if the signer is more leaned to belief that the interlocutor is staying in town during summer, the signer would ask about that. This combination of nonmanual features also encodes a [–negative], since the polar interrogative is not allowed in contexts providing negative evidence.

- (31) [Context: We meet some days ago and you do not know a lot about me. You would like to know whether I travel or I am staying in town during summer.]

$\frac{\text{br+hf+fb}}{\text{INDEX}_2 \text{ TRAVEL}}$
‘Do you travel?’

- (32) [Context: You know I was travelling with the whole family this month. You met me at the bus station, I have my suitcase and the bus ticket prepared, all my family is also there.]

$\frac{\text{br+hf+fb}}{\text{INDEX}_2 \text{ TRAVEL}}$
‘Do you travel?’

- (33) [Context: You know I was travelling with the whole family this month. You met me at the bus station, but I do not have my suitcase and neither my bus ticket, all my family is also there.]

$\# \frac{\text{br+hf+fb}}{\text{INDEX}_2 \text{ TRAVEL}}$
‘Do you travel?’

3.3.5. ‘eyebrow furrowing’+ YES-NO Q-sign

A polar interrogative marked with ‘eyebrow furrowing’ but also with the manual YES-NO Q-sign is associated with [–positive] and [–negative] evidential bias. That means that the combination would only be felicitous in absence of contextual evidence, as one can conclude from examples (34–36). This bias was also encoded in the ‘eyebrow raise’+‘body backward posture’ combination, but contrary to that one, this combination does not carry any epistemic bias. That is why in a context like 34 is irrelevant asking about (34a) or (34b). That is not possible in contexts like the ones in examples (35–36), where asking (34b) would also not be allowed.

- (34) [Context: Your best friend has planned a trip for both of you to celebrate your birthday, but the country you will be visiting is a surprise. However, you need to prepare your suitcase and you would like to know whether is it a cold or a warm place.]

- a. $\overline{\text{COUNTRY COLD YES-NO}}^{\text{bf}}$
 ‘Is it cold in that country?’
- b. $\overline{\text{COUNTRY WARM YES-NO}}^{\text{bf}}$
 ‘Is it warm in that country?’

- (35) [Context: Your best friend is travelling around the world. Today you are making him a video call. You can see from the video that he is sitting somewhere outside and he is wearing a T-shirt.]

- # $\overline{\text{COUNTRY COLD YES-NO}}^{\text{bf}}$
 ‘Is it cold in that country?’

- (36) [Context: Your best friend is travelling around the world. Today you are making him a video call. You can see from the video that he is sitting somewhere outside and he is wearing a coat and a scarf.]

- # $\overline{\text{COUNTRY COLD YES-NO}}^{\text{bf}}$
 ‘Is it cold in that country?’

3.4. Summary

The outcomes resulting from the contexts presented in the tasks, previously manipulated to control the different biases that they encode, as it has been done in examples (22–36), showed evidence that prove the signers use consistently the specific combinations of markers that I have presented so far in very specific and constrained contexts. Therefore I can claim that different combinations of markers exist in LSC to provide different kind of biases. The evidential and epistemic biases encoded in the analysed combinations are summarized in (37).

| (37) | Combination of markers | Evidential bias | Epistemic bias |
|------|---|--------------------------|----------------|
| | Brow furrowing + body backward position | + positive | negative |
| | Brow raise + body backward position | – positive – negative | negative |
| | Brow furrowing + head and body forward position | + positive | positive |
| | Brow raise + head and body forward position | – negative | positive |
| | Brow furrowing + YES-NO Q-sign (question particle) | – positive – negative | none |

It would have been nice to find that each marker is actually providing a specific bias to the polar interrogative. But, as it can be drawn from (37), this first analysis points towards the assumption that the meaning is not compositional and, thus, it is the whole combination of features that convey the biases. Yet, all possible combinations of markers have not been examined. By this, I mean to say that the big picture is still not completed and only further studies could answer the question about how the meaning regarding the biases is built in LSC polar interrogation.

4. Conclusion

This paper provides evidence that shows that nonmanual features and the YES-NO Q-sign are operating on a non-truth-conditional dimension of the meaning of LSC polar interrogatives. Moreover, it has been demonstrated that, despite previous assumptions, it is quite common to find polar interrogatives in LSC marked with ‘eyebrow furrowing’ as the most salient feature or with other unexpected nonmanual features such as ‘backward body posture’. Yet, the LSC puzzle can be explained through the system proposed by Sudo (2013). Therefore, these different combinations exist to encode different flavors of evidential and epistemic bias and are displayed in different contexts to fulfill the requirements of the conversational situation.

A more detailed examination of all the possible combinations of markers displayed in LSC polar interrogatives and the biases they encode merits further research: I am aware that there are other combinations that can be used to signal the utterance under study and possibly encode other pragmatic meanings. Their addition to the present study was not possible, since they did not appear consistently in constrained contexts that carried the same inferences. Therefore, the list of possible combinations to mark polar interrogatives in LSC is not full. I am also aware that a study with more informants will help to get more accurate predictions for the outcomes and will account for signers variation. Nevertheless, to the best of my knowledge, the presented research contributes to the understanding of the grammar of sign language interrogation, as it has tried to decode the intricate functions that markers may have in gestural-visual modality languages for this structure. Moreover, this research can contribute to the discussion of typological variation between spoken and signed languages, showing a mechanism to mark polar interrogatives that only signed languages have in their grammar: the nonmanual markers.

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Abbreviations

| | |
|-------|---|
| SOV | Subject-Object-Verb |
| SVO | Subject-Verb-Object |
| LSC | Catalan Sign Language |
| pol-q | polar question (nonmanual marking) |
| br | eyebrow raise (nonmanual feature) |
| bf | eyebrow furrowing (nonmanual feature) |
| bb | backward body posture (nonmanual feature) |
| fb | forward body posture (nonmanual feature) |
| hf | head forward position (nonmanual feature) |

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References

- Cañas-Peña, S. (2015). The morphosyntax of polar interrogatives in LSC. [MA Thesis] Universitat Pompeu Fabra, Barcelona. <https://repositori.upf.edu>.
- Cecchetto, C. (2012). Sentences types. Pfau, R., M. Steinbach & B. Woll (eds.), *Sign Language: an international handbook*. de Gruyter Mouton, Berlin. pp. 292–315.
- Groenendijk, J. & M. Stokhof (1984). Studies in the Semantics of Questions and the Pragmatics of Answers. [PhD thesis] University of Amsterdam.
- Hamblin, C. L. (1958). Questions. *The Australasian Journal of Philosophy* 36, pp. 159–168.
- Hamblin, C. L. (1973). Questions in montague grammar. *Foundations of Language* 10, pp. 41–53.
- Karttunen, L. (1977). Syntax and semantics of questions. *Linguistics and Philosophy* 1, pp. 3–44.
- Krifka, M. (2001). For a structured meaning account of questions and answers. *Audiatur vox sapientia. A festschrift for Arnim von Stechow* 52, pp. 287–319.
- Moody, B., A. Vourc'h, M. Girod & R. Benelhocine (1983). *La langue des signes. Tome 1: Histoire et Grammaire*. International Visual Theatre - Centre Socio-Culturel des Sourds, Vincennes (France).

- Pfau, R. & J. Quer (2010). Nonmanuals: their grammatical and prosodic roles. Brentari, D. (ed.), *Cambridge Language Surveys: Sign Languages*. Cambridge University Press, Cambridge. pp. 381–402.
- Quer, J., E. M. Rondoni, G. Barberà, S. Frigola, D. Aliaga, J. Boronat, J. P. Gil, P. Iglesias & M. Martínez (2005). *Gramàtica bàsica de la llengua de signes catalana*. FESOCA: DOMAD, Barcelona.
- Sudo, Y. (2013). Biased questions in English and Japanese. Gutzmann, D. & H. Gärtner (eds.), *Beyond expressives: Explorations in conventional non-truth-conditional meaning*. Leiden, Brill. pp. 275–296.
- Zeshan, U. (2004). Interrogative Constructions in Signed Languages: Cross-linguistic Perspectives. *Language* 80:1, pp. 7–39.

Verbal number driven suppletion in Georgian

Jordan Chark

This paper provides an account of allomorphy in the domain of verbal number in Georgian (Kartvelian). Cross-linguistically, verbal number is often associated with either suppletion, reduplication, or a combination of the two (Veselinova 2006). Georgian has two morphological devices in this domain: stem-suppletion and the preverb *da-* (Makharoblidze 2018). I argue for three separate but interrelated claims: (i) Georgian exhibits genuine, structurally constrained root suppletion, supporting a late insertion view contra Borer (2014); (ii) Bobaljik & Harley (2017)'s generalization that all intransitive verbs which supplete for number are unaccusatives can be upheld; (iii) a unified analysis for root suppletion and the preverb *da-* is possible.

1. Introduction

Suppletion has figured prominently in the debate pertaining to locality conditions for triggers and targets of contextual allomorphy within Distributed Morphology (henceforth DM) (Halle & Marantz 1993). The present paper draws on data from Georgian (Kartvelian) to bear on this debate. It will be argued that cases of root suppletion for verbal number in the language are instances of genuine contextual allomorphy, not an agreement phenomenon. Suppletion, as opposed to agreement, is identifiable by means of blocking effects, which indicates that there is competition for insertion between Vocabulary Items (henceforth VI) conditioned by morphosyntactic or phonological features (Harley 2014b). The present analysis expands beyond cases of root suppletion to the *da-* preverb alternation. This prefix is conditioned by the same type of plurality responsible for root suppletion, which is associated with a particular structural position: that of the affected argument (the subject of intransitives and the object of transitives). In (1), the two exponents of the root $\sqrt{\text{KILL}}$ are *k'al* and *khots* in the context of singular and plural direct objects respectively. The suppletive alternation is obligatory (Harris 1981). Note also that *mglebi* 'wolves' fails to trigger plural object agreement; formal number marking in Georgian is sensitive to an animacy hierarchy (in that inanimate DPs are formally marked sin-

gular; *ibid.*). This restriction does not apply to arguments which condition suppletion. That these overlap and may not be valued identically thus suggests that phi-featural marking and suppletive allomorphy are distinct phenomena.

- (1) a. *mgel-i mo-v-**k'al**-i*
 wolf-NOM PV-1SG-kill.SG-3SG
 ‘I killed the wolf.’
 b. *mgel-eb-i da-v-**khots**-e*
 wolf-PL-NOM PV-1SG-kill.PL-3SG
 ‘I killed the wolves.’ (Harris 1981:199)¹

The preverb *da-* may combine with a number of roots, in which it exhibits a paradigmatic alternation with other preverbs such as *ga-*. This is illustrated by the minimal pair in (2), where the singular noun *p'uri* ‘bread’ selects for *ga-* and its plural counterpart *p'urebi* ‘loaves of bread’ requires *da-*.

- (2) a. *kal-ma p'ur-i ga-mo-a-tskh-o*
 woman-ERG bread-NOM PV-PV-V-bake-RM
 ‘The woman baked a loaf of bread.’
 b. *kal-ma p'ur-eb-i da-a-tskh-o*
 woman-ERG bread-PL-NOM PV-V-bake-RM
 ‘The woman baked several loaves of bread.’ (Makharoblidze 2012:60)

Additionally, *da-* has iterative readings as exemplified in (3a), which are adequately classed as being a type of verbal event plurality. This reading may be contrasted with the preverb-less form in (3b).

- (3) a. *da-k'otsn-i-s*
 PV-kiss-TH-3SG
 ‘Somebody kisses one person many times.’
 ‘Somebody kisses many people at once.’
 b. *k'otsn-i-s*
 kiss-TH-3SG
 ‘Somebody kisses someone.’ (Tuite 1998:66)

The analysis presented here exploits these distributional commonalities and advances the view that *da-* and root suppletion are conditioned by the same functional projection. Harris (1981:295) observes that these two morphological strategies seem to be sensitive to the same features and structural configuration; she writes that ‘an adequate grammar of Georgian must include a rule that accounts for the occurrence of *da-* with plural direct objects. The same rule will account for the use of *da-* with plural subjects of inactive intransitives.’

More broadly, this paper shows that Georgian does not constitute a counterexample to Bobaljik & Harley (2017)’s generalization, which states that all intransitive verbs which supplete for participant-number cross-linguistically are unaccusatives. Bobaljik & Harley (2017) show that Hiaki, an Uto-Aztecan language, exhibits a class of verbs which have root-suppletion

¹The stems involved in the alternation are in bold.

for the number of their internal argument. The distribution in Georgian is analogous to Hiaki. In (4), we see that $\sqrt{\text{KILL}}$ in Hiaki may surface with the VIs *mea* with a singular internal argument and *sua* with a plural internal argument.

- (4) a. Aapo / Vempo uka koowi-ta mea-k.
 3SG / 3PL DEF.SG pig-ACC.SG kill.SG-PRF
 ‘He/They killed the pig.’
 b. Aapo / Vempo ume kowi-m sua-k.
 3SG / 3PL DEF.PL pig-PL kill.PL-PRF
 ‘He/They killed the pig.’ (Bobaljik & Harley 2017:9)

Bobaljik & Harley (2017) conclude that these verbs do not pose problems for two of the most prominent accounts of locality within DM (Embick 2013; Bobaljik 2012) because, in the case of the intransitives, independent language-specific syntactic diagnostics reveal that they are all unaccusative. Bobaljik (2012) posits that the relevant structural domain for suppletive alternations is that of the maximal projection. If the suppletion-triggering argument is base-generated as the sister of the root, it is indeed sufficiently local. Were the trigger for suppletion a genuine external argument (originating in the specifier of VoiceP), operating under the assumption that the derivation proceeds in a bottom-up cyclic fashion from the root outwardly, νP would render the external argument too far from the root to condition its phonological realization. Other accounts also rule out such an interaction: on Embick (2013)’s analysis, a νP constitutes a *cyclic* head which would trigger spell out of its sister including the root, meaning it would already have phonological form by the time the external argument is merged. Whether VIs may be sensitive to morpho-syntactic or morpho-phonological features closer to or further away from the root, otherwise known as the issue of *directionality* is also a matter of debate which will be discussed in more detail later on in the paper.

The paper is structured as follows. Sections 1.1 and 1.2 will respectively present the assumptions I make about Georgian morphosyntax with regards to the structure of the verbal complex and lay out the theoretical mechanisms underlying locality constraints in DM. Section 2 introduces the data from Georgian: in Section 2.2, it is shown that all intransitive verbs which exhibit number driven suppletion are unaccusatives; in Sections 2.3 and 2.4, I present arguments against an agreement-based account of the data and in favour of structurally conditioned contextual allomorphy. In Section 2.5, the preverb *da-* is discussed as an overt exponent sensitive to verbal and event plurality. In Section 3, I provide an analysis building on Thornton (2018), exploiting the insight that suppletion and reduplication overlap in their distribution, both of which can be accounted for by positing a low (νP -internal) number node.

1.1. Georgian: morphosyntactic preliminaries

This subsection serves to motivate the assumptions made about the shape of the verbal complex in Georgian, drawing primarily on discussions in McGinnis (2016) and Lomashvili (2011). The necessary theoretical background pertaining to locality and directionality in DM is then provided in Section 1.2.

Georgian is a Kartvelian language spoken by 3.7 million people natively, primarily in Georgia, where it serves as the country’s official language (see Hewitt 1995; Aronson 1990; Harris

1981 for general information on its morphosyntax). Georgian exhibits relatively free word order, but SOV can be considered the most unmarked, and it is also worth mentioning that Georgian is a pro-drop language. Case marking is split-ergative: patterns of marking are dependent both on lexical properties of the verb in addition to aspect. In traditional Georgian grammar, the term *screeve* is used, which refers to patterns of TAM marking, much like the term ‘conjugation’ has traditionally been used for many European languages (those patterns which differ only in person and number). Georgian has ten screeves altogether, made up of four conjugational classes and three series of inflection; screeves are classified according to inflectional series. Each series has different patterns of case marking (we will return to this point in Section 2 in terms of diagnostics for unaccusativity).

Georgian is a highly agglutinating language, verbs can consist of a large number of morphemes (as many as 21; Cherchi 1999:18). The shape of the verbal complex is often conceived of in a templatic fashion, seeing as the order of morphemes is fixed to some extent. The order of the first three morphemes prior to the root in the Georgian verbal complex is pre-determined, whereas post-root a number of affixes can be right-adjoined. Below is a schematic template of the Georgian verb, based on Makharoblidze (2018:163). Not all of these morphemes are always present, but their order is always subject to the same constraints.

- (5) **1.** Preverbs **2.** Prefixal nominal marker **3.** Version marker **4.** Verb root **5.** Passive marker
6. Thematic suffix **7.** Causative marker **8.** Imperfective marker **9.** Mood/row marker **10.**
 Auxiliary verb **11.** Suffixal nominal marker **12.** Plural person marker

In (6), we see that the first morpheme to be linearized is the preverb which may be separated from the root by two other morphemes, *-gv-* marks first person and *-a-* is a *version* morpheme which is tied to transitivity.

- (6) da-gv-a-ts'er-in-eb
 PV-1PL-V-write-CAUS-TH
 ‘You will get us to write them.’ (Hewitt 1995:118)

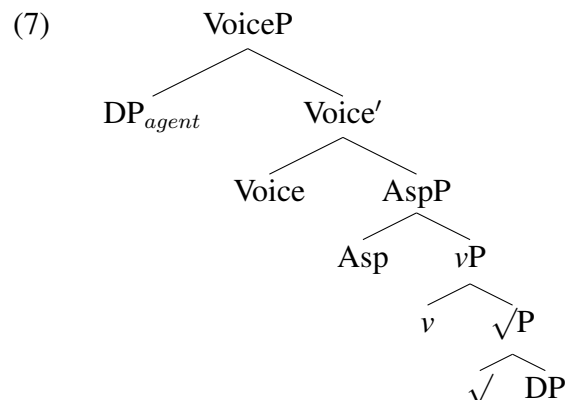
I make the standard assumption that the verb raises cyclically through functional projections upwards through Asp to the T domain.

The first templatic position in the Georgian verb phrase is occupied by a preverb, which prototypically conveys directional and aspectual meaning. I preliminarily assume that this morpheme is cliticized from a structurally low position, *vP*-internally. The second slot marks person agreement, originating in T, while the third templatic position is occupied by a transitivizing or version morpheme which corresponds to *v*. Causatives and applicatives may have a variety of exponents depending on their featural content and syntactic context. In addition, I take it that external arguments are introduced by Voice (Kratzer 1996), in the specifier of VoiceP. Roots are category-neutral and as such, verb phrases are derived from a root and category-defining *v* head. Like the direct object of transitives, unaccusative themes and patients are base-generated as internal arguments of the root; this is based on the well-established assumption that unaccusatives are structurally intransitives which lack a projected external argument (Embick & Halle 2004).

I follow Lomashvili (2011) in assuming that the linear order of affixes in Georgian can be pre-determined and may not necessarily always correspond to the order of feature-checking in syntax, though Baker (1985)’s Mirror Principle is expected to be derived from head movement

in most cases.²

The basic structure I assume for the verbal complex is displayed in (7), CP and TP domains left out for expository purposes.



Compared to its verbal morphology, Georgian nominal morphology is relatively straightforward. Georgian has no grammatical gender, however there are seven cases. Morphological case marking is uniform in the nominal domain with a single morpheme for all nouns and nominal plurality is marked with the regular infix *-eb-* which is placed between the root and case markers.

1.2. Locality and directionality in Distributed Morphology

This analysis is carried out within the DM framework (Halle & Marantz 1993). As the name implies, DM takes morphological realization to be “distributed” in the syntax: it is ‘syntax all the way down’ (Bobaljik 2015). In this section, I begin by laying out the primary assumptions which are made about the architecture of grammar in DM. Next, I focus on the most influential generalizations which have been put forth with regards to two interrelated parameters of contextual allomorphy: locality (Embick 2010; Bobaljik 2012) and directionality (Carstairs 1987; Bobaljik 2000).

Insertion of VIs into terminal nodes takes place after syntactic operations have left us with complex heads (via head movement), with feature bundles distributed onto terminal nodes. This is also referred to as *late insertion* (Harley 2014b), because morphemes with phonological structure are not inserted until after the derivation has occurred. Crucially, it is a matter of debate whether late insertion can apply to roots. Phonological operations may take place after vocabulary insertion in accordance with language-specific well-formedness constraints (Halle & Marantz 1993).

In DM, roots are category-neutral and only become verbs, nouns, etc. upon the addition of a category defining head (i.e. *v* or *n*) (Halle & Marantz 1993). Crucial to the analysis here is the notion of phase domains and cyclicity in syntax. I take it to be uncontroversial that there are locality domains which act as barriers to morphosyntactic and phonological interactions. Embick (2010) has formalized this notion in DM and posits that it is these category-defining

²I refer the reader to Noyer (1997), who argues that morphemes may be idiosyncratically determined to surface as prefixes or suffixes depending on their featural makeup.

heads which constitute the relevant phase boundaries. Hence, category-defining heads trigger spell out of their sister during vocabulary insertion.

DM derivations also make use of the Subset Principle (see e.g. Halle 1997 for a standard formulation) which states that when multiple VIs compete for insertion, the most featurally specific one wins out. A key insight of the DM research programme is that underspecification of VI-rules derives systematic syncretisms (Halle & Marantz 1994). From a learnability perspective, this is also crucial, as it prevents the interpretation of identical morphemes as accidental homophony (Embick 2013:156). Homophonous exponents ought to then be well motivated from a syntactic and semantic point of view language-internally.

Derivations in DM proceed as follows. Syntactic operations take place prior to Vocabulary Insertion. Head movement leaves us with complex heads—word formation in DM falls out from the syntactic structure, more precisely, words are complex heads formed by means of cyclic movement operations in the syntax. Movement of the root to the category defining head *v* triggers VI of its complement in accordance with phase cyclicity and assuming VI occurs from the root outwardly (Bobaljik 2000).

Crucial to any analysis of contextual allomorphy are two types of constraints: Locality and directionality. First, locality: how close do the trigger and target of allomorphy have to be structurally? Bobaljik (2012) claims that suppletion must obey strict locality: the trigger for suppletion and the root must be located within the same X^0 ; maximal phrasal projections render the relationship sufficiently non-local.

Bobaljik (2012)’s generalization is based on very robust empirical observations, for instance the split between periphrastic and suppletive constructions, the latter not being capable of conditioning root suppletion. Where a phrasal projection intervenes, as is the case with *T* in the construction *did go*, *T* is not able to condition suppletion on *go*. Conversely, if *T* and the root end up in the same m-word via head movement, the suppletive form is available, *went*, this is his Root Suppletion Generalization (Bobaljik 2012:90) shown in (8).

- (8) $\alpha \dots]X^0 \dots \beta$
 $*\alpha \dots]XP \dots \beta$

This requires the trigger of suppletion to be structurally low: located within the same phrasal projection as the root. Positing constraints on allomorphic triggers in terms of linear adjacency has also played a significant role in DM theorizing insofar as it has good empirical coverage. There are varying viewpoints regarding the type of adjacency relevant for suppletion, namely whether it is structural or linear; I refer the reader to Embick (2010) for a discussion of these issues.

In addition to locality, there is the matter of what directionality constraints hold between the trigger and target. Allomorphy can be considered inwardly sensitive when it takes into consideration material which is more inwardly embedded in the structure and outwardly sensitive when it can “see” a trigger in the other direction (Bobaljik 2000; Carstairs 1987). The fundamental question is: can allomorphy make reference to morphemes which have their phonological form already? This falls out from the notion of ‘rewriting’: morpho-syntactic feature bundles are overwritten by the phonological exponents themselves over the course of derivation. Bobaljik (2000) argues convincingly that inwardly sensitive allomorphy may only be sensitive to morpho-phonological material, i.e. phonological form. On the other hand, morpho-syntactic features may trigger allomorphy of an element lower in the syntactic structure.

Having touched on the relevant theoretical mechanisms and constraints on locality and directionality of allomorphic selection, in the following Section 2, data from Georgian will be presented. I will argue that Georgian has root suppletion only for internal arguments, using case marking as a diagnostic for unaccusativity in the case of suppletive intransitives. These data points indeed constitute cases of suppletion (defined in terms of competition for insertion) which patterns differently from phi-features agreement for person and number. It follows from the theoretical assumptions made here that the locus of such agreement (in the T domain) is not sufficiently close to affect the phonological form of the root due to intervening cyclic heads, most notably the verbalizer/transitivizer *v* head. Evidence will be presented to advance the theoretical claim that roots are subject to late insertion.

2. Georgian data

In this section, I present the relevant data from Georgian.³ It is shown that these are best characterized as contextual allomorphy as opposed to agreement. Drawing on diagnostics from Harley (2014a), and contra Borer (2014), there is sufficient evidence that in cases where we find stem alternations, we are dealing with the same verb.

2.1. List of suppletive verbs

The following five intransitive verbs supplete for the plurality of their subject (see Hillery 2013:139 and Aronson 1990:406-407).⁴

Table 1: Suppletive intransitives in Georgian

| √ | SG | PL |
|-------------|-------------|--------------|
| √GROW | b | skh |
| √FALL | vard | tsviv |
| √BE.SITTING | zi | skhed |
| √DIE | k'vd | khots |
| √SIT.DOWN | jd | skhd |

- (9) a. *v-zi-v-ar*
 1P-be.sitting-1P-AUX.SG
 'I am sitting.'
 b. *v-skhed-v-art*
 1P-be.sitting-1P-AUX.PL
 'We are sitting.'⁵

(Hewitt 1995:454)

³Georgian sentences without a citation are due to Levan Songhulashvili and Aziko Petriashvili, native speaker consultants.

⁴Georgian also has suppletion for animacy and tense, indeed, in some cases extending to multiple suppletion for the same root (e.g. animacy and tense for the verb 'bring'; Harris 1981:18-20); I leave an analysis for further work.

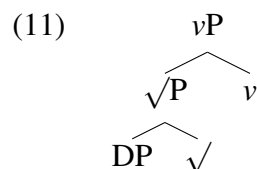
⁵Note multiple exponence for person in this example, *v* being a first person clitic.

- (10) a. potl-eb-i da-tsviv-da
 leaf-PL-NOM PV-fall.PL-AOR.3P
 ‘The leaves fell.’
 b. *potl-eb-i da-var-d-da
 leaf-PL-NOM PV-fall.SG-AOR.3P
 Intended: ‘The leaves fell.’
 c. potol-i chamo-var-d-da
 leaf-NOM PV-fall.SG-AOR.3P
 ‘The leaf fell.’⁶

There are, additionally, a number of transitive verbs which supplete for the plurality of the direct object (see Aronson 1990:406 for a list and Lomashvili 2019 for more discussion).⁷

2.2. Diagnostics for unaccusativity

If it can reliably be shown that all of the intransitive verbs which exhibit suppletion for their subject are unaccusatives, and hence originate structurally as internal arguments, there is no problem for the generalizations put forth by Bobaljik (2012) and Embick (2010). In such a case, the trigger and target of suppletion are then in a maximally local relationship: no maximal projection intervenes and they are within the same cycle. On the other hand, true external arguments (base generated in SpecVoiceP) do not fulfill these requirements and are not visible to the root prior to the latter being realized phonologically, the barrier in this case being the cyclic *v* head.⁸ A complex unaccusative head derived via head movement is illustrated in (11):



Harris (1981) provides some robust diagnostics for identifying unaccusative verbs in Georgian (what she terms ‘inactive intransitives’). Namely, in Series II (Aorist), there is a case-marking split between unergative and unaccusative predicates. The subject of unergatives patterns with that of agentive transitives and is marked ERG, whereas the subject of unaccusatives is marked NOM.⁹ Looking at the verbs in question, the prediction that they are all unaccusative is borne out with this language-specific diagnostic. The examples in (12) and (13) illustrate that the

⁶The attentive reader may have noticed the use of the preverb *chamo* in the (c) example with the singular *potoli* ‘leaf’. My Georgian consultants inform me that *chamo* is more natural in the singular as it emphasizes the direction of the falling.

⁷Tellingly, when these are passivized, it is the derived subject which controls suppletion.

⁸It is necessary to look carefully at what sorts of unaccusatives are implicated, as it has been argued that change-of-state verbs have a differing argument structure from prototypical unaccusatives, and that they merge their subject in SpecvP or higher (Cuervo 2003). All of the verbs here are prototypical unaccusatives: motion and stance or caused motion and stance verbs. Unergatives and unaccusatives in Georgian may primarily be distinguished along aspectual lines (Holisky 1981).

⁹Some agentive inactive intransitives (in Harris’ terminology) may also have ergative subject marking for some speakers (Harris 1981:270-273).

subject of $\sqrt{\text{SIT.DOWN}}$ and $\sqrt{\text{FALL}}$ is marked nominative (with the affix *-i*) which suggests that it originates as the internal argument.

- (12) bavshv-eb-i da-skhd-nen
 child-PL-NOM PV-sit.down.PL-AOR.3PL
 ‘The children sat down.’

- (13) potl-eb-i da-tsviv-da
 leaf-PL-NOM PV-fall.PL-3PL
 ‘The leaves fell.’

2.3. Against an agreement based account

A number of criteria may serve to distinguish between verbal plurality and agreement for number. The data points to phi-featural agreement being sensitive to surface relations, whereas interpretable number agreement is subject to deep relations (Weisser 2019). Weisser (2019) shows that allomorphy is not about features, but (structural or linear) positions. For one, allomorphy exhibits divergent behaviour from agreement language-internally (e.g. ERG patterning of suppletion across-the-board). Paradigms of allomorphic alternations are comparatively limited in terms of the number of allomorphic forms selected for. Allomorphy and agreement may and often do, overlap.

Firstly, looking at suppletive transitives, the number features responsible for conditioning suppletion are those of the internal argument as opposed to an agentive external argument (i.e. in SpecVoiceP), in contrast with phi-featural agreement which is exponed separately (the affixes *-o* and *-a*).

- (14) a. burt-i gada-a-gd-o
 ball-NOM PV-V-throw.SG-AOR.3SG
 ‘He threw the ball.’
 b. burt-eb-i gada-a-qar-a
 ball-PL-NOM PV-V-throw.PL-AOR.3SG
 ‘He threw the balls.’

(Wier 2011:69)

Secondly, while quantifiers and pluralia tantum nouns in Georgian demand singular formal agreement marking, they may condition the presence of the plural exponent with this class of verbs.¹⁰ It is clear that we are dealing with separate exponents for these features in (15) where a pluralia tantum DP *ri* ‘people’ displays singular agreement marking alongside suppletion for the plural allomorph for $\sqrt{\text{SIT.DOWN}}$.¹¹

- (15) r-i ese romel-i sxed-s mta-sa mas
 people-NOM this which-NOM be.sitting.PL-3SG mountain-DAT DEF
 ‘These people who are sitting on the mountain.’

(Tuite 1998:68)

¹⁰Some speakers of Georgian use plural agreement with quantifiers, perhaps due to influence from Russian (Hillary 2013:169).

¹¹Example from Old Georgian though this generalization still stands for the modern language.

The minimal pair in (16) shows that the quantifier *qvela* ‘all’ selects for the plural root *q’r* ‘throw.PL’ as opposed to *gd* ‘throw.SG’.

- (16) a. *qvela did-i kva zhnel-i-a*
all.NOM big-NOM stone.NOM hard-NOM-3SG.be
gada-sa-q’r-el-ad
PV-FUT.PART-throw.PL-PART-ADV
‘All the big stones are hard to throw.’
- b. **qvela did-i kva zhnel-i-a*
all.NOM big-NOM stone.NOM hard-NOM-3SG.be
gada-sa-gd-el-ad
PV-FUT.PART-throw.SG-PART-ADV
Intended: ‘All the big stones are hard to throw.’ (Wier 2011:50)

Thirdly, in contexts where higher functional projections are not present, suppletion can still be conditioned. In nominalizations, either a singular or plural exponent may be used depending on what is presupposed about the context.

- (17) a. *da-var-d-na*
PV-fall.SG-MAS.NOM
‘Falling’ (of a singular entity)
- b. *da-tsviv-na*
PV-fall.PL-MAS.NOM
‘Falling’ (of a plurality) (Hewitt 1995:482)

Finally, as pointed out by Lomashvili (2019), applicative constructions are an additional diagnostic which points in favour of a non-agreement approach; the suppletive alternation between *qar* ‘throw.PL’ and *gd* ‘throw.SG’ is conditioned by the internal argument *satamasho* ‘toy’, as opposed to the external argument which is marked ergative and agrees with the verb formally.

- (18) a. *Laura-m bavshv-s satamasho gada-u-gd-o*
Laura-ERG kid-DAT toy PV-V-throw.SG-AOR.3SG
‘Laura threw away the toy for the kid.’
- b. *Laura-m bavshv-eb-s satamasho gada-u-gd-o*
Laura-ERG kid-PL-DAT toy PV-V-throw.SG-AOR.3SG
‘Laura threw away the toy for the kids.’
- c. *mshobl-eb-ma bavshv-s satamasho-eb-i gada-u-q’ar-es*
Parent-PL-ERG kid-DAT toy-PL-NOM PV-V-throw.PL-AOR.3PL
‘Parents threw away the toy for the kid.’
- d. *Laura-m bavshv-s satamasho-eb-i gada-u-q’ar-a*
Laura-ERG kid-DAT toy-PL-NOM PV-V-throw.PL-AOR.3SG
‘Laura threw away the toys for the kid.’ (Lomashvili 2019:40)

Taken together, the data in Sections 2.2 and 2.3 demonstrate that it would be misguided not to treat these instances of suppletion as a genuine case of the phenomenon, as opposed to conceiving of the data in terms of agreement associated with higher functional projections. In Section

2.4, additional diagnostics are presented in order to advance this claim, more specifically I argue against the view that late insertion, and consequently, genuine root suppletion, do not exist. This hinges on whether different phonological realizations of a verb can actually be considered to be belonging to the same root.

2.4. In favour of late insertion

Verbs which select for plural arguments, such as the English *gather* and *massacre* have been written off in the literature as semantic alternations (Corbett 2000; Borer 2014). What these authors call lexico-semantic alternations are in their view independent lexical items with restricted uses to plural affected arguments. If we take the verb *gather* as an example, it is not clear what its singular counterpart would be; the necessity of a general paradigmatic contrast is stressed in order to count as ‘true’ suppletion. As opposed to paradigmatic alternations, it is a matter of lexical selection due to semantic requirements; these are separate lexical entries (Borer 2014). In this section, I argue that the Georgian data support a late insertion view of root suppletion. That is, genuine suppletion exists and roots are subject to individuation in narrow syntax (see Harley 2014b and Haugen & Siddiqi 2013 for discussion on the debate surrounding the status of roots and late insertion).

Evidence for this comes from elsewhere in Georgian morphosyntax. I adopt the three diagnostics below as indicative of true suppletion from Harley (2014a). Firstly, suppletion in Georgian is subject to strict locality conditions, as has been robustly established for contextual allomorphy cross-linguistically, speaker intuition is “categorical” in nature. In (19), replacing the plural stem *tsviv* with the singular stem *vard* renders it clearly ungrammatical, not along the lines of the effect which would be expected with the type of plural-selecting verbs mentioned above.¹² Singular and plural suppletive stems are in true complementary distribution, they compete for insertion.

- (19) a. potl-eb-i da-tsviv-da
leaf-PL-NOM PV-fall.PL-AOR.3PL
'The leaves fell.'
- b. *potl-eb-i da-var-d-da
leaf-PL-NOM PV-fall.SG-AOR.3PL
Intended: 'The leaves fell.'

The second pertinent diagnostic is behaviour under ellipsis. Were these alternating stems really two lexical items which are subject to contextual insertion constraints due to their semantics, it would not be expected that identity is retained when elided (cf. #*The women gathered but the man did not*). The ellided conjunct in (20b) selects for the singular stem *-jd-* as shown in (20a) and is nonetheless completely grammatical.

- (20) a. bavshv-eb-i da-skhd-nen magram ara qali da-jd-a
child-PL-NOM PV-sit.down-PL-AOR.3PL but NEG woman PV-sit.PL-AOR.3SG
'The children sat down, but the woman did not sit down.'

¹²It is nonetheless worth mentioning that some (especially younger) speakers of Georgian may use plural verb agreement with a singular root, however this is considered a deviation from linguistic norms (Hillery 2013)

- b. mxolod bavshv-eb-i da-skhd-nen magram ara qali
 only child-PL-NOM PV-sit.down-PL-AOR.3PL but NEG woman
 ‘Only the children sat down, but not the woman.’

The minimal pair in (21) illustrates this for $\sqrt{\text{KILL}}$.

- (21) a. chven mkholod mgel-i mo-v-k'al-it magram ara chit'i
 1PL only wolf-NOM PV-V-kill.SG-AOR.1PL but NEG bird
 ‘We only killed the wolf, but not the bird.’
 b. chven mkholod mgl-eb-i da-v-khots-et magram ara chit'i
 1PL only wolf-PL-NOM PV-V-kill.PL-AOR.1PL but NEG bird
 ‘We only killed the wolves, but not the bird.’

The third diagnostic is focal contrast. Depending on what is presupposed from the context, it is possible to use either allomorph and have focal contrast by suppletion alone, suggesting again that we are not dealing with what could be considered separate lexical items. Note that an example like (22) is different than the exchange *Who was killed* - *You mean, who was massacred?*, but rather analogous to *Who will go on the trip?* - *You mean, who went on the trip?* where what is focused is solely the issue of the plurality (Harley 2014a).

- (22) vin i-skhd-a ik'
 who V-sit.down.PL.AOR-3PL there
 ‘Who was sitting down there?’ (Plurality presupposed)

To wrap up this section, it is worth pointing out that suppletive verbs in Georgian do not seem like good candidates for a light-verb analysis. They have meanings which appear to be more encyclopaedic than anything else. Indeed, in a theory where the distinction is made between lexical and functional morphemes, the latter lacking a category-defining head, instances of apparent root suppletion can be explained away on these grounds (Embick & Halle 2005 pursue such an account for the English *go/went* alternation).

2.5. An overt exponent for verbal and event plurality

Cross-linguistically, verbal and event number is often associated with either suppletion, reduplication, or both within a single language (Veselinova 2006; Thornton 2018). In Georgian, the preverb *da-* (at least, in those cases where it forms a paradigmatic opposition to *ga-*) displays similar ergative patterning to cases of suppletion whereby it may mark plurality of the direct object in transitives or of the subject in intransitives (Makharoblidze 2012) as shown in (23) where *da-* is licensed in the presence of the plural NP *k'abebi* ‘dresses’, alternating with *ga-* in the singular. Georgian only has two possibilities for overtly expressing the plurality of a direct object for the third person (Makharoblidze 2012:60): with the addition of *da-* or stem suppletion.¹³

- (23) a. man k'ab-eb-i da-pin-a
 3SG dress-PL-NOM PV-hang-RM
 ‘He/she hung the dresses on the line.’

¹³Old Georgian had the suffix *-en* which served this purpose, see Harris (1982:296).

- b. man ga-pin-a k'aba
 3SG PV-hang-RM dress.NOM
 'He/she hung a dress on the line.' (Makharoblidze 2012:60)

Harbour (2016) points out the striking commonalities in distribution and function between Georgian preverbs and reduplication cross-linguistically. Reduplication clusters around verbal and event plurality interpretations. In addition to giving rise to participant-plurality readings, *da-* combines with a number of roots (150 or more; Vogt 1971:175) to express event plurality. Event plurality is a general term which includes iterative readings as exemplified in (24), where the events of kissing and selling are pluralized.

- (24) a. da-k'otsn-i-s
 PV-kiss-TH-3SG
 'Somebody kisses one person many times.'
 'Somebody kisses many people at once.'
- b. da-q'id-i-s
 PV-sell-TH-3SG
 'Somebody sells many things.'
 'Somebody goes around selling things.'

In (25), attention is drawn to the repetition of the motions of sliding and flying in various directions.

- (25) a. da-srial-eb-s
 PV-slide-TH-3SG
 'Somebody slides back and forth.'
- b. da-čxvl-et'-s
 PV-fly-TH-3SG
 'Somebody/something flies around.'

Compare these to examples from Niuean (Thornton 2018:393), where reduplication overlaps with suppletion and exhibits a similar range of meanings from participant plurality in (26) and (27) to iterativity in (28). In (26), we see a suppletive alternation for participant-number, where *fano* 'go.SG' is the singular and *ō* 'go.PL' is the plural VI.

- (26) a. To fano a au
 FUT go.SG ABS 1SG
 'I will go.'
- b. To ō a tautolu
 FUT go.PL ABS 1PL.INC
 'We will go.' (Haji-Abdolhosseini et al. 2018:476)

In (27) and (28), stem reduplication serves to mark iterativity.

- (27) a. Ne hoko mai a Sione
 PST arrive there ABS Sione
 'Sione arrived there.'

- b. Ne ho hoko mai a laua
 PST arrive ~PL there ABS 3PL
 ‘They arrived there.’

(Haji-Abdolhosseini et al. 2018:476)

- (28) a. Ne noko e ia e gutuhala
 PST knock ABS she ABS door
 ‘She knocked on the door (probably once but not necessarily).’

- b. Ne noko noko e ia e gutuhala
 PST knock ~ITER ABS she ABS door
 ‘She knocked on the door (many times).’

(Haji-Abdolhosseini et al. 2018:483)

In the previous section, we have seen evidence for providing a unified treatment of stem-suppletion and the preverb *da-*. Despite being affixal, *da-* patterns with suppletion as a morphological device to express verbal number. This is a tendency language-internally and cross-linguistically; Thornton (2018) discusses further data from Hiaki and Kosati, in which habitual and iterative events also overlap with participant number and are exponed via reduplication as well as suppletion.

3. Towards an analysis

3.1. Suppletion

Verbal plurality is often connected with lexical aspect/Aktionsart. Dressler (1968:51) subsumes iterative, distributive, durative and intensive readings under this category, which all relate to intrinsic properties of the verb’s semantics. Indeed, the verbs which show suppletion in Georgian form a natural class in terms of their lexical semantics in that they are all telic. This is to be expected considering Bobaljik & Harley (2017)’s generalization that only internal arguments are local enough to condition suppletion. Under the view that lexical aspectual semantics are mapped isomorphically in the syntax, all such verbs obligatorily project an internal argument.

My analysis builds on this commonality between the overt exponent of verbal and event plurality *da-* and suppletive forms. I follow Thornton (2018) who posits a vP-internal number node which may bear a [+PL] feature and is sufficiently local to the root to trigger suppletion, while still upholding Bobaljik (2012)’s generalization of strict locality (no intervening XP).

Thornton (2018) examines the analogous distribution of reduplication and suppletion cross-linguistically and proceeds to propose a verb-internal node responsible either for triggering suppletion or surfacing as reduplication. In this way, it gives a uniform account for verbal and event number taking them to be associated with the same functional projection. Under Thornton (2018), the number node values its features by looking into its c-command domain and finding the closest argument using the mechanism of Wurmbrand (2011)’s *Reverse Agree*, which states that ‘a feature F: on a head α is valued by a feature F: val on β , iff’:

- (29) i. β c-commands α
 ii. There is no γ with a valued interpretable feature F such that γ commands α and is c-commanded by β
 iii. α is accessible to β

(Wurmbrand 2011:3)

Let us now look at a sample derivation for a case of suppletion. To the left, we see the syntactic structure prior to head movement. Recall Embick (2010)’s phase cyclicity criterion: cyclic heads (in this case, *v*) trigger the spell out of their sister. We end up with (31), which shows the morphological structure derived by cyclic head movement, which mediates between syntax and PF.



We can conceive of the following VIs in (32). In accordance with the Subset Principle, the most specific item gets inserted, which in the presence of a plural feature on the number node is the second entry.

- (32) $\sqrt{\text{FALL}} \leftrightarrow \text{vard} / \text{_____}$
 $\sqrt{\text{FALL}} \leftrightarrow \text{tsviv} / \text{_____} [\#, +\text{AUG}]$

Recall that nominals which are formally singular trigger the realization of plural VIs. Taking this into account, as well as parallel behavior with pluralia tantum nouns such as the compound *da-dzma* ‘sister-brother’, it seems reasonable to posit an [+/- augmented] feature in the sense of Harbour (2014). Wier (2011) emphasizes that the conditioning root suppletion is most accurately characterized as being sensitive to a scale of individuation, mass-like entities being un-individuated though formally singular.

3.2. *Da-*

Next, how do we account for *da-*? Where does it enter the derivation? One potential analysis would be to posit that *da-* is the exponent of this number node. However, that would fail to take into account that this is far from the only use of an exponent with this phonological form.

Any morphological theory must be careful not to posit non-systematic patterns of homophony, that is, arbitrary syncretisms, predicated on the notion that VIs are underspecified in terms of the feature bundles they expone; cf. Müller (2005:236)’s **Syncretism Principle**: Identity of form implies identity of function.

Georgian preverbs are notoriously difficult to categorize and it is well out of the scope of this paper to do so adequately. Preverbs may convey temporal, aspectual and directional information and are typically analyzed as being an exponent of Asp (Lomashvili 2011). Preverbs contribute directional meaning with verbs of motion and aspectual meaning with non-motion verbs. In addition, they may change verbal valency introducing arguments and/or adjuncts, as in (33). Svenonius (2004) argues for a distinction between two types of preverbs in Slavic, which have properties ranging from idiosyncratic (non-compositionally predictable) and highly derivational to transparently compositional and inflectional (see Makharoblidze 2018 for a detailed overview of how preverbs function in Georgian). This is relevant for our purposes see-

ing as the parallels between preverbs in Slavic languages and those in Georgian are manifold (Tomelleri & Gäumann 2015). This distinction can be analysed as being a result of the height at which preverbs merge, according to Svenonius (2004), which is reflected in properties such as idiomaticity (see also Travis 2010 on outer and inner aspectual projections).

- (33) a. a-a-šen-a
PV-V-build-TH.3SG
'He/she built it.'
- b. mo-a-šen-a
PV-V-build-TH.3SG
'He/she built upon it.'
- (Makharoblidze 2018:170)

In (34), we see that combining the stem *k'itxv* 'read' with various preverbs results in meanings which are on a spectrum of idiomaticity. Spatial preverbs such as *mo-* may also combine with more idiosyncratic ones like *ga-* as shown in (34c).

- (34) a. c'a-k'itxv-a
PV-read-INF
'To read'
- b. da-k'itxv-a
PV-read-INF
'To interrogate'
- c. ga-mo-k'itxv-a
PV-PV-read-INF
'To examine'
- (Makharoblidze 2018:168)

Harbour (2016) notes that directional meanings and viewpoint aspect as well as Aktionsart are both tied to paths where the locative meaning can be grammaticalized to convey perfectivity. All verbs in Georgian which display an opposition between the presence and absence of a preverb are telic accomplishment predicates; in the aorist, the preverb form necessarily results in a completion reading (Nash 1995). Due to this and other aspectual properties, researchers have characterised preverbs as making the featural contribution of [+telic] (Nash 2017).¹⁴

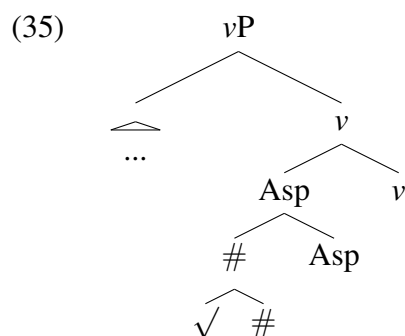
A further primary generalization to be made regarding the function of preverbs in Georgian morphosyntax is that they are present in a variety of environments where inflectional morphology originating from higher projections, such as causatives, applicatives, person/number clitics, may be omitted, as is the case in *masdars* (nominalisations) (McGinnis, p.c.) Taking this into consideration, I propose that *da-* and *ga-* are exponents of an (Inner)Asp head, following Travis (2010) and others who associate lexical aspect with a functional head structurally lower than viewpoint aspect.¹⁵

I propose that the preverb cliticizes onto the left edge, merging *vP* internally. Below, we see the complex head derived here as a result of head movement.¹⁶

¹⁴I also assume that the Georgian verbal complex may have multiple aspectual projections, McGinnis (2016) utilises stacked AspPs to explain contextual allomorphy of the thematic suffix.

¹⁵There is a connection to be drawn between iterativity and telicity; semantically speaking, telic verbs denote countable events (as opposed to processes or states.) and have the structure of atomic join semilattices like nominal count nouns, where the minimal verbal events are atomic (Bach 1986).

¹⁶Head movement is not the sole way to build the verbal complex in DM, m-merger would be another option.



This leaves us with a directionality problem, however: inwards sensitivity for morphosyntactic features ought to be impossible (Bobaljik 2000). The Asp head has to be sensitive to the [+AUG] feature on #. For this to work, it must be posited that inwards-sensitivity to phonological form suffices to condition root suppletion. In order for this to be compatible with the directionality constraint proposed in Bobaljik (2000), we would have to concede that this preverb alternation applies to an ‘idiosyncratic’ class of verbs. Referring only to phonological identity may however not be possible here, on the grounds that there are a number of potential preverb allomorphs for most roots. Whether or not this is possible depends, in principle, on the richness of phonological representations and how they may be referenced during vocabulary insertion.

We may solve this by appealing to the post-syntactic operation of Fusion (Halle & Marantz 1993). Seeing as head movement in syntax leaves the number node linearly adjacent to (low)Asp, these nodes are then able to join into a single node. The fused #/Asp node is exponed as *da-* only if the root node contains a *da-/ga-* alternating stem, in accordance with the VI rules in (36). On this analysis, Bobaljik (2012)’s locality constraint of an XP can be upheld.

- (36) # / ASP[+telic, +AUG] ↔ *da-* / _____ [√HANG, √BAKE...]
 # / ASP[+telic] ↔ *ga-* / _____ [√HANG, √BAKE...]

Alternatively, we may pursue an account whereby inwards sensitivity to syntactic features is indeed possible. This would allow us to do away with positing Fusion of NumP and (low)Asp. Gribanova & Harizanov (2017) argue that allomorphy can be inwards sensitive for gender and number based on data from Russian and Bulgarian in the nominal domain and claim that D may simultaneously be sensitive to phonological as well as syntactic features on the root.

In summary, it may well be possible to relax some of the assumptions about directionality, though doing so does require a re-thinking of how ‘rewriting’ occurs. In any case, under the account that I have proposed above, strict locality and cyclicity conditions can be maintained. Inwards-sensitivity also does not pose a problem in the first place for Embick (2010)’s theory, according to which it is linear concatenation that matters. Indeed, the relevant nodes and the root are linearly concatenated within the same spell out domain.

4. Conclusion and implications

In this paper, a number of claims have been made which have broader theoretical implications for theories of directionality and locality in contextual allomorphy.

Firstly, suppletion for participant and verbal number in Georgian is genuine suppletion, there is competition for insertion and the roots in question are encyclopaedic in nature rather than

4. Conclusion and implications

In this paper, a number of claims have been made which have broader theoretical implications for theories of directionality and locality in contextual allomorphy.

Firstly, suppletion for participant and verbal number in Georgian is genuine suppletion, there is competition for insertion and the roots in question are encyclopaedic in nature rather than functional (f-morphemes) contra Embick & Halle (2005). This can be seen, for instance, by means of identity under ellipsis.

Secondly, I provide further support for a *vP* internal node for verbal number, building on Thornton (2018). There is evidence that phi-featural agreement and suppletion/verbal number are sensitive to separate features.

Thirdly, while Bobaljik (2000)'s directionality constraints are upheld in instances of root suppletion, the preverb *da-* is a potential counterexample with regards to inwards-sensitivity to morphosyntactic features, it needs to exhibit sensitivity to the root beyond its phonological identity.

Further research is needed to evaluate the patterns of contextual allomorphy within the Georgian verbal complex from a DM perspective, as the name betrays, it is indeed *complex* and offers fruitful testing ground for theories of locality and directionality; Georgian has instances of root suppletion for aspect, tense, animacy, and honorifics (Harris 1982; Tuite 1998). Lomashvili (2019) provides an analysis of stem suppletion conditioned by number and TAM (tense and mood) marking utilising the notion of *Node Sprouting* (Choi & Harley 2019).¹⁷ While Lomashvili (2019) does not provide an account of plural *da-*, her analysis is conceptually similar to mine and makes, it seems, similar empirical predictions. However, the analyses differ in terms of more conceptual considerations as to whether number should be treated as a functional projection or an insertion of a dissociated morpheme at PF (this is the definition of *Sprouting*). Her analysis of suppletion for TAM marking suggests, interestingly, that Bobaljik (2012)'s locality constraint of a maximal projection ought to be relaxed in light of the Georgian data. The facts can however be accounted for on standard notions of cyclic heads as phase barriers as in Embick (2010).

In conclusion, the facts from Georgian add to a growing data set which demonstrates that agreement and contextual allomorphy ought not be conflated (cf. Weisser 2019).

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¹⁷This article was published after ConSOLE XXVII took place and was unknown to the author until very recently.

Abbreviations

| | | | |
|------|-------------------------|------|--------------------------|
| ABS | Absolutive | P | Person |
| ADV | Adverbial | PART | Participle |
| AOR | Aorist | PF | Phonological Form |
| AUG | Augmented | PL | Plural |
| AUX | Auxiliary | PST | Past |
| CAUS | Causative | PRF | Perfective |
| DAT | Dative | PV | Preverb |
| DM | Distributed Morphology | RED | Reduplication |
| ERG | Ergative | RM | Row Marker |
| INC | Inclusive | SG | Singular |
| INF | Infinitive Suffix | TAM | Tense and Aspect Marking |
| ITER | Iterative | TH | Thematic Suffix |
| MAS | Masdar (Nominalization) | V | Version Vowel |
| NEG | Negation | VI | Vocabulary Item |
| NOM | Nominative | | |

A note on transliteration

Seeing as Georgian is normally written in its own, Mkhedruli script, one must always make concessions with transliteration. Most Georgian characters have fairly straightforward correspondences to Latin script and are hence transliterated in a rather uniform manner across works. I have adapted transcription from elsewhere to be uniform here. It is important to know that I use apostrophes to represent ejectives, distinguishing k' from k, for instance.

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References

- Aronson, H. (1990). *Georgian: a reading grammar*, Slavica, Bloomington, IN.
- Bach, E. (1986). The algebra of events. *Linguistics and Philosophy* 9, pp. 5–16.
- Baker, M. (1985). The mirror principle and morphosyntactic explanation. *Linguistic Inquiry* 16:3, pp. 373–415.
- Bobaljik, J. (2000). The ins and outs of contextual allomorphy. Grohmann, K. & C. Struijke (eds.), *University of Maryland Working Papers in Linguistics 10*, University of Maryland, Department of Linguistics, pp. 35–71.
- Bobaljik, J. (2012). *Universals in comparative morphology: Suppletion, superlatives, and the structure of words.*, MIT Press, Cambridge.
- Bobaljik, J. (2015). Distributed morphology. [Ms]. <http://bobaljik.uconn.edu/papers/DMORE.pdf>.
- Bobaljik, J. & H. Harley (2017). Suppletion is local: Evidence from Hiaki. H. Newell, G. P., M. Noonan & L. Travis (eds.), *The Structure of words at the interfaces*, Oxford University Press, Oxford.
- Borer, H. (2014). Wherefore roots? *Theoretical Linguistics* 40, pp. 343–359.
- Carstairs, A. (1987). *Allomorphy in inflexion*. Croom Helm, London.

- Cherchi, M. (1999). *Georgian*. Lincom Europa, Munich, Newcastle.
- Choi, J. & H. Harley (2019). Locality domains and morphological rules: Phases, heads, node-sprouting, and suppletion in Korean honorification. *Natural Language and Linguistic Theory* 37:4, pp. 111–176.
- Cuervo, C. (2003). Datives at large. [PhD thesis]. MIT. <http://www.ai.mit.edu/projects/dm/theses/cuervo03.pdf>.
- Dressler, W. (1968). Studien zur verbalen Pluralität. *Phil.-hist. Klasse. Sitzungsberichte*, Österreichische Akademie der Wissenschaften, Vienna.
- Embick, D. (2010). *Localism vs. globalism in morphology and phonology*. MIT Press, Cambridge.
- Embick, D. (2013). Phase cycles, phi-cycles, and phonological (in)activity. [Ms]. <http://www.ling.upenn.edu/embick/ph-cycle-sept.pdf>.
- Embick, D. & M. Halle (2004). Unaccusative syntax and verbal alternations. Alexiadou, A., E. Anagnostopoulou & M. Everaert (eds.), *The unaccusativity puzzle*, John Benjamins, Amsterdam, pp. 137–158.
- Embick, D. & M. Halle (2005). On the status of stems in morphological theory. Geerts, v. G. I., T. & H. Jacobs (eds.), *Romance languages and linguistic theory*, John Benjamins, Amsterdam, pp. 59–88.
- Gribanova, V. & B. Harizanov (2017). Locality and directionality in inward-sensitive allomorphy: Russian and Bulgarian. Vera Gribanova, S. S. S. (ed.), *The morphosyntax-phonology connection: locality and directionality at the interface*, Oxford Scholarship Online, Oxford.
- Haji-Abdolhosseini, M., D. Massam & K. Oda (2018). Number and events: Verbal reduplication in niuean. *Oceanic Linguistics* 41:2, pp. 163–183.
- Halle, M. (1997). Distributed Morphology: Impoverishment and fission. Bruening, B., Y. Kang & M. McGinnis (eds.), *PF: Papers at the interface*, Oxford University Press, Cambridge, MA, pp. 425–250.
- Halle, M. & A. Marantz (1993). Distributed Morphology and the pieces of inflection. *The view from building 20, MIT Working Papers in Linguistics*, MIT Press, Cambridge, pp. 111–176.
- Halle, M. & A. Marantz (1994). Some key features of Distributed Morphology. *MIT Working Papers in Linguistics* 21, pp. 111–176.
- Harbour, D. (2014). Paucity, abundance, and the theory of number. *Language* 90:1, pp. 185–229.
- Harbour, D. (2016). Georgian preverbs: Reduplicative semantics without reduplication. Paper presented at South Caucasian Chalk Circle, Paris, September 22–24. <http://paris2016.mariapolinsky.com/wp-content/uploads/2015/11/Harbour.pdf>.
- Harley, H. (2014a). Hiaki verbal number suppletion really is suppletion. Paper presented at Roots IV, New York University, April 24. <https://wp.nyu.edu/roots4/wp-content/uploads/sites/1403/2015/07/harley.pdf>.
- Harley, H. (2014b). On the identity of roots. *Theoretical Linguistics* 40:3–4, pp. 225–276.
- Harris, A. C. (1981). *Georgian syntax: A study in Relational Grammar*. Cambridge University Press, Cambridge.
- Harris, A. C. (1982). Georgian and the unaccusative hypothesis. *Language* 58:2, pp. 290–306.
- Haugen, J. & D. Siddiqi (2013). Roots and the derivation. *Linguistic Inquiry* 44:3, pp. 493–517.
- Hewitt, B. G. (1995). *Georgian: a structural reference grammar*. John Benjamins, Amsterdam.
- Hillery, P. (2013). The Georgian language: An outline and grammatical summary. [Ms]. <http://www.armazi.demon.co.uk/georgian/>.
- Holisky, D.-A. (1981). *Aspect and Georgian medial verbs*. Caravan Books, Delmar, NY.
- Kratzer, A. (1996). Severing the external argument from its verb. Rooryck, J. & L. Zaring (eds.), *Phrase structure and the lexicon*, Kluwer Academic Publishers, Dordrecht, pp. 111–176.
- Lomashvili, L. (2011). *Complex predicates: The syntax-morphology interface*. John Benjamins, Amsterdam.
- Lomashvili, L. (2019). Root suppletion and the theory of allomorphic locality. *World Journal of English Language* 9:1, pp. 34–48.
- Makharoblidze, T. (2012). *The Georgian verb*. Lincom Europa, Munich, Newcastle.
- Makharoblidze, T. (2018). On Georgian preverbs. *Open Linguistics* 4, pp. 163–183.
- McGinnis, M. (2016). The morphosyntax of thematic suffixes in [g]eorgian. Paper presented at South Caucasian Chalk Circle, Paris, September 22–24. <http://paris2016.mariapolinsky.com/wp-content/uploads/2015/11/McGinnis ThemSuf.pdf>.
- Müller, G. (2005). Syncretism and iconicity in Icelandic noun declensions: A Distributed Morphology approach. *Yearbook of Morphology 2004*, Springer, pp. 229–271.
- Nash, L. (1995). Portée argumentale et marquage casuel dans les langues sov et dans les langues ergatives: l'exemple du géorgien. [PhD thesis]. Université de Paris VIII.
- Nash, L. (2017). The structural source of split ergativity and ergative case in Georgian. Coon, J., D. Massam & L. Travis (eds.), *Oxford Handbook of Ergativity*, Oxford University Press, Oxford.
- Noyer, R. (1997). *Features, positions and affixes in autonomous morphological structure*, Garland Publishing, New

York.

Svenonius, P. (2004). Slavic prefixes inside and outside VP. *Nordlyd* 32:2, pp. 111–176.

Thornton, A. (2018). Plural verbs, participant number, and agree. Bennett, W., L. Hracs & D. R. Storoshenko (eds.), *Proceedings of the West Coast Conference on Formal Linguistics* 35, Cascadia Proceedings Project, Sommerville, MA, pp. 306–311.

Tomelleri, V. & M. T. Gäumann (2015). Aspectual pairs in Georgian: [s]ome questions. *STUF* 68:1, pp. 49–85.

Travis, L. (2010). *Inner aspect: The articulation of VP*. Springer, Dordrecht.

Tuite, K. (1998). Kartvelian morphosyntax: Number agreement and morphosyntactic orientation in the South Caucasian languages. [PhD thesis]. Université de Montréal.

Veselinova, L. (2006). *Suppletion in verb paradigms*. John Benjamins, Amsterdam.

Vogt, H. (1971). *Grammaire de la langue géorgienne*. Universitetsforlaget, Oslo.

Weisser, P. (2019). Telling allomorphy from agreement. *Glossa: A Journal of General Linguistics* 4:1.

Wier, T. (2011). Georgian morphosyntax and feature hierarchies in natural language. [PhD thesis]. University of Chicago. <https://ling.auf.net/lingbuzz/002030>.

Wurmbrand, S. (2011). On agree and merge. [Ms].

<http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.470.4778rep=rep1type=pdf>.

Generic and non-generic interpretations for singular and plural subjects

Experimental studies on genericity

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This paper focuses on the morphosyntax of generic subjects in novel concept acquisition. Pitting the well-studied bare plural against the indefinite and definite singular in a picture book study, we found that indefinite singular subjects evoke, at first glance, similar behavioural results to the bare plural. However, considering their semantic differences, we investigated whether their underlying semantic representations are, in fact, treated the same. Further analyses show potentially more fine-grained interactions between the type of predicated property and the morphosyntax of the subject, in line with linguistic and psychological predictions.

1. Introduction

This paper takes observations on the relationship between the morphosyntactic form of a generic subject and the properties of its concept, and translates them into variables for psycholinguistic studies. Specifically, the sub-categorisation of generic subjects into three linguistically distinct conditions aids us in teasing apart the role of their semantic representations for the human conceptual system. The study presented in this paper addresses the importance of testing experimentally how subjects that are ambiguous between generic and episodic interpretations can easily be interpreted generically, even for less commonly used singular generic subjects. Our study shows that this holds at least for animal kinds. In addition to testing hypotheses on the availability of generic interpretations, we also address the role of the specific properties that are predicated of novel kinds. We find that while morphosyntactic variation aids us in understanding category-property links, the properties themselves can guide our understanding of these links to a significant effect.

Linguistic theory has shown that the relationship between properties and the concepts of which they are predicated is limited by the linguistic form of the subject. One popular example is that indefinite singular (IS) subjects are acceptable only when expressing principally connected properties (1-a), but not those that are merely statistically connected ((2-a), Lawler 1973). These

limitations do not apply to bare plural (BP) subjects, as (1-b) and (2-b) illustrate:

- (1) a. A madrigal is polyphonic.
b. Madrigals are polyphonic.
- (2) a. *A madrigal is popular.
b. Madrigals are popular.

Similarly, the generic definite singular (DS) is limited to predicates that can only apply to kinds¹, as in (3-a) and (4-a), but not individual instances thereof, as shown in (3-b) and (4-b):

- (3) a. The dodo is extinct.
b. *This dodo is extinct.
- (4) a. The owl is widespread.
b. *This owl is widespread.

Note here that (3-b) and (4-b) can receive an acceptable reading by being coerced into a subkind reading, i.e. *This kind of dodo is extinct* and *This kind of owl is widespread*, but this is not the intended contrast here. More to the point, talking about one instance and predicating that it is extinct or widespread is not an acceptable interpretation.

If the DS co-occurs with predicates that do not apply to kinds as a whole, it only allows for individual reference (5-a). Again, BP subjects can express this generic relationship without any of the restrictions that apply to the DP (5-b):

- (5) a. #The car has a radio. (intended: Cars, generally, have radios)
b. Cars have radios.

These distribution patterns are well-attested in the linguistics literature. We use these observations as a starting point and ask whether the same hold true of the reverse relationship: Can the morphosyntax of the subject guide the human conceptual concept? If so, can it guide us to expect that the relationship between a novel concept and its property to be likely principled or likely statistical? In more specific terms, if a novel animal is introduced with one morphosyntactic form, e.g. an IS subject, as opposed to another, e.g. a BP subject, will the participant consequently reason differently about the animal? And will they expect that a property is present in other members of the kind as well?

To test this hypothesis, we have created four versions of a picture book introducing a new kind of animal (a *zarpie*). Each version displays the subject in one of four morphosyntactic versions. These are based on our considerations about their specific semantic representations and how these link categories to their properties, laid out in section 2.1 of this paper. The study itself and the results are presented in section 3 of this paper.

After data collection, we tested further hypotheses that can alternatively and additionally explain the results of the picture book study. This is because the introduction of properties for any novel animal can raise certain assumptions if they fall within the realm of specific properties related to, e.g. the animal's diet or means of locomotion. The findings of these post-hoc item analyses that we conducted are presented in section 4.

¹The DS may also apply to subkinds, such as *The blue whale is the largest mammal*. There are other linguistic differences between kind and subkind reference, which have been addressed in McNally & Boleda (2004) and Kwapiszewski & Fuellenbach (in press), among others.

Leading on from this discussion, we address broader conceptual considerations by making reference to the concept of overhypotheses in section 5. Specifically, we analyse the properties predicated of the novel animal in the picture book by considering whether they form part of properties that are likely to be uniform across an entire kind. Addressing the role of certain types of properties that animals possess, regardless of the specific type of animal they are, helps us understand conceptualisation beyond purely linguistic perspectives and positions this research in a broader cognitive framework. The findings of this paper are summarised in the conclusions in section 6.

2. *Introducing properties of kinds*

People have extensive knowledge about the ways in which properties are connected to the categories of which they are predicated. Thinking about the challenges of learning these intricate relationships from an acquisitional perspective, one problem might be that the BP subject is by far the most commonly used. This does not mean, however, that it is always the preferred subject. We wonder how to account for the variation in subject types given a lack of variation in input and exposure. Moreover, the BP is also the subject form that is allowed in both of the two main types of connections between a category and its properties: principled and statistical connections (although there are others, e.g. striking properties, see Prasada & Dillingham 2006, 2009).

Yet, English can also use DS and IS subjects to make generic statements. These have distinct semantic representations that make them more suitable to express certain types of properties. Especially when thinking about instruction about mathematical objects, sentences like *The triangle is three-sided*, with a DS subject, might be preferred to its minimal pair with a BP subject: *Triangles are three-sided*. The distribution, interaction, and distinct semantics for these subject types have been discussed in the linguistic literature since at least the 1970s (e.g. Lawler 1973). The distinct effects of the morphosyntactic variation in English and other languages, as well as their unique status compared to quantified statements and those with specific demonstrative determiners, have been laid out in much detail in Carlson & Pelletier (1995), and specifically Krifka (1995).

Even with these linguistic differences, a corpus study we conducted found that BP generic subjects are used almost exclusively in everyday child-directed speech. Generic IS and DS subjects are almost entirely absent in transcripts of these spontaneous, naturalistic settings. An analysis of the Brent (Brent & Siskind 2001), Davis (Davis & MacNeilage 1995), Rollins (Rollins 2003), Brown (Brown 1973), and Sawyer (Sawyer 1997) corpora in the CHILDES database (MacWhinney 2000, [Talkbank Project](#)) revealed a remarkable general absence of singular generic subjects in favour of BP generic subjects (Fuellenbach in prep). This contrasts with the knowledge that, at least IS generics have a distinct and essential role in conveying information of category-property links in generic statements. Gelman et al. (1998) focus on their role in concept acquisition and production of parental, child-directed speech. However, on the whole, they are much rarer both in usage and analysis than BP generic subjects. Moreover, our focus is on generics in subject position, while in guided or prompted speech in corpora, they often occur as a predicate of phrasal segment. In these cases, it might not be clear which syntactic position the generic phrase is assigned (see also Gelman 2004). By including these occurrences, the presence of IS generics would be higher, although still not as prominent as BP

generic subjects. By comparison, DS generic subjects are even less prominently used. A more detailed corpus analysis on DS subjects in their kind-referring, as opposed to episodic function, was therefore not judged helpful in investigating the differences in usage of the three generic subject types.

Following this discussion of generic subjects, we will now turn to its role in determining the methodology of the picture book study presented below.

2.1. *All about zarpies*

The study presented here investigates how varying the morphosyntax of the generic subject when introducing a novel animal affects reasoning about its properties. By extending Gelman et al. (2010)'s picture book studies to include not only BP generic subjects, but also IS subjects, DS subjects, and a *most*-quantified control condition (MQ), we tested whether linguistically hypothesised distinctions would result in behavioural differences.

Gelman et al., amongst others (e.g. Lawler 1973), have argued that the indefinite singular “clearly implicates principled connections” (2010:296). This makes it distinct from the interpretation a generic BP subject receives. Similarly, definite singulars make direct kind reference accessible, hence the preference for “The dodo is extinct” (Borik & Espinal 2012 et seq.) as opposed to “#A dodo is extinct” (example (3) above).

The original experiments consist of a set of three separate studies, with two participant groups each (four-year-olds and adults). We chose to focus on the first of these studies with adult participants. These experiments gave the strongest results and are thus an ideal starting point to look at more fine-grained linguistic distinctions. The study consisted of three subsequent components: the category-property component, the essentialism composite, and a memory task. Both this study and our current research exploit the fact that generic language is not only a reflection of our understanding of the world but, in fact, teaches us about the relationship between objects and their properties. Rather than passively accepting generalisations, we have expectations regarding the kind of connection, be it principled, statistical or other, such as striking (Gelman et al. 2010; Cimpian & Markman 2009; Fuellenbach 2017), implied by each linguistic form.

In line with many previous psychology studies on generics, the generic label consisted of BP subjects. We extended this to a four-way subject design by adding IS, DS, and MQ subjects. The experiments can thereby highlight the role of variation in morphosyntax by changing the original subject forms (‘no-label’, ‘specific-label’, and ‘generic label’). In this between-subject wording manipulation of the picture book, participants learned different properties about the novel animal (e.g. {Zarpies, A/The zarpie, Most zarpies} hide(s) behind fences / sleep in tall trees.). Then they were asked questions targeting their understanding of the category-property links and essentialism of the properties to the new animal kind. This is because our main research interest, while closely related, is distinct in that it takes the finding that people tend to generalise to other instances of a kind when presented with generic language, and further asks what types of expectations they raise when presented with different types of generic language. In other words: based on our assumptions about the linguistic properties of IS or DS generic subjects, do participants still expect the same kinds of connections between the subject and its property or do we find more fine-grained distinctions?

We will focus on each of the three experimental components in turn. First, the category-

property component measured “the extent to which [participants] linked the category to the properties expressed” (Gelman et al. 2010:273) and is relevant for our version of the study, as it directly targets the relationship between the generic subject and its property. With it testing the strength between subject and property, we hypothesise that when a connection between category and property is judged as strong, this “impl[ies] that a range of zarpies (zarpies in general) have this property. Thus (...) [participants] did not restrict this property to the instance at hand, but instead readily generalized this fact to other zarpies” (2010:284). Thereby, BP generic subjects licensed high expectations in the face of low prevalence. This effect of generic language has been observed independently (Rhodes et al. 2012).

Second, the essentialism composite directly feeds into these questions by assessing “the extent to which [the participants] treated the category as constituting an essentialized kind” (2010:273). It raises the issue of whether participants believe in a shared, underlying commonality among members of a kind. These features are “a cluster of non-obvious, inherent properties” (2010:274), at least for natural kinds.² These essentialist beliefs are proposed to be stronger if the subject is presented in generic form (in the original case, in the BP), as this implies that the category has properties with an underlying basis that connects the property to the members (and thereby instantiations) of the kind. Compared to the specific-label and the no-label condition, participants “treat the category as more stable, more inductively rich, etc.” (2010:285) with a generic label. If generic subjects give us access to understanding a category in general, as opposed to providing data points about an observation of a specific instance, this link between category and property is expected to be stronger if the information is expressed in a linguistic form that matches the generalisation. By extension, we hypothesise that generic statements, by virtue of expressing generalisations, are hypothesised to imply tighter category-property links than linguistic forms that merely support episodic observations about individuals. We expect to find more graded response patterns based on the type of generic subject with which participants were introduced to the category. We do not expect that the BP is representative of all properties that can be expressed by the morphosyntactic forms available in English. Instead, we argue that they carry distinct semantic assumptions. In other words, we are not solely interested in the strength of the link but also in the kind of link, which can be principled, accidental or causal (Prasada & Dillingham 2006, 2009).

Finally, the memory component serves to test whether participants were mindful of the wording and information provided, thereby ensuring that the observed effects can truly be attributed to the wording of the subjects. Participants are asked to recall the information that was provided in the picture book and fill it in, as precisely as possible, in a blank version of the picture book.

We acknowledge that different kinds of categories (e.g. natural kinds, social kinds, artefacts etc.) behave differently in generalising statements but will focus on just natural kinds in this paper. In addition to that, the interpretation of the property depends partially on the kind of category of which it is predicated (e.g. terms predicated of animal kinds are more likely to be expected to be principally connected than colour terms predicated of artefacts). In the experiments proposed here, we restrict our stimuli to novel animal creatures and thereby restrict the interpretation of how certain properties usually relate to them. Consequently, we expect participants to extrapolate from their current knowledge on the available types of connections between animals and the known properties, even without any further information about how the (known)

²We leave aside the question of how these properties would be ascribed to underspecified categories, that could be introduced in a pseudoword paradigm, or for other types of categories, such as artefacts.

properties are in fact related to the novel animal kind.

2.2. Test booklet

Gelman et al. (2010) used a tripartite test booklet with a battery of questions to target participants' understanding of category-property relationships, essentialism of properties, and their memory, to ensure they recalled the information conveyed via the stimuli throughout the experiment. The full set of tasks is presented in Table 1 below, grouped by the composite of which they were a part.

Table 1: Test batteries in Gelman et al. (2010) [adapted from Gelman et al. (2010:279), their Table 3]

| TASK | # OF ITEMS | EXAMPLE |
|------------------------------------|-------------------|--|
| <u>Category-property composite</u> | | |
| Categorization | 4 | Can you find another one? |
| Familiar induction | 6 | Do you think this zarpie <i>P</i> -s |
| Explanation (scope) | 4 | Why is this <i>P</i> -ing? |
| <u>Essentialism composite</u> | | |
| Explanation (content) | 4 | Why is this <i>P</i> -ing? |
| Stability | 6 | <i>True at 4 years old? True always?</i> |
| Inheritance | 4 | <i>Birth mother vs. adoptive mother</i> |
| Novel induction | 6 | <i>see 'familiar induction'</i> |
| Match taxonomic/thematic/shape | 4 | <i>Match with one of three choices</i> |
| <u>Memory composite</u> | | |
| Picture memory | 4 | <i>Which of these two zarpies was in the book?</i> |
| No label (subjects) | 17 | <i>Correct subject label</i> |
| No label (predicates) | 58 | <i>Correct predicate label</i> |

The subjects in our proposed experiments were worded in one of four conditions (generic BP label, generic IS label, generic DS label, and the quantified label 'most'). The stimuli were presented to the participant in one of four versions of a picture book, based on the ones used in the original experiments (Gelman et al. 2010). We expect that the questions targeting category-property links and essentialism will enable us to uncover subtle semantic differences in the subject form by the participants' distinct behavioural responses. We have included all three questions from the category-property composite.

In the essentialism test battery, we expect the IS to score significantly higher than BP plurals. The 'explanation (scope)', 'stability', 'inheritance', and 'novel induction' tasks will provide us with insights that are similar to questions that we have previously asked to understand whether a connection between subject and property is principled or statistical. We will include all five questions from the essentialism composite.

Finally, we have chosen to also include the picture memory task from the memory composite to check participants' attention, but to reduce the number of blank pages to two. These were randomly selected for each participant.

2.3. *The role of singular generic subjects*

The subject condition was fixed within each picture book, rendering a between-subject comparison. Thus, the addition of two singular generic subjects allowed us to draw more detailed comparisons, based on and extending Rhodes et al. (2012).

We argue that, unlike the BP and the IS, the DS does not only make generic reference but denotes kinds directly (Borik & Espinal 2012; Fuellenbach 2017). We therefore treated the semantics of the DS as a more specific type of generic reference. It is linguistically distinct from the IS and BP in that it is argued that its NUMBER value is neither [singular] nor [plural], but numberless. Syntactically, this means that while both IS and BP have a NUMBER-phrase, #P, in the structure of their subject DP, this covert projection is lacking for kind-referring DPs (Borik & Espinal 2012, 2014, see also Borer 2005).³ Its surface structure is identical to the definite singular, i.e. the underlying structure of a subject which is made up of a definite determiner and a noun, with episodic reference. The kind-referring equivalent is therefore often assumed to also be [singular].⁴

A previous pseudoword study also investigated the effect of morphosyntactic differences in generic subjects on expectations as to the kind of concept-property links (Fuellenbach 2017). In those experiments, generic IS subjects led participants to have higher expectations of the connection between subject and property to be principled than when the properties occurred with a BP subject. Because IS subjects refer to individuals rather than groups of individuals, participants came to expect that a property introduced with an IS subject would be principally connected to new objects since the semantics of the IS required that each individual possess the property.⁵

The DS, by contrast, displayed an asymmetrical pattern. Properties that were introduced with a DS subject led participants to have lower expectations of the connection to be statistical. Following the hypothesis that DS subjects directly refer to kinds, we argue participants came to expect that a property introduced with a DS subject was less likely to be statistically connected to a new object. This is because these types of generalisations about kinds have to do with their essential causal properties.

Taking these results into consideration, we predict that IS and DS subjects will show individual patterns that are unlike the previously tested BP.

³While we may reanalyse a kind-referring definite 'singular' subject as a 'definite numberless' (DN), this theoretical distinction has no direct bearing on the argument presented here. Thus, we continue to refer to it as a DS subject. Where the difference between generic and non-generic definite singular/numberless subjects is crucial, this distinction should be made explicit.

⁴For a more detailed account of some theoretical assumptions that have been made over the course of the formal treatment of generic and kind-referring interpretations of *the*, refer too to Bacon 1973.

⁵These assumptions have been laid out in more theoretical detail in various publications, e.g. Burton-Roberts 1976.

2.4. Graded strength effects

We predict that the strength of the connection between subject and property will be graded based on the form of the subject with which the zarpie was introduced. In the first instance, the results should reflect the data previously collected by Gelman et al. (2010). We expect that subjects in the ‘BP-generic’ (BP) condition will continue to show tight category-property links, in line with the original findings in Gelman et al. (2010). This is based on the semantics of BP subjects, which allow for both the principled connections that we find with IS subjects and statistical inferences based on averaging of property occurrences over the individuals that possess them. The BP will thereby offer a baseline against which to compare the other subject types. We explain the findings of BP subjects in English by the fact that they allow for both principled and statistical generalisations. Thus, their category-property links and levels of essentialism of the properties can be hypothesised to be high when necessary, as well as based on mere happenstance for properties that would not normally be expected to be tightly connected to the category.

The MQ label served as a baseline condition against which to compare the three generic connections. It presents the novel animal quantified with ‘most’, which is argued to only tap into statistical connections with majority prevalent properties. In terms of experimental predictions, subjects that are quantified with a majority quantifier should behave similarly to the BP in that the overall scores should be high. This is due to the fact that the predicated properties are expected to be prevalent in most instances. However, this should not necessarily lead to the assumption that they are essential to the category. Scores in the essentialism composite should be lower than for IS and DS subjects, but similar to the BP, which also allows for merely statistically connected properties. Note also that the precise syntax of the plural can differ between languages, as it may occupy different layers of the DP. Butler (2011, 2012) provides a detailed analysis of the distinct syntactic positions of the plural in Yucatec Maya, Korean, English, and Romance-type languages, some Innu-aimun plurals, and Upriver Halkomelen. For the purposes of this paper, we assume that the English-style plural is positioned in #P and thus merged as a head, not an adjunct. Support for this comes from the obligatory marking of plural in English.⁶

The semantic representation of the indefinite singular is such that each instance of the kind is expected to possess the predicated property. The ‘IS generic’ (IS) condition is therefore predicted to lead participants to expect that the connections between subject and property are more likely to be principled. Thus, ‘IS-generic’ subjects should show the strongest connection between the subject and property. Specifically, this means that the IS is hypothesised to score higher ratings in the category-property links composite and the essentialism composite than the BP.

The semantics of ‘DS generic’ subjects (DS) establishes reference to kinds. This wording condition should therefore support the belief that the connection is less likely to be statistical, since properties predicated of kinds, and not instances thereof, do not rely on statistical connections. Any property that could merely just happen to be predicated of the zarpies in the book, should receive lower ratings in both the category-property links and the essentialism composite. If the DS is interpreted in its kind-referring function, we predict that the DS will score high in the category-property composite, indicating tight links between the category and its properties,

⁶We thank an anonymous reviewer for pointing out the relevance of the underlying theoretical assumptions about the plural in English as well as its differences when comparing the syntax of NUMBER cross-linguistically.

as well as higher ratings in the essentialism composite than the BP. However, we are aware of concerns that a DS subject might be more difficult to interpret generically than other subject types. Due to the high level of ambiguity between generic and episodic interpretations, participants might also give DS subjects much lower ratings, in line with a specific interpretation of ‘the zarpie’. Part of the underlying reason for these experiments is to ascertain whether this assumption holds true experimentally.⁷

3. Experiment: Do you know about zarpies?

3.1. Participants

Fifty-six adults (33 female) participated in the experiment. They were assigned one of four conditions (n=14 each). The adults were mostly undergraduate or graduate students at the University of Oxford, gave informed consent to participation, and received either course credit (3 credits) or financial compensation (£7.50) for their time.

3.2. Items

The items were adapted from Gelman et al. (2010)’s study and included two new generic subjects. The way that the three generic subjects contrast and interact with the different types of properties was the focus of this extension of the original study.

The replication study kept the between-participants design. Pictures were presented to the participants in one of four conditions: BP, IS, DS or MQ.⁸ As in the original study, there were 17 zarpies in the book about which participants learned properties and three additional zarpies on the cover that were not repeated in the picture book. The sentences were templatic, i.e. they did not vary throughout the book, and followed the form: *Look at this zarpie! {Zarpies / A zarpie / The zarpie / Most zarpies} hide(s) behind fences.*

This text was presented on one page, as illustrated for the BP prompt in Figure 1, followed by a picture illustrating a zarpie and the aforementioned property on the next page (as in Figure 2).⁹

To summarise, we ran a pilot study that looked at whether the four wording conditions, three generic and one quantified one, would result in differential judgements for category-property links and essentialist beliefs. These were targeted by a test booklet with a variety of questions that fall within the three composites introduced in Table 1: category-property links, essentialism,

⁷Note further that with the correct intonation, the DS subject very much sounds like instructional, child-directed speech, e.g. “The elephant (*pause*) lives in Africa”. For a more detailed overview on the relationship between semantic interpretation and pitch, see also Kratzer & Selkirk (2007) and Longobardi (2000:694).

⁸The original studies included a specific condition “This zarpie...” as a baseline condition. We were interested in comparing the BP, which allows for statistically connected properties, with a quantifier, i.e. a linguistic marker that explicitly allows for only statistically connected properties, in this case a majority subset. Future studies should also include the original baseline condition ‘this’ to allow for comparisons between the studies and the different generic subject forms.

⁹Relatedly, we would be interested in the different types of connections these properties could have with the kind. To illustrate, ‘has stripes at the bottom of their feet’ is more likely to be a principled connection for animal kinds, whereas ‘hates ice-cream’ is more likely to be an idiosyncratic property that is statistically prevalent. However, this raises the question of which connections can a priori be deemed as principled and as statistical as part of the data analysis. A clearer distinction between these properties will be considered in future experiments.

Look at this zarpie!
Zarpies hide behind fences.

Figure 1: Sample prompt from Zarpies picture book, BP generic condition.



Figure 2: Sample image from Zarpies picture book, BP generic condition.

and memory.

3.3. Procedure

Participants were tested in a quiet lab environment, either individually or in small groups of up to four people. Participants received a Participant Information Sheet via email and again before the start of the experiment. They were encouraged to ask any questions they might have before the start of the experiment.

The experiment itself consisted of four parts, replicating the methods and procedures in Gelman et al. (2010)'s Study 1. First, participants read through the picture book for five minutes. They were instructed to continue reading through the book for the entirety of the five minutes, even if they finished reading it in less than the allocated time. Participants then moved on to a distractor task, solving as many multi-digit multiplication problems as possible during a four minute period. The third part was the testing phrase during which participants were asked to fill out the test booklet introduced above. It targeted multiple aspects of the novel animal kind that was introduced during the reading of the picture book. Finally, participants filled out an essentialism questionnaire that assessed their beliefs about how essential, innate or stable they judged certain properties to be for people in general (based on Gelman et al. 2007, 2010; Haslam et al. 2000). The version used in this replication was a reduced variant of the questionnaire used in the 2010 studies, including 80 of the 140 items, or four out of the seven 20-question categories, which were randomly chosen. Participants rated how much they agreed with statements on a 6-point Likert scale. Its purpose was to find a baseline of essentialism within and between groups to allow for adjusted comparison between the different conditions, if necessary. The entire experiment lasted between 30-45 minutes.

3.4. Analysis and coding

Coding was carried out as it was executed in the original studies. The 'explanation scope' and 'explanation content' sections were scored by two coders. Inter-coder agreement was 92.86% for the 'explanation scope' and 85.71% for the 'explanation content' section and any discrepancies were resolved by discussion.

Some additional analyses were carried out to test further hypotheses, complementing those in the original studies. This applies to the binary coding of the "match taxonomic/thematic/shape" questions in the original 2010 studies, which was extended in certain categories to catch the full range of possible answers. In the original studies, participants received one point for the 'taxonomic' explanation and zero points for either the 'shape' or the 'property' match response. In this version of the analysis, we took into consideration which of the alternative answers participants selected, so as to avoid scoring '0' when a participant chose either the 'shape' or the associated 'property' match, instead of the 'taxonomic' option. Instead, both alternative answers were given independent scores. This means that for each wording condition, there were independent scores for the 'taxonomic', the 'shape', and the 'property' match.¹⁰

¹⁰Further, for the "match taxonomic/thematic/shape" task, we will not know why participants chose one option over the other two. Thus, we will pay special attention to the justifications in the 'explanation' tasks to see if there are patterns that emerge for specific items or participants.

3.5. Results and discussion

3.5.1. Inferences about category-property links

Overall, the results from the original study were closely replicated, with the scores for category-property links of the 2010 study just outside one SE of the replication study. In general, participants were highly likely to expect properties associated with *zarpies* to extend from the instances presented in the picture book to novel instances in the test booklet,

This holds well in the case where the *zarpies* were introduced with a BP subject. Similarly, when the *zarpies* were introduced in the IS, participants expected the properties ascribed to them to also hold true of novel instances, i.e. participants were likely to generalise and extend them to previously unseen instances.

One of our predictions was that the IS subject (orange bars, all further references are made to Figure 3) leads to higher scores in the category-property composite of the test booklet (as defined in Table 1 above). This could be seen as indicative of the assumption that IS generics raise expectations of principled connections between kind and property. However, the scores for IS subjects were not significantly higher, compared to the BP (paired one-tailed t-test, $p=0.29$).

The DS subjects (yellow bars) scored significantly lower in the category-property composite than the other two generic subjects (35.71%), and is significantly different from all other subject conditions ($p<0.001$). “The zarpie” seems to be mostly interpreted non-generically.¹¹ Taking a look at the results from just the properties that were used in the familiar property induction task, they illustrate the systematically lower scores for DS subjects. Table 2 provides an overview of all the ratings for the familiar property induction task:

Table 2: Summary of item analysis (familiar property induction)

| WORDING CONDITION | TOTAL(%) |
|-------------------------|----------|
| Bare Plural | 90.48 |
| Indefinite Singular | 86.90 |
| Definite Singular | 46.43 |
| <i>most</i> -quantified | 95.24 |

In general, if the strength of the link between category and property, as assessed by the questions in the test booklet, is an indicator of whether properties are seen as generalisable to novel instances of the category, and are therefore expected to be found in all instances (unless there is an underlying reason that explains why a novel instance does not possess the property), then all generic subjects except the DS seem to be on par with merely statistical knowledge. Based on claims in the literature, this indicates that a DS subject allows for kind-reference, but that it is more ambiguous between the individual and kind-reading than the other subject types in this context. Future studies with a larger sample size will be helpful in further addressing this hypothesis. These should further consider whether the types of questions asked in the test booklet are appropriate to investigate whether a connection between kind and property is likely to be

¹¹Due to the preliminary nature of the data, it is not possible to analyse the data patterns in more detail, although we noticed that the data for DS subjects had a wide range. This should be pursued in future studies to investigate whether a bimodal distribution exists, in line with the generic and non-generic interpretations of the subject.

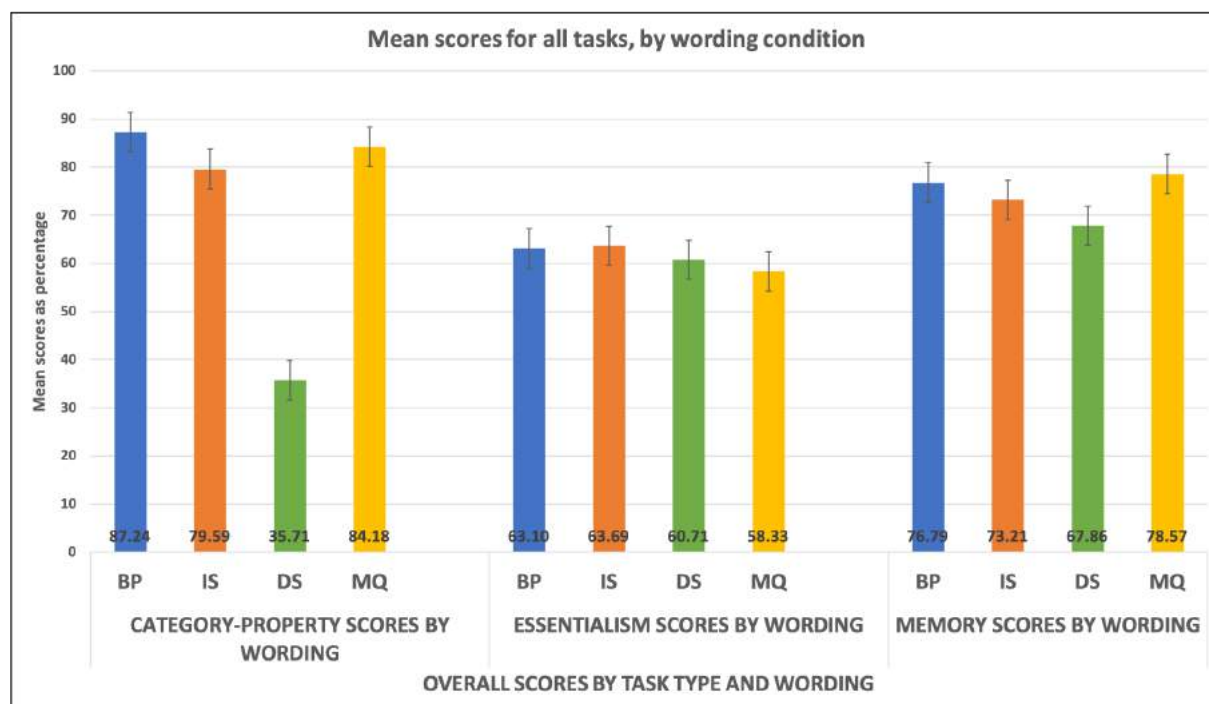


Figure 3: Mean scores for all tasks by wording condition, where ‘BP’ = bare plural, ‘IS’ = indefinite singular, ‘DS’ = definite singular, and ‘MQ’ = most quantified. Error bars = SE

principled. A re-evaluation thereof might explain the similar responses for category-property scores for BP and IS and essentialism scores for all three generic subjects in these experiments.

The MQ subject condition (yellow bars) was included as a baseline comparison for statistical measures, since participants should extend the existence of properties of one instance of a zarpie to others when being told that ‘most zarpies’ have the predicated property. The category-property link scores are similar to the BP, which is hypothesised to allow for averaging over groups and statistical connections. Therefore, their similar behaviour supports the hypothesis that majority statistical properties can be expressed with BP subjects, like the overt quantifier ‘most’.

To compare the current results with the original generic condition in Gelman et al.’s study, the results obtained in the BP condition were isolated for all three task types. The category-property links scored 87.24% (SE=4.57; original study: around 82%), essentialism at 63.10% (SE=4.43; original study: around 60%), and memory at 76.79% (SE=5.54; original study: around 78%).¹² Figure 3 shows a close replication of the BP condition (blue bars), as explained above.

3.5.2. Essentialism

The tasks in the essentialism composite targeted properties that we expect to be highly prevalent amongst members of the category. If they are essential to the category, they should be easily extended to other instances of the kind. The specific questions in the test booklet that targeted

¹²Gelman et al. (2010) note that across conditions, recall was over 75%, and the current responses are also about 75%. Most errors were related to recall of the predicate. Our findings, as will be explained in Memory below, show that in the DS subject condition, more errors occurred for the subject form compared to recall of the other subject conditions.

the essentialist beliefs of the participants addressed ‘explanation (content)’, ‘stability’, ‘inheritance’, ‘novel induction’, and ‘match (taxonomic vs. shape vs. property)’ as outlined in Table 1 above. When answering these questions, properties that are accidental to the kind would not be sufficient to allow for the extension of these properties to other instances. To illustrate, in the ‘inheritance’ task, a novel ‘zarpie’, as a member of the kind *zarpie*, would still possess properties that other zarpies possess, even if it did not grow up amongst zarpies. It simply must possess its zarpie-like properties (unless something went wrong with it, e.g. it was subject to an accident or a genetic disease). Similarly, a property tested for ‘stability’ would be expected to be present in one individual zarpie, and almost always regardless of its age or developmental stage.

A single-factor ANOVA shows that there is no significant difference between any of the groups ($p=0.86$), and a paired t-test between the IS and MQ, which show the biggest difference in essentialism scores, detects no significant difference either (one-tailed, $p=0.09$). However, we note that the sample size was small. Thus, these analyses are underpowered and unlikely to detect condition differences.

Previous literature provides strong support for the hypothesis that generic language strengthens the link between category and property more than mere prevalence (and vice versa leads to higher prevalence estimates than typically found, e.g. Khemlani et al. 2007, Leslie et al. 2011). Thus, even though MQ subjects seem to fare as well as generic subjects, we still expect that there is a difference in how they are processed that can be detected with the right type of experimental design.

3.5.3. Memory

Participants’ memory recall rate was lowest for DS subjects (67.86%), while BP, IS, and MQ conditions had a more accurate recall (76.79%, 73.21%, and 78.57%, respectively). For DS subjects, many participants falsely recalled the subject as a demonstrative, which only allows specific reference (e.g. ‘this zarpie’).¹³ This supports the hypothesis that the lower category-property link scores were due to participants not having a generic interpretation of the information presented. Notably, participants scoring high on the category-property link composite and the essentialism component of the study recalled the subject form more accurately or sometimes even falsely recalled them as another generic subject type (e.g. ‘zarpies’). It is of interest for future studies to investigate these differences with more detailed memory tests to better understand when DS subjects are recalled as generic and when they are misremembered as specific.

Similarly, some of the responses in the IS condition falsely recalled the subject form as a plural, indicating that they had a generic interpretation but did not specifically recall its linguistic

¹³I thank an anonymous reviewer for pointing out that alternatively, one might argue that this is a recall effect based on the introductory prompt on each page of the picture book, regardless of the subject condition of the picture book, since every prompt began by stating “Look at this zarpie! The/A/This zarpie(s) ...”. I have not specifically tested this hypothesis experimentally. It is not unlikely that this prompt has a carry-over effect on the recall of the generic (or control) sentence. However, this did not affect the memory recall for any of the other wording conditions, although one might argue that the demonstrative ‘this’ and the definite determiner ‘the’ have the largest phonological overlap and this effect could be hypothesised to be largest in this condition. Further, this brings forward a discussion on whether memory recall is a useful proxy to ensuring whether distinct generic interpretations were achieved based on the morphosyntactically distinct subject forms. While I believe that memory components are a useful way of attention checks, I do not think that the implicit learning that was targeted in this study is dependent on explicit recall of the linguistic form.

form. On the one hand, this suggests that the subtleties of morphosyntactic form can influence our conceptual interpretation without the need for correct recall of its form. These falsely remembered subject forms hint at how participants encode conceptual input but do not rely on the exact form in their own output, if another form with a similar function can also be used. On the other hand, these false recalls can also be seen as problematic, in that they might be stored without the associated semantic representations that distinguish them from one another.

Overall, this experiment showed that the paradigm of the original *zarpies*-study may partially extend to other generic subjects as well. However, the test batteries of the original studies were not able to confirm the distinct hypotheses for the three separate generic subjects in English. To address this, we decided to have a closer look at another possible factor, namely the effects of the properties of specific items. Moreover, we can thereby link the results more closely to previous research hypotheses. In particular, it allows us to think about properties in terms of whether they are likely principally or statistically connected to a novel animal, which was raised by Prasada & Dillingham (2006, 2009). Finally, this also returns to the distinction of property types that was mentioned in footnote 9 above. This analysis of the items used in the study is presented in section 4 below.

4. *Post-hoc item analysis*

For our post-hoc item analysis, we used an alternative scoring method. In addition to the original overall scores, we compared how individual properties fared. Every predicate within a battery of questions was compared to the other predicates in the same set. We found that certain properties consistently scored higher than others across the board, regardless of their linguistic subject form. These high scores are unlikely to be attributable to the linguistic form but rather reflect something characteristic of the property itself. Some quality of this property, at least when predicated of an animal kind, appears to make it easily extendable to new instances, accounting for higher ratings of questions targeting category-property links and essentialism. We analysed the high variation of acceptance rates within the category-property composite and the essentialism composite. To do so, the individual properties that were assessed in the testing phase of the experiment were compared separately, and collapsed by wording condition.

We begin by looking at the familiar property induction task (as introduced in Table 1 above), which targets category-property links by asking whether participants can “find another one” based on a property they have encountered before (Figure 4). We found that some properties received higher ratings for the questions targeting category-property links across the board. An ANOVA detects no significant difference between the three properties ‘bounces a ball on its back’, ‘stands up on its hind legs when surprised’, and ‘hates ice-cream’.¹⁴

Turning to the novel property induction task, we compared the three properties that participants were not introduced to in the picture book but then asked about in the test booklet: ‘dance in circles’, ‘buzz when angry’, and ‘play frisbee’ (Figure 5). They then judged in terms

¹⁴However, a preliminary analysis, looking at the individual data patterns of the properties, broken down by the four wording conditions, shows that there are distinct relative patterns for each property, emerging within each wording condition. These differences do not come out in this analysis since they are all at different magnitudes. Due to the small sample size, these analyses by wording condition do not have enough power to generalise based on these results. Similar to Figure 4, ‘stands up on its hind legs when surprised’ scores highest and ‘bounces a ball on its back’ scores lowest. We will return to a discussion of the possible underlying reasons in Section 5 below.

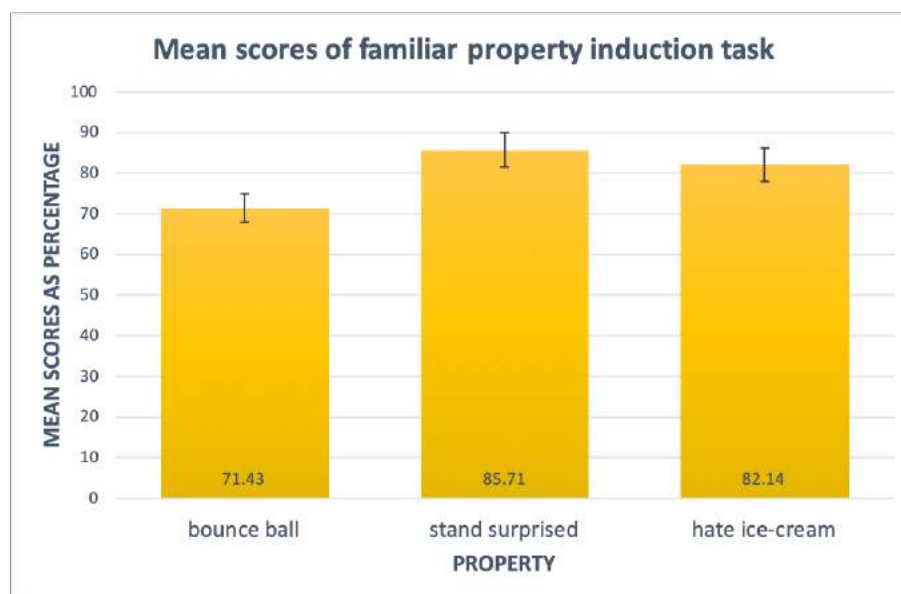


Figure 4: Item analysis for familiar property induction task. Error bars = 95% confidence interval.

of whether they think another zarpie, again one they had not seen in the picture book, would also have this property.

Overall, all three properties received lower ratings than the familiar properties in the previous task. We hypothesise that this might be due to the unfamiliarity and therefore provides support for the idea that the training phase with the picture book helped participants understand the tight link between the property that is predicated of the zarpies. An ANOVA shows a significant difference between property types ($p=0.003$), where ‘dance in circles’ scores significantly lower than ‘buzz when angry’ and ‘play frisbee’.¹⁵

Finally, we turn to the questions targeting beliefs about inheritance of properties. For the four properties (‘chases shadows’, ‘sings’, ‘wiggles its horns when it is happy’, and ‘eats tulips’, illustrated in Figure 6), an ANOVA reveals a significant difference between these properties ($p<0.001$). This is driven by the low scores for ‘chases shadows’.¹⁶ By contrast, the other properties were all rated above chance. We note that the property ‘wiggles its horns when it is happy’ receives particularly high scores.

In general, we can see that there are some relative patterns that show up for the different properties regardless of the wording condition they were presented in. The amount of data collected in this pilot study does not give sufficient power to analyse whether these patterns are significant, especially for an analysis within each wording condition. However, the patterns displayed for those properties that consistently scored higher, independent of their subject form, raise the question of whether there is an alternative explanation. For instance, it is noteworthy

¹⁵We also had a preliminary look into the patterns for the scores of different properties within the wording condition. Again, we do not have the power to conduct a full analysis, but we saw the same tendency towards repeated relative patterns for IS and DS subjects.

¹⁶As for the familiar property induction task and the novel property induction task, a preliminary analysis was conducted, looking at the individual data patterns. Similarly, ‘wiggles its horns when it is happy’ consistently scores the highest, closely followed by ‘eats tulips’ and ‘sings’. The lowest scores across the board are found for ‘chases shadows’.

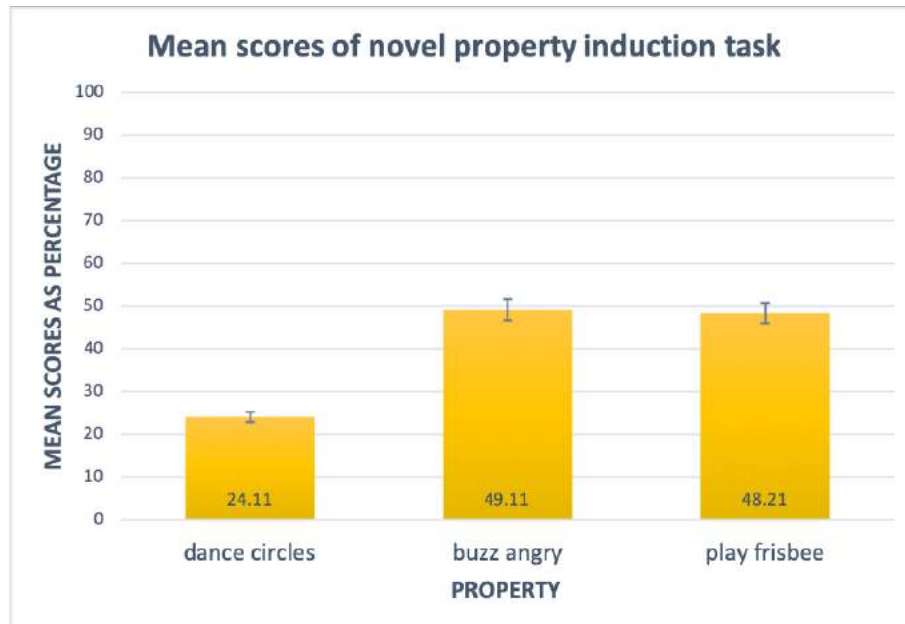


Figure 5: Item analysis for novel property induction task. Error bars = 95% confidence interval.

that these specific items scoring higher were ‘wiggling their horns’, ‘eating tulips’, ‘buzzing when angry’, and ‘standing up on hind legs’. These properties can be argued to be properties that are typically thought to be part of *overhypotheses* in animal categories. In short, overhypotheses are formed based on properties related to locomotion, diet, reproduction, etc., i.e. those that are more easily generalised in animal categories as they are thought to be more consistent across different kinds and subkinds. The next section relates this theory to the patterns observed in this section in more detail.

5. Overhypothesis

To provide a more detailed account of the post-hoc analysis above, we will focus on the specific properties used in the experiments. This explanation might not only be an alternative explanation for the observed variation, but would add to the debate by being in line with independent theories, discussing higher level notions of the organisation of the human conceptual system. This would allow us to make predictions about the behaviour of specific types of properties in future experiments. We are focusing on the theory of overhypotheses, which was first introduced by Goodman (1955) (cited from the second edition, Goodman 1983:Chapter IV), addressing a variation of the problem of induction (Hume 1748). Goodman argues that there are multiple levels involved when abstracting away from specific instances to arrive at a generalisation. We generate these abstract hypotheses to capture similarities from a variety of specific instances.

A quick and efficient form of inductive learning comes from forming an overhypothesis, i.e. “a second-order generalization about categories in general” (Dewar & Xu 2010:1871). These generalisations allow us to form hypotheses not only about the one category that we are exposed to, but all categories that are similar to each other and related via a superordinate kind. To illustrate, in Goodman (1983)’s experiments, participants were shown a marble from a bag containing multiple marbles. Each marble from a new bag varies in colour but crucially, every

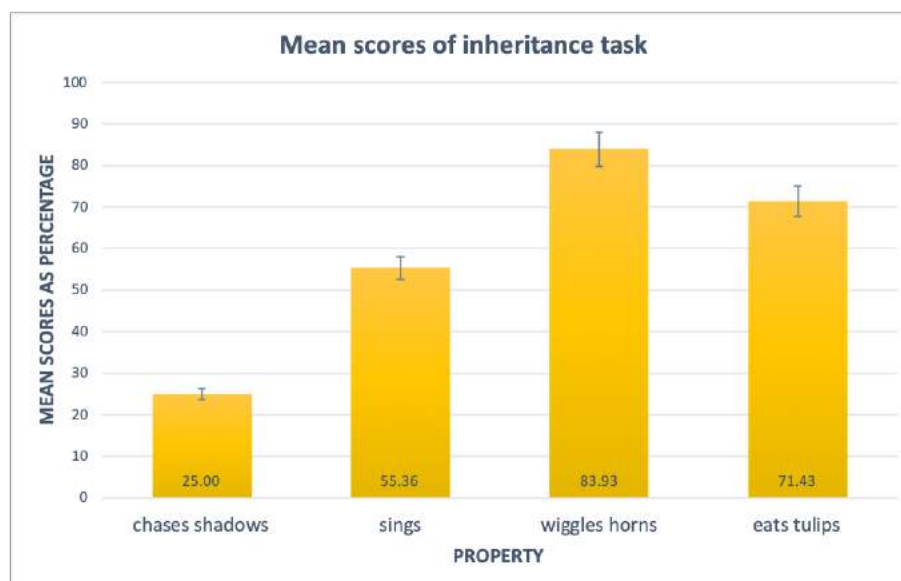


Figure 6: Item analysis for inheritance task. Error bars = 95% confidence interval.

bag only contained marbles of one colour. A first-order hypothesis about a novel bag would be to infer the colour of the other marbles to be the same as the one the participant is shown. Forming a second-order generalisation, i.e. an overhypothesis, means the participant assumes bags of marbles to always be uniform in colour.

Kemp et al. (2007) provide a broader and more recent overview. They explain the experimental design in more detail, to set up their own contextualisation within a Bayesian model (Kemp et al. 2007:308): “Suppose that *S* is a stack containing many bags of marbles. We empty several bags and discover that some bags contain black marbles, others contain white marbles, but that the marbles in each bag are uniform in color. We now choose a new bag - bag *n* - and draw a single black marble from the bag. On its own, a single draw would provide little information about the contents of the new bag, but experience with previous bags may lead us to endorse the following hypothesis:

H: All marbles in bag *n* are black.

If asked to justify the hypothesis, we might invoke the following overhypothesis:

O: Each bag in stack *S* contains marbles that are uniform in color.”

The alternative hypothesis is that upon seeing bags containing marbles of different colours, that each bag contains marbles of these possible colours. As Dewar & Xu (2010:1871) explain, “[t]he first-order generalization concerns the contents of each individual bag (...). The second-order generalization, or overhypothesis, is that ‘bagfuls of marbles are uniform in color’.”

Even though most learning is dependent on generalisations from individual exposures, which cannot possibly account for the variety and variation of properties in the real world (e.g. Quine 1960), not all learning leads to the formation of an overhypothesis. In fact, it is not yet clear which categories allow for overhypotheses to be formed, though some experimental work has started to investigate this phenomenon in more detail. In the developmental literature, overhypotheses are useful to account for the quick acquisition of conceptual knowledge, which is often based on only very few instances (e.g. Marchak & Gelman 2018). The notion of forming overhypotheses might also be useful to explain patterns of individual properties in the data presented above, specifically how the generalisations made about animal kinds vary systematically based

on the type of property predicated of them.

Looking at the types of properties that scored high for category-property links across the board, they seem to display a tendency towards properties that appear principally connected to the kind. This raises a more general question of whether any property that is mentioned alongside a (novel) animal is seen as more likely to be principled, by virtue of it being the only information explicitly mentioned (apart from visual information in these picture book tasks). If we can attribute strong category-property links that occur independent of subject type, a more likely explanation than linguistic variation is that they are caused by how our conceptual system links properties that are similar across entire animal categories, i.e. overhypotheses about locomotion, reproduction, and diet.

This leads to two implications: First, the linguistic restrictions we observe between property type and category might hold true for novel animal induction tasks as well. However, these are likely limited by the type of experimental task that participants are asked to carry out. In the study presented in this paper, the ratings in both the essentialism and the category-property links composites were higher for BP subjects than for IS and DS subjects. Second, we find that, contrastingly, category-specific knowledge can grant specific properties a privileged status in induction and essentialism tasks. In this case, the knowledge about the relationship between animal categories and their means of locomotion, diet, etc. are part of processes of overhypotheses. These seem to have a privileged status in the human conceptual system. Thus, the results we found in the current studies address a cross-section of domain-general processes, linguistically-informed restrictions on generalisations, and category-specific expectations of essentialism.

6. Conclusions

We have argued that the morphosyntax of the subject in concept acquisition tasks can take on various roles. Indefinite singular and definite singular subjects can be restrained by the type of property, e.g. principally or merely statistically connected property, especially in existing kinds. Based on these linguistic observations, we investigated whether the reverse relationship also holds. Specifically, can the linguistic form with which a novel kind is introduced bias participants towards expecting a property to be present in novel instances of the kind.¹⁷ Previous work in pseudoword studies has shown that behavioural judgements can be influenced in such a way. However, the current studies have found no systematic differences in terms of how participants judged the link between categories and their properties, and neither in how essential they thought a property to be to a novel kind.

A preliminary look at the data patterns shows restrictions in the study design that explain results that hold for specific properties across conditions. Namely, animal properties show a high essentialism compared to categories such as artefacts. Moreover, certain properties might fall within property types linked to overhypotheses. These properties consistently score higher across the board for both the strength of category-property links and essentialism scores. Thus, we found that while morphosyntactic cues may guide our conceptual system to expect certain properties to be more likely to be principally connected, other factors such as category know-

¹⁷Our future work additionally addresses the role of the definite singular from an acquisitional perspective. This includes a discussion of intonational properties. Stimuli design relies on understanding the relationship between semantic interpretation and pitch, see also (Kratzer & Selkirk 2007) and (Longobardi 2000:694). Further discussion on the interpretations of DS subjects that are accented can be found in e.g. Allerton (1979).

ledge can overwrite these assumptions.

Future research will address these methodological questions by simplifying the design to test category-property links in a more targeted manner. Specifically, we will use multiple novel animals as opposed to introducing just one novel animal. Further, we will more clearly demarcate the boundary between properties that are likely principally connected and those that are likely statistically connected. Finally, these new studies will not rely on a test booklet that may tap into judgements beyond the type of category-property link and thereby include fewer distractions for the participant.

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Abbreviations

| | |
|----|---------------------|
| BP | bare plural |
| DS | definite singular |
| IS | indefinite singular |
| MQ | most-quantified |

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References

- Allerton, A., D. J.; Cruttenden (1979). Three reasons for accenting a definite subject. *Journal of Linguistics* 15:1, pp. 49–53.
- Bacon, J. (1973). The semantics of generic “the”. *Journal of Philosophical Logic* 2:3, pp. 232–339.
- Borer, H. (2005). *Structuring Sense: Volume 2: The Normal Course of Events*. Oxford University Press.
- Borik, O. & M. Espinal (2012). On definite kinds. *Recherches Linguistiques de Vincennes* 41, pp. 123–146.
- Borik, O. & M. Espinal (2014). Reference to kinds and to other generic expressions in spanish: definiteness and number. *The Linguistic Review* 1, pp. 1–58.
- Brent, M. & J. Siskind (2001). The role of exposure to isolated words in early vocabulary development. *Cognition* 81, pp. 31–44.
- Brown, R. (1973). *A first language: The early stages*. Harvard University Press, Cambridge, MA.
- Burton-Roberts, N. (1976). On the generic indefinite article. *Linguistic Society of America* 52:2, pp. 427–448.

- Butler, L. K. (2011). The DP-adjoined plural in Yucatec Maya and the syntax of plural marking.
- Butler, L. K. (2012). Cross-linguistic and experimental evidence for non-number plurals. *Linguistic Variation* 1, pp. 27–56.
- Carlson, G. N. & J. F. Pelletier (eds.) (1995). *The Generic Book*. The University of Chicago Press.
- Cimpian, A. & E. Markman (2009). Information learned from generic language becomes central to children's biological concepts: Evidence from their open-ended explanations. *Cognition* 113:1, pp. 14–25.
- Davis, B. & P. F. MacNeilage (1995). The articulatory basis of babbling. *Journal of Speech and Hearing Research* 38, pp. 1199–1211.
- Dewar, K. M. & F. Xu (2010). Induction, overhypothesis, and the origin of abstract knowledge: Evidence from 9-month-old infants. *Psychological Science* 21:12, pp. 1871–1877.
- Fuellenbach, K. (2017). *Genericity and the human conceptual system: On the morphosyntax of generic subjects*. Master's thesis, University of Oxford.
- Fuellenbach, K. (in prep). Generics: Morphosyntax and the human conceptual system. PhD thesis in progress.
- Gelman, S. (2004). Psychological essentialism in children. *Trends in Cognitive Sciences* 8:9, pp. 404–409.
- Gelman, S., J. Coley, K. Rosengren, E. Hartman, A. Pappas & F. Keil (1998). Beyond labeling: The role of maternal input in the acquisition of richly structured categories. *Monographs of the Society for Research in Child Development* 63:1, pp. 1–157.
- Gelman, S., G. Heyman & C. Legare (2007). Development changes in the coherence of essentialist beliefs about psychological characteristics. *Child Development* 78, pp. 757–774.
- Gelman, S., E. Ware & F. Kleinberg (2010). Effects of generic language on category content and structure. *Cognitive Psychology* 61:3, pp. 273–301.
- Goodman, N. (1983). *Fact, Fiction, and Forecast*. Harvard University Press, Cambridge, MA, 4 edn.
- Haslam, N., L. Rothschild & D. Ernst (2000). Essentialist beliefs about social categories. *British Journal of Social Psychology* 39, pp. 113–127.
- Hume, D. (1748). *An enquiry concerning human understanding*. Hackett.
- Kemp, C., A. Perfors & J. Tenenbaum (2007). Learning overhypotheses with hierarchical bayesian models. *Developmental Science* 10:3, pp. 307–321.
- Khemlani, S., S.-J. Leslie, S. Glucksberg & P. R. Fernandez (2007). Do ducks lay eggs? how people interpret generic assertions. *Proceedings of the 29th annual conference of the cognitive science society*, pp. 395–401.
- Kratzer, A. & E. Selkirk (2007). Phase theory and prosodic spellout: The case of verbs. *The Linguistic Review* 24, pp. 93–135.
- Krifka, M. (1995). *Genericity: An Introduction*, The University of Chicago Press, pp. 1–123.
- Kwapiszewski, A. & K. Fuellenbach (in press). Reference to kinds and subkinds in polish. *Advances in Formal Slavic Linguistics 2018*, Open Slavic Linguistics, Language Science Press.
- Lawler, J. (1973). *Studies in English Generics*. Ph.D. thesis, University of Michigan.
- Leslie, S.-J., S. Khemlani & S. Glucksberg (2011). Do all ducks lay eggs? the generic overgeneralization effect. *Journal of Memory and Language* 65:1, pp. 15–31.
- Longobardi, G. (2000). Remarks and replies: "postverbal" subjects and the mapping hypothesis. *Linguistic Inquiry* 31:4, pp. 691–702.
- MacWhinney, B. (2000). The childes project: Tools for analyzing talk. URL <https://talkbank.org>.
- Marchak, K. & S. Gelman (2018). How do we learn overhypotheses about the characteristic properties of different kinds of animals? Poster presented at the 44th annual meeting of the Society for Philosophy and Psychology.
- McNally, L. & G. Boleda (2004). Relational adjectives as properties of kinds. Bonami, O. & P. C. Hofherr (eds.), *Empirical Issues in Formal Syntax and Semantics*, Colloque de Syntaxe et Semantique a Paris, vol. 5, pp. 179–196.
- Prasada, S. & E. Dillingham (2006). Principled and statistical connections in common sense perception. *Cognition* 99:1, pp. 73–112.
- Prasada, S. & E. Dillingham (2009). Representation of principled connections: A window onto the formal aspect of common sense perception. *Cognitive Science* 33:3, pp. 401–448.
- Quine, W. V. O. (1960). *Word and Object*. MIT Press, Cambridge, MA.
- Rhodes, M., S.-J. Leslie & C. Tworek (2012). Cultural transmission of social essentialism. *Proceedings of the National Academy of Sciences in the United States of America*, PNAS, vol. 109 of 34, pp. 13526–13531.
- Rollins, P. R. (2003). Caregiver contingent comments and subsequent vocabulary comprehension. *Applied Psycholinguistics* 24, pp. 221–234.
- Sawyer, K. (1997). *Pretend play as improvisation*. Erlbaum, Mahwah, NJ.

Japanese honorification as nominalization

Taking [HON] out of honorifics

Ruoan Wang & Takanobu Nakamura

We claim that Japanese honorification involves no dedicated grammatical apparatus, *contra* longstanding analytical tradition. Examining the components of two productive honorification strategies, we show that these components lack honorific meaning in isolation, but are nominal in nature. We therefore suggest that Japanese honorifics are built from general nominalisation processes and light verb constructions. We also recharacterize ‘honorific suppletives’ as semantically bleached verbal substitutions, showing that their distribution conforms to a general morphophonological constraint of Japanese, which we call the monomoraic constraint. Crucially, this honorification-as-nominalization approach eschews *ad hoc*, honorification-specific grammatical machinery, advocating for a minimal and economical featural inventory.

1. Introduction: empirical background

Japanese has a highly complex honorification system, with both productive and irregular grammatical reflexes.¹ In this section, we first provide some empirical background into the shape of the Japanese honorification system, and then an overview of our analysis.

Productive honorifics add predictable morphological pieces to the verbal complex. Within productive honorifics, subject honorification (SH) is distinguished from non-subject honorification (NSH). *Irregular* honorifics involve an unpredictable change to the verbal complex. In our translations, (HON) indicates that the preceding referent is the target of deference.

SH is productively expressed by adding a ‘honorific’ prefix, *o-*, and the light verb *naru* ‘become’, to the verbal complex. In this particular construction, the dative marker *-ni* also appears. Throughout, we will refer to this as the *naru* strategy, which is always subject-oriented. The con-

¹Honorifics (traditionally termed *sonkeigo/kenjōgo*) are to be distinguished from politeness indicated by the verbal endings *-mas-*, *-des-* (traditionally termed *teineigo*). The former are targeted towards third persons, while the latter are targeted towards second persons and are better analysed as allocutive agreement (see Miyagawa 2017). Only the former will be covered in this paper.

trast between plain (1) and subject honorific (2) illustrates this, where (2) indicates the speaker's deference towards the subject.

- (1) Taro-ga Hana-o mats-u.
Taro-NOM Hana-ACC wait-NPST
'Taro waits for Hana.' (plain)
- (2) Sensei-ga Hana-o o-machi-ni nar-u.
professor-NOM Hana-ACC HON-wait-DAT become-NPST
'The professor (HON) waits for Hana.' (subject honorific)

SH can alternatively be expressed with the sole addition of the passive morpheme, *-(r)are*, without *o-* or the light verb *naru* 'become' (3). We will refer to this as the *(r)are* strategy.

- (3) Sensei-ga Hana-o mat-are-ru.
professor-NOM Hana-ACC wait-PASS-NPST
'The professor (HON) waits for Hana.'

While SH may be regarded as directly elevating the status of a referent, NSH may be regarded as demoting the status of the speaker, elevating the status of a referent indirectly (self-humbling). NSH is productively expressed by adding *o-*, and the light verb 'do' *suru*. We will refer to this as the *suru* strategy.

- (4) Watashi-ga sensei-o o-machi su-ru.
I-NOM professor-ACC HON-wait do-NPST
'I am waiting for the professor (HON).' (non-subject honorific)

Before we proceed, let us note two morphological quirks of Japanese. First, the prefix *o-* has an allomorph *go-* when it combines with Sino-Japanese stems such as *syookai* 'introduce'.

- (5) Hanako-ga Yamada-san-ni Sato-san-o go-syookai si-ta.
Hanako-NOM Yamada-TITLE-DAT Sato-TITLE-ACC HON-introduce do-PAST
'Hanako introduced Mr. Yamada (HON) to Mr. Sato.' (Hasegawa 2006:522)

Second, our examples of the SH *naru* and NSH *suru* strategies above involve the verb *matsu* 'wait', a verb which receives up to five different inflectional endings (a *godan* verb in traditional terms). Honorific verbal complexes occur with the infinitival form, illustrated below.

- (6) *Inflectional forms of matsu 'wait'*
- | | |
|---------------------------------|--------------|
| Dictionary form | <i>matsu</i> |
| Infinitival/nominal form | <i>machi</i> |
| Negative/causative/passive form | <i>mata</i> |
| Imperative/conditional form | <i>mate</i> |
| Volitional form | <i>mato:</i> |

It is notable that this infinitival form is the one used for nominalizations in Japanese.² This will be an important component in our re-characterizations of the *naru* and *suru* strategies as

²Its detail is discussed in §4.2.

nominalizations.³

In comparison, a distinct class of verbs (the *ichidan* class in traditional terms) does not receive distinct inflectional endings. An example of this is *tasuke* ‘help’, which inflectional ending starts with *-e* across all of its uses (7), including in honorific verbal complexes (8).

(7) *Inflectional forms of tasuke ‘help’*

| | |
|---------------------------------|------------------|
| Dictionary form | <i>tasukeru</i> |
| Infinitival/nominal form | <i>tasuke</i> |
| Negative/causative/passive form | <i>tasuke</i> |
| Imperative/conditional form | <i>tasukero</i> |
| Volitional form | <i>tasukeyoo</i> |

- (8) Sensei-ga Taro-o o-tasuke-ni nar-u.
 professor-NOM Taro-ACC HON-help-DAT become-NPST
 ‘The professor (HON) helps Taro.’ (productive honorification)

Crucially, regardless of the class membership of the verb, the infinitival form is always used in productive honorifics. We wish only to alert the reader that the shapes of the infinitival inflections differ across verb classes (varying between *-i* and *-e*), but this morphological quirk is a matter independent of honorification.

Table 1 summarizes the shapes of the three productive honorification strategies of Japanese. This paper will focus on the *naru* and *suru* strategies, with passing mention of the (*r*)*are* strategy.

| | | | | |
|-----|----------------------------------|-------------|------------------|------------------|
| SH | <i>naru</i> strategy | o- + | V _{INF} | + ni naru |
| | (<i>r</i>) <i>are</i> strategy | | V | + (r)are |
| NSH | <i>suru</i> strategy | o- + | V _{INF} | + suru |

Table 1: Productive honorification strategies in Japanese

In contrast to productive honorifics, *irregular* honorifics involve unpredictable changes to the whole verbal complex, and have been analysed as suppletives (e.g. Volpe 2009, Thompson 2011). Each ‘suppletive’ form can be either subject- or object-orientated, as shown for the verb *iu* ‘to say/tell’ below.

- (9) *iu* ‘to say/tell’
- a. Taro-ga soo **i**-u.
 Taro-NOM so **say**-NPST
 ‘Taro says so.’ (plain)
- b. Sensei-ga soo **ossyar**-u.
 professor-NOM so **say.SH**-NPST
 ‘The professor (HON) says so.’ (subject honorific)
- c. Taro-ga sensei-ni iken-o **mousi**-ta.
 Taro-NOM professor-DAT opinion-ACC **tell.NSH**-NPST
 ‘Taro told the professor (HON) his opinion.’ (non-subject honorific)

³Note that the SH (*r*)*are* strategy does not use the infinitival form, but the passive form, as expected since the passive marker is involved.

Here we see that the stem *i-* ‘say’ has irregular forms when one of its arguments is honorified. When its subject argument is honorified, *i-* changes to *ossyar-* (9b); when a non-subject argument is honorified, *i-* changes to *mousi-* (9c). No productive honorifics of *i-* exist.

Irregular honorifics affect only a handful of verbs in modern Japanese. We will see in §4 that this infrequency falls out naturally from a general morphophonological constraint of Japanese, what we call the monomoraic constraint. Furthermore, not all verbs have both SH and NSH irregular forms. Several more irregular forms are illustrated in Table 2 below.

| Verb | Plain form | Irregular SH form | Irregular NSH form |
|-----------------|-----------------|--|--------------------|
| ‘to go’ | <i>iku</i> | | |
| ‘to come’ | <i>kuru</i> | <i>irassyaru</i> | <i>mairu</i> |
| ‘to eat’ | <i>taberu</i> | | |
| ‘to drink’ | <i>nomu</i> | <i>mesiagaru</i> | <i>itadaku</i> |
| ‘to visit’ | <i>tazuneru</i> | | |
| ‘to listen’ | <i>kiku</i> | – | <i>ukagau</i> |
| ‘to see/watch’ | <i>miru</i> | <i>goran-ni-naru,</i> <i>goran-nasaru</i> | <i>haiken-suru</i> |
| ‘to say’ | <i>iu</i> | <i>ossyaru</i> | <i>moosu</i> |
| ‘to do’ | <i>suru</i> | <i>nasaru</i> | <i>itasu</i> |
| ‘to feel/think’ | <i>omou</i> | <i>obosimesu</i> | <i>zonziru</i> |

Table 2: Irregular Japanese honorifics

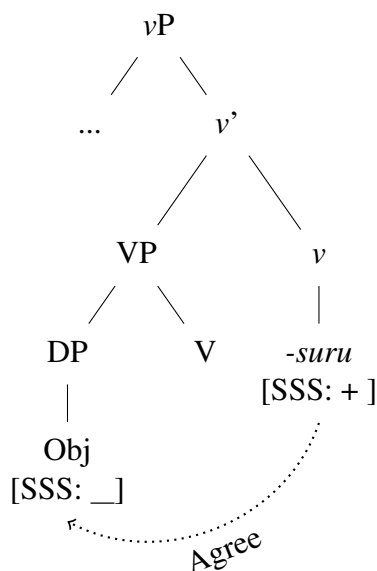
Note that the several pairs of verbs conflate their irregular forms: for example, ‘to eat’ and ‘to drink’ have distinct forms *taberu* and *nomu* in plain speech, but their irregular forms are conflated into *mesiagaru* (SH) and *itadaku* (NSH) in honorific speech. This semantic bleaching in honorific speech will be accounted for in §4.1.

2. Analytical background

2.1. Analyses of honorification-as-Agree

A longstanding tradition in the literature on Japanese honorification postulates a dedicated grammatical feature which drives a honorification-as-Agree analysis (Toribio 1990; Ura 2000; Hasegawa 2002, 2006; Niinuma 2003; Boeckx & Niinuma 2004; Kishimoto 2010; among many others). This grammatical feature typically takes the shape of [HON], or [SSS] (indicating that its DP referent is “Socially Superior to the Speaker”). This feature is then assumed to sit on the morphological pieces added to honorified verbal complexes, such as the prefix *o-* or the light verbs *-suru* and *naru*.

To see how such analyses work, let us consider Boeckx & Niinuma’s (2004) analysis of the NSH *suru* strategy. The *v* head is expounded by *suru*, and is a probe which seeks to value its [SSS] feature. The DP which receives honorific reference is the goal. This is illustrated in (10).

(10) *Non-subject honorification (NSH) as Agree*

The main motivation behind this analysis is the presence of intervention effects: in the presence of an indirect object, honorification towards the direct object is blocked (11a). Only when the indirect object is absent, can the direct object receive honorification (11b).

- (11) a. # Uchi-no imooto-ni Yamaha sensei-o go-syookai shi-ta.
 my-GEN sister-DAT Yamaha professor-ACC HON-introduce do-PST
 ‘(I) introduced Professor Yamaha (*HON) to my little sister (HON).’
 b. Yamaha sensei-o o-tasuke shi-ta.
 Yamaha professor-ACC HON-rescue do-PST
 ‘(I) rescued Professor Yamaha (HON).’

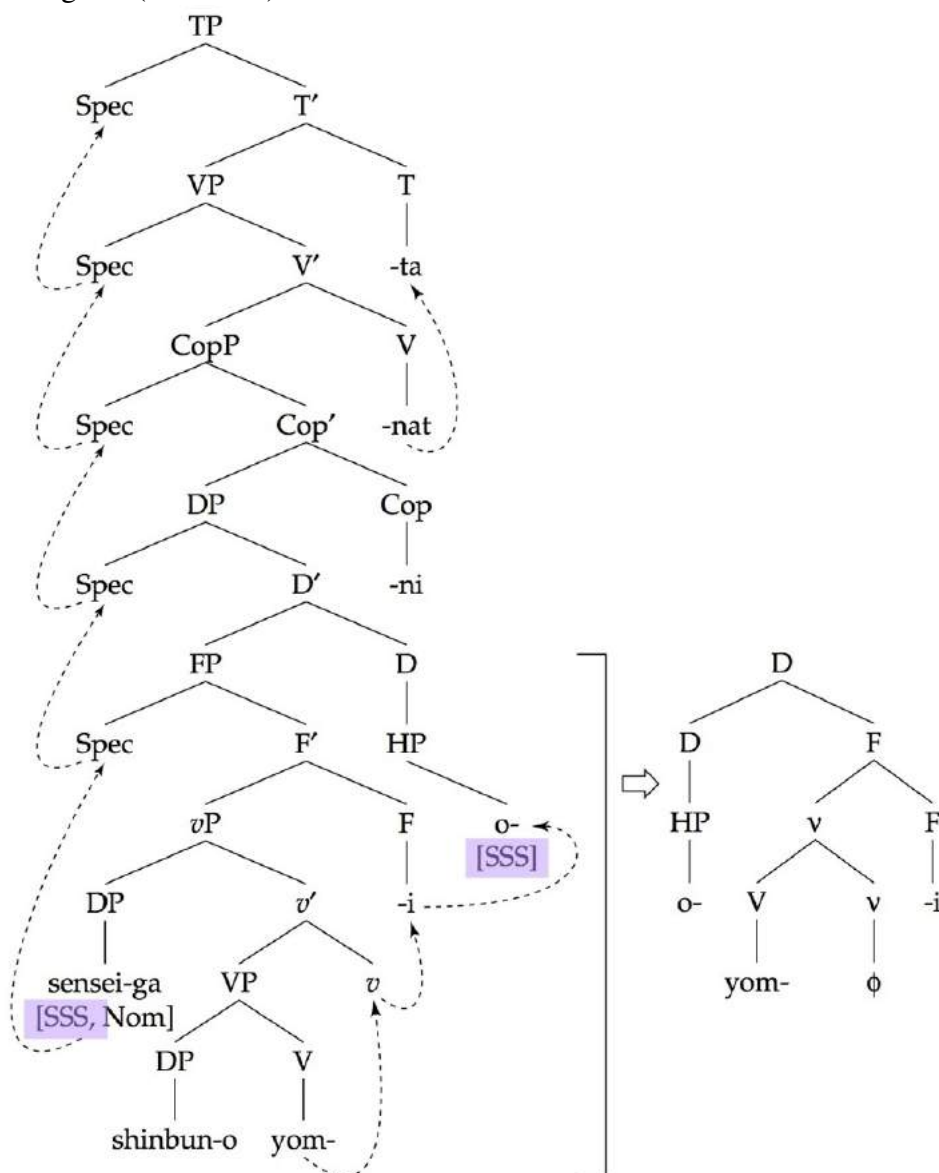
Assuming that indirect objects are structurally higher than direct objects, if an indirect object is present, it will be the indirect object which receives honorification. This intervention effect is correctly predicted under an Agree analysis.

Boeckx & Niinuma (2004) do not give an analysis of SH. Here, we reproduce Hasegawa’s (2006:507) adaptation of Toribio (1990) for the SH sentence in (12). The relevant feature for honorific Agree is still [SSS], which is now situated on both the honorific prefix *o-* and the subject DP (rather than just on *v* as in Boeckx & Niinuma 2004).

(12) *Subject Honorification (SH) as Agree*

- a. Sensei-ga shinbun-o o-yomi-ni nat-ta.
 professor-NOM newspaper-ACC HON-read-DAT become-PAST
 ‘The professor (HON) read the newspaper.’

b. Hasegawa (2006:507)



Already, we can sense that this makes for a rather complex analysis. To accommodate the various pieces of morphology that the *naru* strategy creates, several additional phrasal projections are postulated. The verbal stem, its inflectional ending, and the prefix *o-* undergo movement to form a complex D head. This complex D head carries the [SSS] feature and attracts another element with the [SSS] feature into its specifier, Spec-DP. This element would be the subject DP, which has been attracted from its base position, Spec-vP, to Spec-DP. To derive the correct word order, the subject DP then undergoes further movement through higher specifier positions until stops at Spec-TP.

We feel that this makes for a rather *ad hoc* and un insightful analysis: several specialized phrasal projections and syntactic movements have to be assumed. But putting aside issues of aesthetics, honorification-as-Agree analyses also face empirical problems regarding constituency facts, optionality of Agree, multiple exponence of the [SSS] feature and mismatch with c-command relation.

First, let us turn to the constituency facts. Both analyses predict that the prefix *o-* and the verb do not form a constituent, but this prediction is not borne out. Bobaljik & Yatsushiro (2006) use VP-preposing to show that [*o*+V] is a constituent, to the exclusion of the light verb (13); furthermore, *o-* cannot be stranded in a VP-preposing construction (14).

- (13) a. Tanaka sensei-o [o-tasuke]-sae Taro-ga t_{VP} si-ta.
 Tanaka professor-ACC HON-help-even Taro-NOM do-PAST
 ‘Taro even helped Prof. Tanaka (HON).’
 b. *Tanaka sensei-o [o-tasuke-si]-sae Taro-ga t_{VP} ta.
 Tanaka professor-ACC HON-help-do-even Taro-NOM PAST
- (14) *Lina-o [mise]-sae Kai-ga Tanaka sensei-ni o-t_{VP} si-ta.
 Lina-ACC show-even Kai-NOM Tanaka professor-DAT HON- do-PAST
 Intended: ‘Kai even showed Lina to Prof. Tanaka (HON).’

(Bobaljik & Yatsushiro 2006:366, 369)

The constituency facts suggest that the prefix *o-* either directly attaches to the verb and nominalises it, or take a zero-nominalised verb as its complement. In §3, we will provide a structure for honorific verbal complexes which is consistent with these facts.

Secondly, such analyses do not capture the fact that honorific morphology is *optional*: in (15), the speaker can still express deference to the professor without honorific morphology.

- (15) *Deference without honorific morphology*
 a. Sensei-ga Taro-o tasuke-ta.
 professor-NOM Taro-ACC help-PAST
 ‘The professor (HON) helped Taro.’
 b. Taro-ga sensei-o tasuke-ta.
 Taro-NOM professor-ACC help-PAST
 ‘Taro helped the professor (HON).’

Thirdly, these analyses also do not straightforwardly capture the fact that the distribution of the prefix *o-* is not restricted to verbs. It can felicitously appear on the DPs in the sentence (16a), or both on the DPs and the verb in the sentence (16b), hinting that *o-* is nominal in nature.

- (16) a. Sensei-wa go-zibun-de o-kuruma-o araw-u.
 professor-TOP HON-self-ACC HON-car-ACC wash-PST
 ‘The professor (HON) washes her car by herself.’
 b. Sensei-wa go-zibun-de o-kuruma-o o-arai-ni nar-u.
 professor-TOP HON-self-ACC HON-car-ACC HON-wash-DAT become-PST
 ‘The teacher (HON) washes her car by herself.’ (Hasegawa 2006:533)

The problem that (16) presents for an Agree analysis is twofold. First, the honorified referent must be assumed not only to undergo Agree with verbs, but also be able to undergo nominal concord with DPs like anaphors and objects. Second, these become cases of Multiple Agree, where one probe agrees with more than one goal, but previous analyses do not provide an account for these cases.

Fourthly, Bobaljik & Yatsushiro (2006) show that honorification does not depend on c-command. Non-dative marked indirect objects, such as those marked with *-kara* ‘from’ below, also participate in intervention effects (17), but do not allow reciprocal binding (18).

- (17) Taro-ga Tanaka sensei-kara hon-o o-kari si-ta.
 Taro-NOM Tanaka professor-from book-ACC HON-borrow do-PST
 ‘Taro borrowed the book (*HON) from Prof. Tanaka (HON).’
- (18) *Taro-ga [Yamada sensei to Tanaka sensei]_i-kara [otagai_i-no hon]-o
 Taro-NOM [Yamada professor and Tanaka professor]-from each.other-GEN book-ACC
 kari-ta.
 borrow-PST
 Intended: ‘Taro borrowed each other_i’s books from [Prof. Yamada and Prof. Tanaka_i].’
 (Bobaljik & Yatsushiro 2006:372)

If agreement is dependent on a c-commanding relation, the environments which allow honorific agreement should also allow other operations dependent on c-command, such as reciprocal binding. This not the case as the contrast above shows, suggesting that honorification should not receive an agreement analysis.

Lastly, honorification-as-Agree draws an unwelcome parallel with inflectional processes, such as subject-verb agreement. Such a parallel is unwelcome, as Japanese does not exhibit such inflectional agreement in the first place (lacking ϕ -featural agreement morphology, for example). Not only is such a feature unusual for Japanese, it would also be a highly unusual feature given the usual characteristics of features in our current feature inventory. Unlike canonical syntactic features, [HON] not exhibit inflectional properties, and it does not trigger other grammatical processes such as movement (unlike *wh*-features), nor binding (unlike ϕ -features), nor, as we will argue, true agreement.

2.2. Analyses of honorification without Agree: ‘suppletive’ honorifics

Alternatives to Agree analyses have also been proposed. For instance, Volpe (2009) proposes that honorific meaning originates as an HONOR head of an Expressive Phrase. This HONOR head then undergoes Fission, resulting in the somewhat circumfixal shape of honorific morphology (e.g. *o-V-suru*). Potts & Kawahara (2004) use multidimensional semantics containing a special logical type for expressive meanings, type ϵ , composed by a syntactic rule with combines expressive meanings with propositional meanings. But while the exact mechanisms deriving honorific meaning are different, the core idea unifying previous analyses is that there is some specialised grammatical object, whether this object is a head, a feature, or a logical type.

For irregular honorifics, Thompson (2011) proposes that a [HON] feature triggers the deletion of productive honorific morphology and replaces it with honorific suppletive forms. We adopt a sketch of her analysis below, in order to provide analytical background for our own analysis of irregular honorifics in §4. The relevant examples are repeated from (9) below.

- (9) a. Sensei-ga soo **ossyar-u**.
 professor-NOM so **say.SH**-NPST
 ‘The professor (HON) says so.’ (subject honorific)
- b. Taro-ga sensei-ni iken-o **mousi-ta**.
 Taro-NOM professor-DAT opinion-ACC **tell.NSH**-NPST
 ‘Taro told the professor (HON) his opinion.’ (non-subject honorific)

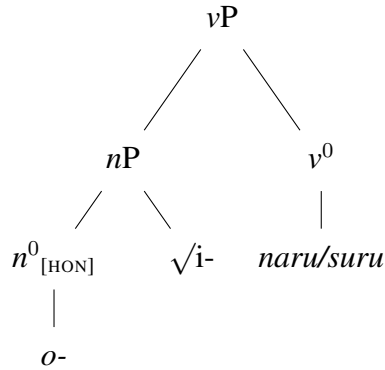
To derive irregular forms, Thompson assumes that the locus of honorification is a *n*(ominalizing)

head which carries the feature [HON], normally exponed as the prefix *o-* (19).

$$(19) \quad n_{[HON]} \leftrightarrow o-$$

This *n* head combines with the verbal stem. There is also a higher *v* head which hosts the light verb, *naru* or *suru*. This produces the structure in (20).

(20)



If Vocabulary Insertion (VI) is allowed at non-terminal nodes (not an uncontroversial assumption), then the VI rule for the irregular form *ossyar-u* would be stated within the above structural environment as in (21), with the effect that the irregular form *ossyar-u* replaces the entire structure wholesale.

$$(21) \quad ossyar- \leftrightarrow$$

```

graph TD
    vP --> nP
    vP --> v0[v^0]
    nP --> i[√i-]
    nP --> n0[n^0_{[HON]}]
  
```

(adapted from Thompson 2011:172)

If insertion is not allowed at terminal nodes, then the following set of VI rules must be posited. First, the [HON] feature triggers insertion of the irregular form *ossyar-* (22). Then, the pieces of productive honorific morphology, *o-* and the light verb, become zero in environments containing this irregular form (23).

$$(22) \quad ossyar- \leftrightarrow \sqrt{i-} / n^0_{[HON]}$$

$$(23) \quad \text{a. } n^0_{[HON]} \leftrightarrow \emptyset / ossyar- \qquad \text{b. } v \leftrightarrow \emptyset / ossyar-$$

This requires deletion rules in (23) to be listed as active in the derivation of every irregular form, but also specified as *inactive* in the derivative of every productive form. It also introduces an undesirable problem of look-ahead: an exponent (*o-* in this case) triggers suppletion, but then itself deletes, leaving no real evidence that it was the trigger for suppletion in the first place.

This characterisation of [HON] as a trigger for suppletion also does not provide any principled way of accounting for the difference between productive and irregular honorifics: since both have the same structure, what distinguishes a suppletive structural environment from a non-

suppletive one? Furthermore, it gives no explanation for why there should be a morphological difference between SH and NSH suppletives.

In sum, we have seen that much *ad hoc* technical machinery (e.g. specialized features or projections, Fission) has been additionally postulated in previous analyses to explain both productive and irregular honorifics. Below, we aim to provide a more minimal and elegant analysis of the Japanese honorification paradigm, without the burden of additional technical machinery.

2.3. Overview of our analysis

While these analyses have provided important insights, we argue that they are misguided in treating honorification as a dedicated linguistic feature. For one, many other agreement phenomena (regarding case, gender, tense, etc.) do not reflect social meaning as honorification does; all they do is to enforce grammatical well-formedness. [HON] is an oddity within the inventory of features, as it patterns away from other agreement phenomena in conveying social meaning instead of enforcing grammatical well-formedness.

Thus, this paper argues that *honorification is not a linguistic feature* in Japanese. How, then, does honorific meaning arise without dedicated means?

We will show that in Japanese, the grammatical mechanisms recruited for honorification are *nominalisation* and *passivization*. Under our account, honorific verbal complexes additionally contain *suru* ‘do’, *naru* ‘become’, or passive marker *(r)are*, but contain nothing honorific *per se* in them: they are merely periphrastic nominalisations or passivizations. We will show that not even the honorific morphology of Japanese are exponents of the feature [HON] or [SSS]; rather, they are merely exponents of general nominalization and passivization processes.

This proposal can be easily and intuitively understood by way of the *(r)are* strategy. An example is given in (24). This can be straightforwardly re-characterised as a passivization strategy, since it adds the passive marker *(r)are* in the language.

- (24) Sensei-ga kodomo-o sikar-**are**-ta.
 professor-NOM child-ACC scold-PASS-PAST
 ‘The teacher (HON) scolded the child.’ (subject honorification)

In (24), *-(r)are* contributes no passive meaning. Indeed, (24) is a *fake* passive, having active meaning, active word order (Agent-Patient), and active case marking (ACC-marked object).

If (24) is made into a true passive by placing the agent into a *niyotte* ‘by’-phrase, and making the patient the grammatical subject, honorific meaning disappears (25).

- (25) Kodomo-ga sensei-niyotte sikar-**are**-ta.
 child-NOM professor-by scold-PASS-PAST
 ‘The child was scolded by the teacher (*HON).’ (true passive)

This contrast between non-passive (24) and passive (25) shows that the *(r)are* strategy does not truly express passive meaning, and that it merely recruits passive morphology, something that is supported by the morpheme’s diachronic history. Oshima (2006:150) notes that *-(r)are* was first ambiguous between passive and spontaneous uses, with records dating from the 8th century. Its honorific uses emerged only afterwards, first being subject to grammatical and stylistic constraints until these uses became full-fledged. This is convincing evidence that honorific *-(r)are*

was co-opted from passive *-(r)are*.

In the next section, we will illustrate the same claim for the *suru* and *naru* strategies: that they are *fake* nominalizations, instead of true honorifics. There is no dedicated grammatical component involved for the expression of honorification; only recruited nominalizing morphology is involved. Bruening (2013) has several arguments showing that English passives and complex nominals in fact share a number of syntactic properties (patterning together in the availability of attaching *by*-phrases, instrumentals, comitatives, adverbials, and distributive *each*).

We will build on this and show that both passivization and nominalization have similar *semantic* effects; namely, distancing its internal argument from the verbal event. Under this view, the literal translation of the NSH sentence in (4), which has a more periphrastic flavor after nominalization, should be taken more seriously.

- (4) Watashi-ga sensei-o o-machi su-ru.
 I-NOM professor-ACC HON-wait do-NPST
 ‘I am waiting for the professor (HON).’
 → Lit.: ‘I am *doing the waiting of* the professor.’

It should be noted that there have been analyses of Japanese honorification showing that the honorific verbal complex consists of a light verb and a nominal element (Ivana & Sakai 2007, Sakai & Ivana 2009). This body of work supports our claim that honorifics are essentially nominalizations, where the light verb is merely a bleached verb which allows the nominal to project up the functional spine of the sentence as a verb. However, the crucial difference is that they still assume a dedicated feature, [HON], which is responsible for the shape of the Japanese honorification paradigm.

The table below summarises our stance in relation to previous analyses. We develop our proposal in the next section.

(26)

| | With nominalisation | Without nominalisation |
|---------------|--|---|
| With [HON] | Ivana & Sakai 2007, Sakai & Ivana 2009 | Toribio 1990, Boeckx & Niinuma 2003, Hasegawa 2006, Volpe 2009, <i>a.o.</i> |
| Without [HON] | This proposal | Harada 1976 |

It is notable that the Japanese honorification paradigm is not automatically acquired, but has to be explicitly taught. This supports the core claim of this paper—that [HON] is not an independent grammatical feature or category.

From this section onward, we develop our theory of Japanese verbal honorification without [HON], organised around three main claims:

- §3: The prefix *o-* is not the locus of honorification, but a noun-selecting prefix.
- §4: Irregular honorifics are not [HON]-conditioned suppletives, but rather as verbal substitutions governed by a morphophonological constraint, the monomoraic constraint.
- §5: The light verbs *suru* and *naru* are general-use light verbs which allow a verbal root to realise its argument structure, which allow the normalised verbal root to project up the functional spine of the sentence.

3. *o-* as a noun-selecting prefix

In this section, we defend our first claim: that the prefix *o-* is a noun-selecting prefix.

To start, consider the fact that there are plenty of nominal expressions containing *o-*, as in (27). (In general, such instances of *o-* always target a noun, although *o-* can appear on a restricted amount of adjectives.)

- | | | | | |
|------|----|-----------------------------------|----|------------------------------------|
| (27) | a. | o-sushi ‘sushi’ | h. | o-shogatsu ‘New Year’ |
| | b. | o-soba ‘buckwheat noodles’ | i. | o-zoni ‘New Year’s soup’ |
| | c. | o-yu ‘hot water’ | j. | o-kogoto ‘rebuke/complaint’ |
| | d. | o-sake ‘alcohol’ | k. | o-susume ‘recommendation’ |
| | e. | o-bento ‘lunchbox’ | l. | o-iwai ‘congratulations’ |
| | f. | o-kane ‘money’ | m. | o-shirase ‘notification’ |
| | g. | o-hashhi ‘chopsticks’ | n. | o-hada ‘body’ |

In these cases, the prefix *o-* is optional. When *o-* appears, the utterance which contains it is softened and polite. This suggests that the prefix *o-* is of a noun-selecting nature. On the other hand, there are frozen expressions which contain *o-* as in (28). In those cases, *o-* is obligatory, unlike those cases in (27).

- | | | | | |
|------|----|---|----|--|
| (28) | a. | o-mutsu ‘diaper’ | e. | o-tangi ‘lecture’ |
| | b. | o-yatsu ‘afternoon snacks’ | f. | o-warai ‘comedy’ |
| | c. | go-han ‘meal’ | g. | o-bake ‘ghost’ |
| | d. | o-sechi ryoori ‘New Year’s bento’ | h. | o-yakusoku ‘predictable/clichéd development’ |

These are all used as a noun in full sentences. In the examples below, there is no honorific meaning: *o-cha* ‘tea’ and *o-shime* ‘diaper’ are not honorified.

- | | | |
|------|----|--|
| (29) | a. | Yuki-ga o-cha-o non-da. Yuki-NOM HON-tea-ACC drink-PST ‘Yuki drank tea.’ |
| | b. | Taihei-ga o-takara-o nyuushusi-ta. Taihei-NOM HON-treasure-ACC get-PST ‘Taihei got a treasure.’ |

If the prefix *o-* is merely a nominaliser or a noun-selecting prefix, this lack of honorification is straightforward. However, if *o-* is a specialized honorific head, then this lack of honorification is surprising: its honorifying function should apply across the board, even to inanimate nouns.

The class of frozen expressions with obligatory *o-* further suggests that the attachment of *o-* should be low, in order to account for their idiosyncratic and opaque interpretations in some cases. For example, *o-yakusoku* ‘something predictable’ is derived from the prefix *o-* and the noun *yakusoku* ‘promise’. Clearly, its meaning is not compositionally derived from the lexical meaning of its root noun. (However, note that most of the examples in (28) have transparent meaning: *o-mutsu* ‘diaper’ is clearly related to its derivational root *mutsu* ‘to bind’. What is important here for our purposes is that opaque interpretations *can* arise.)

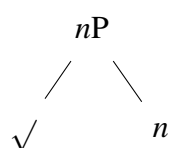
In this sense, these frozen expressions with *o-* share properties with *result nominals*. Result nominals are known to lack argument structure and eventive interpretations (Grimshaw

1990). *Warai* ‘laugh’ has an eventive reading with Taro being the agent of laughing, so the agent-oriented modifier *itotekina* ‘intentional’ is felicitous. On the other hand, *o-warai* ‘comedy’ lacks an eventive reading, being infelicitous with *itotekina* ‘intentional’—Taro can only have a possessive relation with the noun *o-warai* ‘comedy’.

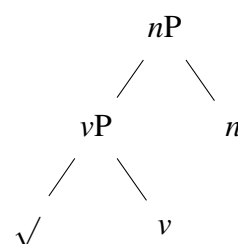
- (30) Taro-no itotekina **warai** / ***o-warai**
 Taro-GEN intentional laugh / comedy
 ‘Taro’s intentional laughing / comedy’

Yoda (2013) proposes the following structures for each. Since these non-honorific *o-* patterns like a result nominal, we will use (31a) in our representations of non-honorific *o-* nominals.

- (31) a. *Result nominals*



- b. *Event nominals*



So far, we have been treating *o-* as having a noun-selecting prefix — a morpheme which has honorification as part of its lexical meaning, on par with respectful appellatives like Japanese *-sama*, *-san* or English *Mister*, *Miss*, *Sir*. This is contradictory to previous analyses which have treated it as a syntactic Hon^0 head. We reject this syntactic analytical possibility mainly because *o-* does not have syntactic reflexes.

Consider the English derivational morpheme *un-*, which expresses a meaning roughly equivalent to negation (as in *unfriendly*) or reversal (as in *unlock*). Its reversal sense, especially, does not have any syntactic counterpart. Also, it is strange to analyse *un-* as a syntactic Neg^0 head, as this wrongly predicts that *un-* licenses NPIs like Neg^0 heads do. For example, while the Neg^0 head expounded by *not* is a licenser for NPIs (32a), *un-* is not a licenser for NPIs (32b).

- (32) a. I do **not** want to see him ever again.
 b. *I **unlocked** the door ever again.

Rather, *un-* targets some resultant state and contributes a presupposition about the original state. This is a contribution which is not encoded in the syntax proper.

On this parallel, we reject a syntactic treatment of *o-*, precisely because *o-* does not participate in syntactic processes. Hence, there is no need to resort to a syntactic/featural analysis of *o-*. We do acknowledge that the addition of *o-* makes the overall utterance more polite and softened, but here a presupposition about *o-*’s referent is sufficient to capture this.

How, then, would one capture the SH orientation of the *naru* strategy versus the NSH orientation of the *suru* strategy? Here it is instructive to note that some derivational morphemes may select certain argument positions. The English *-er* suffix usually selects an (agentive) external argument (e.g., *tutor*) while *-ee* usually selects an internal argument (e.g., *tutee*).

- (33) a. John was the **tutor** of this course.
 b. The **tutees** of this course should read this paper.

Though more work is necessary, we may assume that *o-* always targets a specific argument slot and presupposes a deference toward the referent of the DP which fills the argument position. Which argument is targeted is dependent on the semantics of *suru* and *naru*.

To summarize this section, (27) has shown that *o-* appears optionally with nouns, establishing it as a noun-selecting prefix. (28) shows that the addition of *o-* to now-frozen expressions may induce idiosyncratic interpretations, establishing it as heading a result nominal. Together with reasons above regarding why *o-* is unlikely to have syntactic reflexes, these facts suggest that *o-* is a noun-selecting prefix, not a syntactic Hon⁰ head.

4. The monomoraic constraint

In this section, we show that Japanese irregular honorifics in Japanese do not involve suppletion triggered by [HON], *contra* Thompson (2011). Thus, so-called honorific ‘suppletives’ should not be classified as instances of suppletion; rather, they are more akin to verbal substitutions, which are governed by a morphophonological constraint, the monomoraic constraint (§4.1). Furthermore, we show that this same constraint explains why productive honorifics use nominal forms (§4.2).

Our evidence for this claim consists of the following. Firstly, the alternation between a productive honorific form and an irregular honorific form is optional for most verbs, unlike canonical cases of suppletion. While a handful of verbs exhibit a non-optional, genuine alternation between productive and irregular honorific forms, we put forward the novel observation that such verbs all have a monomoraic verbal stem, being subject to a general morphophonological constraint in Japanese, the monomoraic constraint, which prohibits the zero-nominalisation of verbs with monomoraic stems. Thus, the appearance of a seemingly ‘suppletive’ honorific form is merely due to independent morphophonological repair processes.

4.1. Irregular honorifics as verbal substitutions

First, irregular honorific forms are optionally realised: the regular form (the productive form) is still available under the same context. Consider the verb *taberu* ‘eat’ in (34). We see that the productive honorific *o-tabe-ni naru* and the irregular honorific *meshigaruru* are not in competition in each other. Both forms are felicitous for the same interpretation.

- (34) a. Sensei-wa yuushoku-o [o-tabe-ni nar-u].
 professor-TOP dinner-ACC HON-eat-DAT become-NPST
 b. Sensei-wa yuushoku-o [meshiagar-u].
 professor-TOP dinner-ACC eat.SH-NPST
 ‘The professor (HON) eats dinner.’

This behaviour is unlike that of true cases of suppletion, such as the English past tense (35), where the regular form **tell-ed* is infelicitous, and the irregular form *told* must be realised.

- (35) Yesterday, Bobby told / **telled* me of the news.

Thus, suppletion normally involves such cases where the irregular form is *obligatorily* real-

ized, as in (35). In this regard, the Japanese example (34) patterns away from suppletion, as the irregular form *meshiagaru* is only *optionally* realized over the productive form *o-tabe-ni-naru*. This suggests that these irregular honorifics are not true suppletions, but more like verbal substitutions.

On the other hand, some verbs seem to be genuinely suppletive in this regard: the irregular forms are obligatorily realized. Consider the verb *kuru* ‘come’ in (36), where the productive form *o-ki-ni naru* is banned, and the irregular form *irassyaru* is obligatory.

- (36) a. *Tanaka sensei-wa kesa [o-ki-ni nar-u].
 Tanaka professor-TOP this.morning HON-come-DAT become-NPST
 b. Tanaka sensei-wa kesa [irassyar-u].
 Tanaka professor-TOP this.morning come.SH-NPST
 ‘Prof. Tanaka (HON) will come this morning.’

However, even for these cases, we argue that they are not true suppletions, but verbal substitutions. The seemingly suppletive behavior is merely due to an independent morphophonological constraint, the monomoraic constraint.

To see this, let us begin with a seemingly unrelated observation from Japanese morphophonology: zero nominalisations are infelicitous (i.e. neither a process nor a result reading is available from the resulting nominalisation) if the infinitival form of that verb is monomoraic. (Recall from §1 that infinitival forms are characterized by a final epenthetic vowel *-i* or *-e*.) This observation is illustrated below in Table 3. Non-monomoraic infinitive forms can form zero-derived nouns, that is, free nominals.

| | INF | Free N |
|------------------|------|-------------------------------|
| ki-ru (cut) | kiri | kiri (‘?cutting/limit’) |
| su-ru (scrub) | suri | suri (‘scrubbing/pickpocket’) |
| ne-ru (knead) | neri | neri (‘kneading/parade’) |
| he-ru (decrease) | heri | heri (‘decreasing’) |

Table 3: Non-monomoraic infinitival forms felicitous for zero nominalisation

In contrast, monomoraic infinitive forms do not form free nominals; such infinitive forms can only appear as part of a bound nominal, as in Table 4.

| | INF | Free N | Bound N |
|---------------|-----|-------------------------|--------------------------------|
| ki-ru (wear) | ki | *ki (*wearing/*cloth) | ki-mono ‘cloth garment’ |
| su-ru (do) | si | *si (*doing/*action) | si-you ‘product specification’ |
| ne-ru (sleep) | ne | *ne (*sleeping/*sleep) | ne-maki ‘pajamas’ |
| he-ru (pass) | he | *he (*passing/*history) | – |

Table 4: Monomoraic infinitival forms infelicitous for zero nominalisation

We formalize this observation as the following morphophonological constraint:

(37) *Monomoraic Constraint*:

Only verbs with non-monomoraic infinitival forms can be zero nominalized.

This constraint, formulated on the basis of the distribution of zero nominalisations, is in fact a more general constraint which can be extended to the distribution of irregular honorifics.

Observe that the distribution of irregular honorifics follows the same morphophonological constraint: verbs with monomoraic infinitival forms cannot enter into productive honorification strategies, and must resort to irregular honorific forms, as in Table 5. (The irregular forms are bracketed in italics. For some verbs, neither productive nor irregular forms exist.) For example, the verb *kuru* ‘to come’ has the infinitival form *ki*, which cannot enter into productive honorification due to the monomoraic constraint. Since it cannot enter into productive honorification, it has an irregular form, *irassyaru*.

| | INF | Productive SH | Productive NSH |
|---------------|-----|--|--|
| ki-ru (wear) | ki | *o- ki -ni-naru (<i>o-mesi-ni-naru</i>) | *o- ki -suru |
| ku-ru (come) | ki | *o- ki -ni-nar-u (<i>irassyaru</i>) | *o- ki -suru (<i>mairu</i>) |
| su-ru (do) | si | *o- si -ni-naru (<i>nasaru</i>) | *o- si -suru (<i>itasu</i>) |
| ne-ru (sleep) | ne | *o- ne -ni-naru | *o- ne -suru |
| he-ru (pass) | he | *o- he -ni-naru | *o- he -suru |
| mi-ru (see) | mi | *o- mi -ni-nar-u (<i>goran-ni-naru</i>) | *o- mi -suru (<i>haiken-suru</i>) |

Table 5: *Monomoraic infinitival forms infelicitous for productive honorification*

In contrast, verbs with heavier infinitival forms are perfectly happy to form their honorifics productively, as in Table 6. These verbs do not have irregular honorific forms.

| | INF | Productive SH | Productive NSH |
|------------------|-------|--------------------------|-----------------------|
| ki-ru (cut) | kiri | o- kiri -ni-naru | o- kiri -suru |
| su-ru (scrub) | suri | o- suri -ni-naru | o- suri -suru |
| ne-ru (knead) | neri | o- neri -ni-naru | o- neri -suru |
| he-ru (decrease) | heri | o- heri -ni-naru | o- heri -suru |
| chir-u (scatter) | chiri | o- chiri -ni-naru | o- chiri -suru |

Table 6: *Bimoraic infinitival forms felicitous for productive honorification*

The above contrast between productive and irregular honorifics is particularly evident in pairs of verbs with identical stem forms, but differ minimally in the moraic weight of their infinitival forms. For instance, ‘to cut’ and ‘to wear’ both have the identical stem form *kiru*, but differing infinitival forms *kiri* for ‘cut’ and *ki* for ‘wear’. Consequently, only *ki*, corresponding to ‘to wear’, is ruled out for productive honorification and results in irregularity.

Our account also explains the rarity of irregular honorifics: modern Japanese only has approximately ten verbs with monomoraic infinitival forms. Indeed, these are all of the verbs which have an irregular honorific form. To our knowledge, this is the only account of irregular honorifics which explains this limited distribution.

Thus, the monomoraic constraint explains why verbs with monomoraic infinitival forms do not have productive honorific forms and resorts to irregularity. But what determines the shape of the irregular forms that *are* realised — are they completely random, in that they have no correspondence to the stem at all? For example, why does *taberu* ‘to eat’ have the irregular form *itadaku*, but not some other random form like *kabanu*?

In answer to these questions, we would like to show that the irregular forms themselves have non-honorific uses, being independent stems in their own right. Thus, irregular honorifics in Japanese are neither [HON]-conditioned suppletives, nor random forms constrained by the monomoraic constraint; rather, they are *verbal substitutions*, where one verb is merely being substituted for another as a matter of pragmatics and/or convention.

We note again that the Japanese honorification paradigm is not automatically acquired, but has to be explicitly taught. If irregular honorifics are a matter of convention, then this fact about acquisition falls out naturally.⁴

| Verb(s) | Irregular SH form | Meaning |
|--------------------|-----------------------|---|
| ‘to eat, to drink’ | <i>mesiagaru</i> | <i>mesu</i> + <i>agaru</i> . <i>mesu</i> : ‘to put on (years); to eat/drink; to commit (seppuku)’; <i>agaru</i> : ‘to finish’ |
| ‘to see/watch’ | <i>haiken-suru</i> | <i>haiken</i> + <i>suru</i> . <i>haiken</i> : ‘to humbly visit’; <i>suru</i> : ‘to do’ |
| ‘to do’ | <i>sareru</i> | Passive form of verb ‘to do’ |
| ‘to wear’ | <i>o-mesi-ni naru</i> | The <i>naru</i> SH strategy applied to <i>mesu</i> ‘to wear’ |

Table 7: Independent meanings of SH irregular forms

| Verb(s) | Irregular NSH form | Meaning |
|-----------------------|--------------------|--|
| ‘to go, to come’ | <i>mairu</i> | ‘to be defeated; to collapse; to die; to be annoyed/confused’ |
| ‘to eat, to drink’ | <i>itadaku</i> | ‘to humbly receive’ |
| ‘to visit, to listen’ | <i>ukagau</i> | ‘to implore; to seek direction (from superior); to speak to (a large crowd)’ |
| ‘to see/watch’ | <i>haiken-suru</i> | <i>haiken</i> + <i>suru</i> . <i>haiken</i> : ‘to humbly visit’; <i>suru</i> : ‘to do’ |
| ‘to say’ | <i>moosu</i> | Light verb in Old-Middle Japanese, not in productive use currently. |
| ‘to do’ | <i>asobasu</i> | ‘to let one play; to leave idle’ (archaic) |

Table 8: Independent meanings of NSH irregular forms

Tables 7-8 show that verbs are substituted for another in honorific speech.⁵ Taking the last line of Table 7 as an example, a respectful speaker substitutes the form *haiken-suru* with the meanings ‘to make a humble visit’ for the plain form *miru* with the meanings ‘to see/watch’.

⁴It would be interesting to see what speakers produce when presented with a nonce monomoraic verbal form and asked to produce an honorific form for it. Would they use productive honorification strategies (violating the monomoraic constraint), or produce irregular nonce forms?

⁵The precise meanings of each irregular form is difficult to pin down; some forms have a range of (unrelated) meanings so we only give a selection here.

The result of this substitution is that the choice of a different verb contributes an additional layer of politeness: to see someone is quite a different matter from making a humble visit to someone. We think that this additional layer of politeness is the reason why these particular forms are chosen for subject honorific irregular forms.

Taking the first line of Table 8 as another example, a humble speaker substitutes the form *mairu* with the negatively connotations ‘to be defeated; to be annoyed/confused; to collapse; to die’ for the plain form *iku/kuru* with the meaning ‘to go/to come’. The result of this substitution is that the choice of a different verb contributes an additional layer of self-debasement: to go somewhere is yet another different matter from being defeated, being annoyed, collapsing, or dying. We think that this additional layer of self-debasement is the reason why these particular forms are chosen for non-subject honorific (i.e. self-humbling) irregular forms.

Essentially, the so-called irregular honorifics of Japanese are merely verbal substitutions, where a socially neutral verb (like ‘to see’) is substituted for another with more social connotations (like ‘to make a humble visit’).

Lastly, note that several verb pairs (namely: ‘to eat, to drink’; ‘to visit, to listen’; ‘to go, to come’) share identical irregular forms. For example, the pair of verbs ‘to eat’ and ‘to drink’ have distinct plain forms (*taberu, nomu*), but have an identical irregular NSH honorific (*itadaku*). The result is that in honorific speech, these verbs are conflated into one.

Such semantic bleaching is typologically common in respect registers. Several Australian Aboriginal languages feature a distinct speech register reserved for addressing and referring to in-laws, found in languages including Dyirbal, Djaru, Warlpiri, and Guugu Yimidhirr. (These are not separate languages, as they share the same syntax and phonology with the everyday language.) This phenomenon is In Guugu Yimidhirr, the verbs ‘to go’, ‘to float/sail/drift’, ‘to limp’, ‘to crawl’, ‘to paddle’, ‘to wade’ normally have distinct forms in everyday speech, but are conflated into a single form *balil* ‘go’ in mother-in-law speech (Haviland 1979).

It is notable that our account will not give any formal derivation of irregular honorifics, having shown that they are merely verbal substitutions subject to morphophonological constraints. This is because irregular honorifics are not part of the narrow syntax. Their form is determined by social convention about the pragmatics of politeness, an area where Japanese parallels avoidance phenomena in Australian languages.

4.2. Productive honorifics as nominal forms

Table 6 showed that verbs with non-monomoraic infinitival forms used exactly those infinitival forms in productive honorifics. For example, *heru* ‘decrease’ has the infinitive form *heri*, which is used within its productive SH form, *o-heri-ni-naru*. (38)-(39) further illustrate that infinitive forms are used for both verbal nominalizations and productive honorifics.

- (38) *nuru* ‘paint’
- a. Urushi-no **nuri**-ga ama-i.
lacquer-GEN paint-NOM rough-NPST
‘The painting of the lacquer was rough.’ (nominalization)
 - b. Sensei-ga tansu-o o-**nuri**-ni nar-u.
professor-NOM wardrobe-ACC HON-paint-DAT become-NPST
‘The professor (HON) paints the wardrobe.’ (productive honorification)

(39) *kiru* ‘cut’

- a. Ki-no **kiri**-kata-ga ara-i.
tree-GEN cut-NOMLZ-NOM rough-NPST
‘The cutting of the tree is so rough.’ (nominalization)
- b. Sensei-ga ki-o o-**kiri**-ni nar-u.
professor-NOM tree-ACC HON-paint-DAT become-NPST
‘The professor (HON) cuts the tree.’ (productive honorification)

Hence, both zero-nominalization and productive honorification are governed by the same morphophonological constraint, showing that productive honorifics involve a nominalization component. If stems within honorific verbal complexes have been nominalized, it is thus expected that they obey the same morphophonological constraint as that of nouns.

Lastly, the infinitival forms are justifiably ‘infinitival’ because they are elsewhere inflectional forms. For example, they appear in the environments with intervening focus particles *mo/sae*, or the politeness marker (41). As these items intervene between the root and *v*, only the elsewhere form is available (Yoda 2013).

- (40) a. Taro-ga **kaeri**-{mo/sae}-shi-ta.
Taro-NOM go.back-FOC-do-PAST
‘Taro even returned.’
- b. **iki**-mas-u.
go-POL-NPST
‘(We are) going.’

For more specified environments, this infinitival form is *not* used. Within environments of negation, passivisation, or causation, another form is used instead, namely, the irrealis form, which ends in *-a*. (41) shows this for the verb *nuru* ‘paint’, where the infinitival form *nuri* is systematically banned.

(41) *Infinitival form banned in verbal environments*

- a. Hide-ga hon-o {**nura**/***nuri**}-nai.
Hide-NOM book-ACC paint.IRR/INF-NEG
‘Hide did not paint the book.’ (negative)
- b. Hon-ga {**nura**/***nuri**}-re-ru.
book-NOM paint.IRR/INF-PASS-NPST
‘The book was painted.’ (passive)
- c. Watashi-wa Hide-ni hon-o {**nura**/***nuri**}-se-ru.
I-TOP Hide-DAT book-ACC paint.IRR/INF-CAUS-NPST
‘I made Hide paint the book.’ (causative)

This is strongly suggestive that productive honorifics, which contain infinitival forms, occur strictly under non-verbal environments — for example, *nominal* environments. This nicely fits with the argument made in the previous section: that the so-called ‘honorific’ prefix *o-* is just a noun-selecting prefix or a low-attaching nominaliser. Together, these two observations strongly suggest that Japanese honorification involves nominalisation, an account we develop in full in the next section.

5. Proposal: the syntax of productive honorifics as the syntax of nominalizations

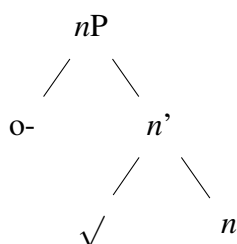
So far, we have argued that the prefix *o-* heads a nominalised verbal complex. As such, *o-* is merely a nominal prefix, not a Hon^0 head, and the syntax of honorific constructions involves nominalisation. This was supported by two commonalities that honorific verbal complexes share with nominalisations: both use the infinitival form of the verbal stem, and both are governed by the morphophonological constraint.

Recall our central claim that there is no syntactic feature specialised for honorification. Honorific sentences are merely nominalizations; thus, the presence of the light verbs *naru* and *suru* in honorific verbal complexes is so that the nominalized verb can project up the functional spine of the sentence. (It is an open question as to whether the additional layer of functional structure adds periphrastic meaning characteristic of respectful speech.) We now proceed to adopt the syntax of nominalization and light verbs for honorifics.

5.1. The syntax of *o-*

Based on the discussion on §3, we propose that the [*o-* + V_{INF}] constituent is a nominalised verbal complex. The root is nominalized by a null *n*. The noun-selecting prefix *o-* is higher than this nominalized root projection (*n'*). The [*o-* + V_{INF}] constituent is a *nP* (42).⁶

(42) The honorific verbal complex as a nominalization



Here, *o-* is a low attaching prefix in the sense that nothing can intervene between *o-* and *nP*. This supports several facts from Bobaljik & Yatsushiro (2006), which show that [*o-*+*V*] is a constituent, to the exclusion of the light verb (13)-(14). Furthermore, this renewed conception of *o-* as a noun-selecting prefix explains why *o-* is apparently optional even if the speaker wishes to express deference, as in (15). This is because *o-* is no longer the locus of honorification. Lastly, if *o-* is a noun-selecting prefix, we are also able to explain why multiple exponence of *o-* is allowed on both nominals and verbs, as was the case in (16).

5.2. The syntax of *suru* and *naru*

Here, we propose that general light verb syntax in Japanese already provides what we need to account for the syntax of productive honorification. There is no special syntax for honorification — all we need is to refashion light verb syntax for our purposes.

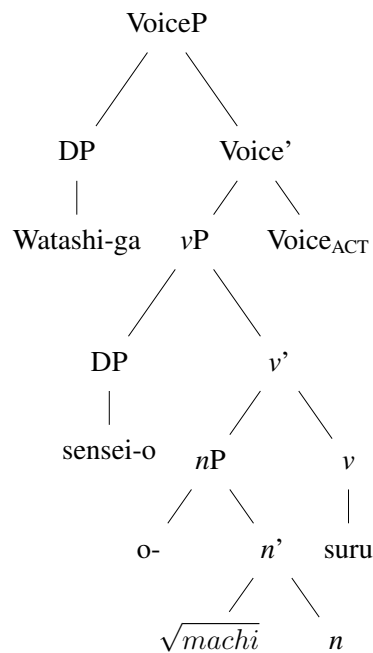
⁶Alternatively, one can analyse *o-* itself as expounding the nominaliser, n^0 , and this is equally available for our analysis.

We adopt uncontroversial assumptions about the positions of objects and subjects in Japanese. Object DPs originate in Spec- v P. Alternatively, it is possible to treat object DPs as the sisters of v , to which a root, n and o - adjoin via successive head movements. Note that the resulting complex head ($[_v o- + \sqrt{} + v]$) corresponds to classical V, and that this is just a variant of the standard assumptions for V. Subject DPs originate at Spec-VoiceP, following Kratzer (1996). Crucially, we propose derivations *without a dedicated component for honorification*, dispensing of Hon^0 or [HON]. We merely make use of standard assumptions about light verb constructions, the origin of the direct object, and the origin of the subject.

(43) gives a derivation of the NSH *suru* strategy. The light verb *suru* originates as a v head, taking the nominalized verbal complex n P as its complement. The object DP originates in Spec- v P, and the subject DP in Spec-VoiceP. (Layers above VoiceP are omitted for exposition.)

(43) *The syntax of honorific suru*

- a. Watashi-ga sensei-o o-machi su-ru.
 I-NOM professor-ACC HON-wait do-NPST
 ‘I am waiting for the professor (HON).’
 b.



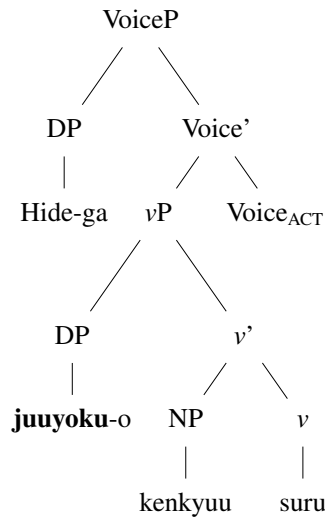
One may argue that if verbal honorification in Japanese involves light verbs, the same case-marking flexibility in light verb constructions should be observed. In its use as a light verb in *kenkyuu-suru* ‘to study’, *suru* may either assign accusative case to its direct object (44a), or genitive case to its direct object plus accusative case to its complement (44b).

(44) *Case flexibility in light verb constructions*

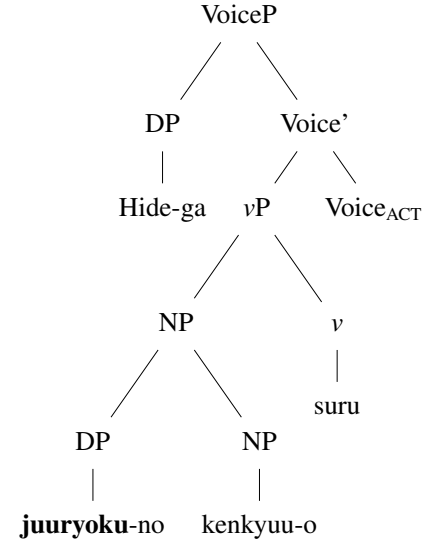
- a. Hide-ga juuryoku-o kenkyuu-si-ta. (DO-ACC N-suru)
 Hide-NOM gravity-ACC research-do-PAST
 b. Hide-ga juuryoku-no kenkyuu-o si-ta. (DO-GEN N-ACC suru)
 Hide-NOM gravity-GEN research-ACC do-PAST
 ‘Hide studied gravity.’

This flexibility can be reduced to a structural difference: in (44a), the direct object *juuryoku* ‘gravity’ originates in Spec-*v*P, and is assigned accusative case by *v* in that position. In (44b), the direct object *juuryoku* ‘gravity’ originates within Comp-*v*P, and is unavailable for accusative case assignment in that position. This is because *kenkyuu* ‘research’ is an independent NP in which the direct object *juuryoku* ‘gravity’ is embedded. As a result, the accusative case is assigned to the NP *kenkyuu* ‘research’ and *juuryoku* ‘gravity’ is assigned the genitive case, just like ordinary possessor DPs.⁷ (45) illustrates this.

(45) a. *DO-ACC N-suru*



b. *DO-GEN N-ACC suru*



Since we are assuming that the syntax of honorific *suru* is identical to the syntax of light verb *suru*, a potential problem for our analysis is that this observed case-marking flexibility does not extend to honorific uses of *suru*. Only the first case marking option (ACC to direct object) is available (46a). The second option (GEN to direct object, plus ACC to its complement) is not available (46b).

(46) *No case flexibility in honorific complexes*

- a. Watashi-ga sensei-o o-machi su-ru.
 I-NOM professor-ACC HON-wait do-NPST
- b. *Watashi-ga sensei-no o-machi-o su-ru.
 I-NOM professor-GEN HON-wait-ACC do-NPST
 Intended: ‘I am waiting for the professor (HON).’

However, this asymmetry between light verb constructions and object honorification does not mean that honorific *suru* is somehow special. Rather, it means that the complements of *suru* differ across the honorific cases and the light verb cases. As we have shown in (30), *o*-headed nominals are result nominals which do not independently project argument structure. This means that they cannot be embedded in the structure (45b), which is precisely the option that allows

⁷We do not commit to any precise syntactic analysis of case marking in Japanese here. The point here is that accusative marked DPs receive case from the light verb *suru*, but genitive marked DPs receive case from the verbal noun *kenkyuu*. One can analyse verbal nouns as an amalgam of a root and *n*. This does not matter in our discussion of honorifics.

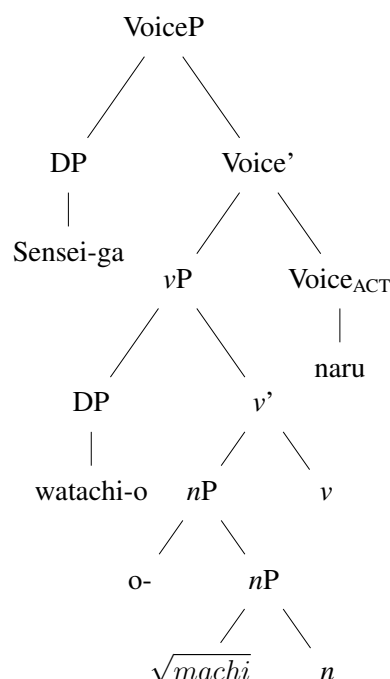
case-marking flexibility. Thus, this accounts for the rigidity of case-marking in honorifics, and further supports our conception of the [*o*-+V] constituent as a result nominal.

Now that we have provided a syntax for the *suru* honorification strategy, we turn to the *naru* strategy. In (47), we give a derivation of the SH *naru* strategy.

(47) *The syntax of honorific naru*

- a. Sensei-ga Hana-o o-machi-ni nar-u.
 professor-NOM Hana-ACC HON-wait-DAT become-NPST
 ‘The professor (HON) waits for Hana.’

b.



One might wonder about the status of dative case in the *naru* strategy, since it is not represented in our derivation above. We have abstracted away from the precise mechanisms of Japanese case assignment, but the presence of dative case is notable in two ways.

First, case only attaches to nouns in Japanese, supporting our claim that honorific verbal complexes are nominalizations (since dative case attaches to the nominal [*o*- + V_{INF}] constituent, as in *o-machi-ni naru*). Second, dative case is obligatory in general uses of *naru*, not just in its honorific use. *naru* obligatorily assigns dative case in both in general uses (48) and its honorific uses (49).

- (48) a. byoki*(-ni) nar-u
 disease-DAT become-NPST
 ‘to become sick, to get sick’
 b. ki*(-ni) nar-u
 tree-DAT become-NPST
 ‘to become a tree’

- (49) Sensei-ga Hana-o o-machi-*(-ni) nar-u.
 professor-NOM Hana-ACC HON-wait-DAT become-NPST
 ‘The professor (HON) waits for Hana.’

This shows that the appearance of dative case is not a special effect of honorification, but ac-

companies general uses of the light verb *naru* ‘become’.⁸

In summary, we have re-characterized Japanese honorific verbal complexes as nominalizations, dispensing of a [HON] feature. In §3 and §4, we observed that *o-* is a noun-selecting prefix and V_{INF} is the form used for nominalizations. Building on this, the addition of the light verbs *suru* and *naru* to honorific verbal complexes is explained, because they enable the nominal [*o*-+ V_{INF}] component to project up the functional spine of the sentence as a verb. Nothing extra is needed to derive the overall shape of Japanese productive honorifics, once we conceive of honorifics as nominalizations.

6. Conclusion

In sum, the shape of the Japanese honorification paradigm can be explained by simply decomposing the *(r)are*, *suru* and *naru* strategies into their component morphemes as in (50).

- (50) a. *(r)are* strategy: passive marker
 b. *suru* strategy: *o-*, nominal prefix; *suru*, light verb ‘do’
 c. *naru* strategy: *o-*, nominal prefix; *-ni*, DAT marker; *naru*, light verb ‘become’

Crucially, this proposal eschews [HON] or any grammatical component dedicated to honorification. This move directly contradicts the longstanding analytical tradition in the literature, but we think that this is gainful in empirical, analytical, and theoretical ways.

Empirically, our proposal explains why the honorific paradigm does not exhibit typical properties of Agree (e.g. honorification is optional, does not enforce grammatical well-formedness).⁹ Furthermore, the monomoraic constraint proposed for irregular honorifics in §4 explains the restrictions on their distribution: only verbal stems with monomoraic infinitival forms have irregular honorific forms.

Analytically, this proposal gives a principled explanation behind Japanese honorific phenomena. The so-called honorification strategies resemble nominalizations, precisely because they *are* nominalizations.

Theoretically, the resulting feature inventory without [HON] is a more minimal one, and suggests that the feature inventory is more economically organised (cf. Biberauer’s (2017) *Maximize Minimal Means*). Thus, nominalizing morphology is recycled for honorific meaning, precisely because nominalization *distances* the honorified referent, whether it be a subject or non-subject, from the verbal event.

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⁸The light verb *naru* sometimes take a sentential complement and it is unlikely that *naru* has syntax of raising verbs. In that case, the syntax proposed above might be revised, though we do not discuss further.

⁹Although, the intervention effect in (11a) remains a mystery for us and many other analyses.

Borer, Yasutada Sudo, and Sam Steddy for their good questions, their wisdom, their constant encouragement, and their unending patience.

Abbreviations

ACC accusative; CAUS causative; DAT dative; FOC focus; GEN genitive; HON honorific prefix *o-*; INF infinitival; IRR irrealis; NEG negative; NOM nominative; NOMLZ nominalizer; NPST non-past; NSH non subject honorification; PASS passive; POL polite; PAST past; SH subject honorification; TITLE title suffix; TOP topic.

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References

- Biberauer, T. (2018). Pro-drop and emergent parameter hierarchies. Cognola, F. & J. Casalicchio (eds.), *Null Subjects in Generative Grammar: A Synchronic and Diachronic Perspective*, Oxford University Press, Oxford, pp. 94–140.
- Bobaljik, J. D. & K. Yatsushiro (2006). Problems with honorification-as-agreement in Japanese: A reply to Boeckx & Niinuma. *Natural Language & Linguistic Theory* 24:2, pp. 355–384.
- Boeckx, C. & F. Niinuma (2004). Conditions on agreement in Japanese. *Natural Language & Linguistic Theory* 22:3, pp. 453–480.
- Bruening, B. (2013). By phrases in passives and nominals. *Syntax* 16:1, pp. 1–41.
- Grimshaw, J. (1990). *Argument structure*. MIT Press, Cambridge: Mass.
- Harada, S. (1976). Honorifics. Shibatani, M. (ed.), *Syntax and Semantics*, Academic Press, New York, vol. 5, pp. 499–561.
- Hasegawa, N. (2006). Honorifics. Everaert, M. & H. van Riemsdijk (eds.), *The Blackwell companion to Syntax*, Blackwell Publishing, Oxford, vol. 1, chap. 32, pp. 493–543.
- Haviland, J. B. (1979). Guugu Yimidhirr brother-in-law language. *Language in Society* 8:2-3, pp. 365–393.
- Ivana, A. & H. Sakai (2007). Honorification and light verbs in Japanese. *Journal of East Asian Linguistics* 16:3, pp. 171–191.
- Kishimoto, H. (2010). Honorific agreement in Japanese. *Canadian Journal of Linguistics/Revue canadienne de linguistique* 55:3, pp. 405–415.
- Kratzer, A. (1996). Severing the external argument from its verb. Rooryck, J. & L. Zaring (eds.), *Phrase Structure and the Lexicon*, Springer, Dordrecht, pp. 109–137.
- Niinuma, F. (2003). *The syntax of honorification*. Ph.D. thesis, The University of Connecticut.
- Potts, C. & S. Kawahara (2004). Japanese honorifics as emotive definite descriptions. *Semantics and Linguistic Theory*, vol. 14, pp. 253–270.
- Sakai, H. & A. Ivana (2009). Rethinking functional parametrization: A view from Honorification in the Nominal Domain in Japanese. *English Linguistics* 26:2, pp. 437–459.
- Thompson, A. (2011). Irregularity in Japanese Honorifics. LaCara, N., A. Thompson & M. A. Tucker (eds.), *Morphology at Santa Cruz: Papers in Honor of Jorge Hankamer*, UC Santa Cruz, California.
- Toribio, A. J. (1990). Specifier-head agreement in Japanese. *Proceedings of West Coast Conference on Formal Linguistics*, vol. 9, pp. 535–548.
- Ura, H. (1993). L-relatedness and its parametric variation. *MIT Working Papers in Linguistics* 19, pp. 377–399.
- Volpe, M. (2009). *Honorifics in Japanese: A Distributed Morphology approach to their morphology*. [Ms.].
- Yoda, Y. (2013). *Tooi kouzou no keitai-toogoron teki kenkyuu [A Morphosyntactic Study of Coordination]*. [PhD. thesis, Osaka University].

Plural marking with *òtúro* in Ògè

Priscilla Lolá Adénúgà

This paper provides an analysis of the syntax of plural marking with *òtúro* in Ògè, a language of the Benue-Congo region spoken in Nigeria. Recent research has investigated lexical plural (optional) systems where some or all of the plural morphemes are realizations of some syntactic heads other than the Num-head. This paper proposes that plural marking on nouns in Ògè instantiates a D-head. This proposal accounts for two things: first, *òtúro* is in complementary distribution with the (in)definite article; second, plural marked nouns are construed as definite.

1. Introduction

The aim of this paper is to discuss the various strategies involved in marking plural with *òtúro* in Ògè. Ògè belongs to the Benue-Congo language family; it is spoken in Àkókó NW, which is a local government area of Nigeria.¹ Plural marking in general has received a lot of attention from scholars with varied analyses. Ritter (1991) analyzed *number* in Hebrew as an inflectional affix, which is associated with the Num-head, while Wiltschko (2008) classifies plural marking in Halkomelem as a non-inflectional plural marking in which the presence of the plural morpheme is not obligatory. Several scholars have supported the claim in Wiltschko (2008) on the different positions of occurrence of plural morphemes in languages in relation to the obligatoriness versus optionality of overt plural marking: Persian (Ghomeshi, 2003); Amharic (Kramer, 2015); Yucatec Maya (Butler, 2011); Korean (Kim & Melchin, 2018).²

This paper defends the assumptions in Wiltschko (2008) on the parameterization of plural marking in languages. Based on empirical evidence, the claim made is that *number* in Ògè is non-inflectional just like its counterparts in some of the languages in Benue-Congo as reported in Omoreyì (1986) for Edo, Ajíbóyè (2005, 2010) for Yorùbá and Nweya (2016) for Igbo. Ògè has a designated morpheme for marking plural on all categories of nouns provided that such

¹ Geographically, Ògè is situated between Defoid, which is to the west (Capo, 1989), and Èdoid, which is to the east (Elugbe, 1989).

² In each of the languages mentioned, the authors argue for a different layer within the nominal phrase for plural morphology. Ghomeshi (2003) claims that plural marking is connected to the Q/DP layer within Persian noun phrases (p.71). Kramer (2015) adds to the growing literature on multiple syntactic locations for plurality, and she provides evidence that irregular pluralization strategies in Amharic are the realizations of n[+PL] (p.235). Butler (2011), analyzed plural in Yucatec Maya as an adjunction to the DP layer, while Kim & Melchin (2018), analyzed the plural marker *-tul* in Korean as an adjunct which adjoins to the nP-layer in the nominal spine.

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nouns allow for such plural marking.³ I also claim that nouns in *Ògè* have no *pluralia tantum* but rather possess a general number. This work concludes that *Ògè* belongs to the group of languages in which the marker of plurality occupies a different position in the nominal spine, not just the Num-head (D-head). This work is organized as follows: Section 2 discusses the structure of *Ògè* nominal expressions while Section 3 presents the strategies of plural marking in *Ògè*. Sections 4-6 discuss the main analyses assumed for the strategies of marking plural in *Ògè* and Section 7 concludes the work.

2. The structure of *Ògè* nominal expressions⁴

This section introduces the structure of the nominal phrase in *Ògè*. It provides the background on the general proposal assumed in this work. It is a general knowledge that, in some languages, the NP is not dominated by the projection of the DP (articleless languages), while in others, the D head takes the NumP or the NP as its complement. In this section, the main proposal will be that the DP and the NumP are projected in the nominal expressions in *Ògè*.⁵ Nouns in *Ògè* could be bare; the examples in (1) show that the (in)definite articles are not necessarily present in a noun phrase of *Ògè*.

- | | |
|--|---|
| (1) a. Í rì (ikári/ikín) ópú. 1SG see (the/a) dog 'I saw the/a dog.' | b. Í dà (ikári/ikín) ópú. 1SG buy (the/a) dog 'I bought the/a dog.' |
| c. Ópú jù àran. dog eat meat 'A/The dog ate the meat.' | d. Sade si olùkó Sade AUX teacher 'Sade is a/the teacher.' ⁶ |

The examples in (1) show that bare nouns (BNS) in argument positions are grammatical in each of the grammatical positions: object and subject positions (1a-c). The BN (1d) *olùkó*, 'teacher', in predicative position is also grammatical. In some contexts, the overt occurrence of the (in)definite article is obligatory. Take the context in (2) for example.

³ It has been reported in Igbo and Yorùbá that both languages use the third plural pronoun to mark plurality on nouns.

(i) Ìyàwó ò mī kī [àwọ̀nọ̀kunrín] tí ó wà nìbẹ̀ (Yorùbá)
Wife G-M 1SG greet PL man that RP be there
'My wife greeted the men that were there.' (Ajíbóyè 2010:148)

(ii) Uchē ha bià-rà ebe ā (Igbo)
Uche 3PL come-PAST place this
'Uche and others came here' (Nweya 2016:8)

The third plural pronoun in each, *àwọ̀n*, for Yorùbá and *ha*, for Igbo, as reported by the authors, marks the plural on a preceding noun.

⁴ The essence of this section is to show that *Ògè* is a DP language as opposed to an articleless language. The argument in this section is paramount to the general proposal in this work, as it will become clear in sections 4-6.

⁵ This proposal differs from the proposed structures for non-inflectional plural marking languages in one significant way: NumP is projected in the nominal expressions of *Ògè*. As it will become clear in Section 5, the Num-head plays a paramount role in marking plural on nouns in *Ògè*.

⁶ I did not provide contexts here because the main argument is that nouns are bare in *Ògè*; most importantly, the equivalent of the example in (1d) is not grammatical in English; '*Sade is teacher'

(2) a. Context

An old woman bought a dog for her daughter, Sade. Sade's friend, Tade, uttered (2b) to report that Sade took the said dog out for a walk. In this context, the definite article is required to introduce the noun, *ópú* 'dog'. In (2c), on the other hand, the definite article is obligatory with a relativized noun.

- b. Tade: Sade gbì *(ikári) ópú shì vè
 sade take DEF dog go out
 'Sade took the dog in question for a walk.'

- c. *(ikári) ópú nì mà má dà yín Sade
 (DEF) dog REL mama buy for sade
 'the dog that mother bought for Sade...'

The noun phrase *ikári ópú*, 'the dog', as used in the subject position in (2c) shows two things: a relativized noun must be preceded by an article and the article is needed to introduce a previously mentioned noun in discourse.⁷ Based on the examples in (1-2), BNS in Ògè can appear in all argument positions with different interpretations. Following the assumptions of the empty determiner in Longobardi (1994) and as expatiated by Schmitt & Munn (2000), I claim that the grammaticality of the bare singular in (1c) with an (in)definite construal is possible because of the empty determiner parameter. Based on the above observations, it is assumed that the noun phrase in Ògè is dominated by the projection of the determiner phrase, and I thus argue that the D-head of a bare definite singular is null in Ògè.

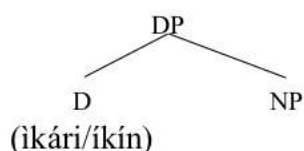


Figure 1

The article in Figure 1 is the head of the determiner phrase while the NP is the complement of the D- head. In addition to the above observations, nouns in Ògè are preceded by demonstratives, as shown in (3).

- (3) a. ígé ópú b. íghé ópú
 DEM dog DEM dog
 'that dog' 'this dog'

It is grammatical for both the article and the demonstrative to co-occur in the nominal phrase in Ògè as we can observe in example (4).

⁷ The argument here is to show that, despite the fact that (in)definite articles are optional in Ògè, in some contexts, its presence is required. This is in support of the structure in Figure 1.

- (4) a. *ìkàrí ígé ópú* b. *ìkàrí íghé ópú*
 DEF DEM dog DEF DEM dog
 ‘that dog in question’ ‘this dog in question’

The context in (2a) will help to understand the co-occurrence of the two elements in (4a-b): for example, the dog in question during the walk got lost! This is different from the interpretation of the nominal expression in (3a-b). The major difference lies in the fact that ‘the dog’ under discussion is the particular one that her mother bought for her and not any other dog. In (3a-b), such reading is not available. I also show that the order of the elements (article plus demonstrative) is strict; this is shown by the ungrammaticality in (5b).

- (5) a. DEF > DEM b. * DEM > DEF

In addition to the data in (1-4), another element that I discuss in the nominal expression in Ògè are the quantifiers. The most commonly used quantifiers in Ògè are *ìgào*, ‘all’, *ikúwó*, ‘some’, and *òpò*, ‘many/plenty’ as can be observed in the examples in (6).

- (6) a. *ìgào ópú* b. *ikúwó icha* c. *òpò ènẹ*
 all dog some sand plenty/many people/person
 ‘all the dogs’ ‘some sand’ ‘many people’

The examples in (7) further show that the quantifier and the demonstrative can co-occur, but that the combination of the quantifier and the (in)definite article is not grammatical (7b).

- (7) a. *ìgào ígé ópú* b. * *ìgào ìkàrí ópú*
 all DEM dog all DEF ópú
 ‘all these dogs’

Since a single node in a tree can only accommodate one element at a time, it follows that a noun phrase could have only one determiner in the D-head. The data presented in (7b) shows that the quantifier and the (in)definite article are in complementary distribution, which could mean that both elements occupy the same position in the nominal spine. However, the claim that I make in this paper is that the quantifier does not occupy the same position with the article. The reason for this claim is that *òtúro*, which is the marker of plurality, occupies the same position with the article which in turns cooccurs with the quantifier (see sections 3.4 and 5 for more discussions on this). This shows that, in the nominal expressions in Ògè, the DP is the complement of the quantifier, this is represented in the tree in Figure 2.

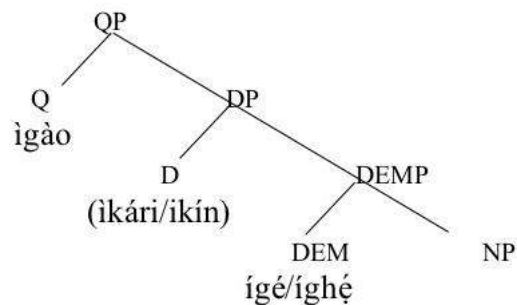
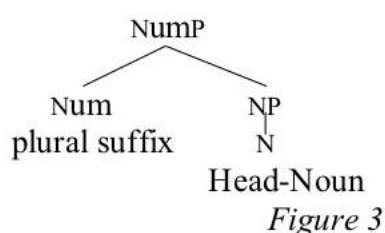


Figure 2

In the next section, I show that NumP is projected between the DP and the NP in Ògè.

2.1. NumP in Ògè

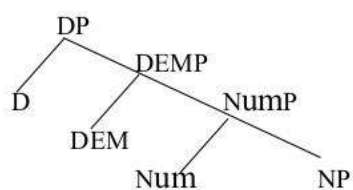
In languages classified as inflectional plural marking languages, it is assumed that the plural affix is not a feature of the noun (Ritter 1991). Instead, the noun phrase only has the plural denotation set when the number affix is base generated as a distinct functional head. This is schematized in Figure 3.



NumP is the syntactic locus of number inflection interpretation (Ritter 1991). According to the structure in Figure 3, the affixes in Num are attached to the noun via head movement in syntax. In Ògè, on the other hand, this work shows that nouns are marked for plurality with an independent morpheme *òtúro*.

- (8) a. Í ri òtúro ópú.
 1SG see PL dog
 = ‘I saw some (specific) dogs.’
 = ‘I saw the dogs.’
- b. Í dà òtúro àga.
 1SG buy PL chair
 = ‘I bought some (specific) chairs.’
 = ‘I bought the chairs.’

Based on the general assumptions in the literature that the phonological realization of the Num-head is associated with inflectional plural markers and regular (obligatory) plural markers, this work claims that there is the functional projection of the NumP between the DP and the NP in Ògè nominal expressions as shown in Figure 4 but that the Num-head is not phonologically filled - I will come back to this in Section 5.



In Section 5, this paper argues that the number feature on Num determines the number interpretation of the noun, i.e., if Num bears an interpretable number feature, then the noun is obligated to be interpreted as plural; on the other hand, an interpretable singular feature on Num is interpreted as a singular noun. However, I show that interpretable singular and plural features spell out either a singular or a plural noun; a result in which the context plays a vital role. The next section introduces the theoretical background to the assumptions in this work.

2.2. Theoretical background

The framework that is adopted in this work is the minimalism theory of syntactic feature specifications, as laid out in Adger (2003, 2010) and Chomsky (1995, 2000, 2001).

Adger (2003) defines features as properties of syntactic atoms, which allow them to enter into relationships with other features. For example, an interpretable feature is said to be able to enter into a relationship with a counterpart feature that is not interpretable, i.e. a plural feature on a syntactic item that is interpretable will be checked against an uninterpretable number feature. The example in (9a) is not grammatical because the verb does not agree with the singular noun ‘the man’, while the grammaticality of (9b) shows that the verb form and the plural form of the noun are compatible: a plural noun agrees with a plural verb.

- (9) a. *the man chuckle b. the men chuckle

Morphosyntactic features are the basic building blocks of syntax and their interactions account for the observable syntactic phenomenon. Adger & Harbour (2008) describe syntactic features as features that have a morphological expression and syntactically influence distribution, such as agreement and case.

In the same vein, Zwicky (1986) describes features in syntax using the terms *controller* and *target*. Zwicky argues that the controller bears an inherent feature, which is specified before the features on the *target*. In his analysis, the features on the target are derived from the features on the controller through agreement. For the analysis adopted in this paper, *òtúro* or the element in the D-head is seen as the *target* while the Num-head is analyzed as the *controller*. In Section 5, the agreement between *òtúro* and the Num-head is not phonologically represented on the Num-head or on the noun, but the assumption is that agreement between *òtúro* and the Num-head is covert: in the presence of *òtúro*, the noun is necessarily plural.

In Ògè, the form of the noun is consistent in all contexts and plural is marked with an independent plural morpheme. For the analysis of the syntax of plural marking in Ògè, this paper argues that *òtúro* bears a number feature, which is independent of the noun. This assumption is different from the number feature specifications for nouns in a language like English (10) or German (11) in which the singular form of the noun is distinct from the plural form and the agreement of such forms with the verb is required.

- (10) a. The child is coming b. The children are coming English

- (11) a. Das Kind kommt b. Die Kinder kommen German

In English, the plural form of the noun ‘child’ is ‘children’, and in German, the plural form of ‘Kind’ is ‘Kinder’; the plural morpheme is overt on the pluralized nouns, but in some cases where this is not the case, then the verb needs to agree with the noun on number feature as shown by the ungrammaticality in (9a).⁸

The main theoretical assumption in this work is that the number feature on the Num-head is interpretable, which gives value to the uninterpretable number feature in D when D is phonologically filled. This paper provides an answer to the following research questions: (i) how are nouns marked for plural in Ògè, (semantically or syntactically marked for plural)?; (ii)

⁸ The example in (9a) shows that the noun ‘man’ is in its singular form while the verb ‘chuckle’ is in its plural form, hence the ungrammaticality of the example.

is there the need for the projection of a NumP between the DP and the NP in Ògè?; (iii) is the plural marker in Ògè associated with other interpretations other than the marker of plural?

Regarding the first question, this work reveals that nouns in Ògè are optionally marked for plural with *òtúro*, which is laid out in Section 3. In Sections 4 and 5, this work argues for the need for a NumP projection within the nominal spine of Ògè, while section 6 shows that, in addition to the marking of plural, *òtúro* marks definiteness in the context in which it occurs. This paper contributes to the growing knowledge on the syntax of plural marking in languages. In particular, it is a common knowledge in the literature that in languages with non-inflectional plural marking (Wiltschko 2008; Kramer 2015; Butler 2011; Kim & Melchin 2018) the projection of the NumP is not realized. However, the present paper shows that the Num-head is required in Ògè in order to bear the number feature specifications associated with the number interpretations of the noun.

3. Plural marking strategies in Ògè

This section discusses the different strategies employed in Ògè to mark plural on nouns. Section 3.1 discusses the different contexts of occurrence of *òtúro* with the noun. Plural marking on nouns varies across languages: on animate or inanimate. In Section 3.2, I discuss the incompatibility of *òtúro* in the context of some nouns in Ògè. In the literature, various studies have been carried out on the strategies used to mark the plural on pronouns in languages. Section 3.3 presents pronouns in relation to plural marking in Ògè, while Section 3.4 shows the co-occurrence of the quantifier and *òtúro*.

3.1. Plural marking with *òtúro*

This section discusses the various contexts of the occurrence of *òtúro* with the noun. *Òtúro* marks the plural on both animate (12a) and inanimate (12b) nouns.

- | | |
|--|---|
| (12) a. Í rì òtúro ópú. 1SG see PL dog 'I saw the dogs.' 'I saw some dogs.' | b. Í dà òtúro àga. 1SG buy PL chair 'I bought the chairs.' 'I bought some chairs.' |
|--|---|

- | | |
|--|---|
| (13) a.*Í rì ópú òtúro 1SG see dog PL | b.*Í dà àga òtúro 1SG see chair PL |
|--|---|

Òtúro has a restricted distribution to the prenominal position, which is shown by the ungrammaticality of the expressions in (13). In addition, *òtúro* is grammatical when it occurs with a numeral greater than one (14a), and it is grammatical when it occurs with the nominal attributive modifier (14b).

- | | |
|--|--|
| (14) a. Í rì òtúro ìyí ópú. 1SG see PL two dog 'I saw two dogs.' | b. Í dà òtúro íhòhò àga. 1SG buy PL white chair 'I bought white dogs.' |
|--|--|

- c. Í rì òtúro òyí íhòhò ópú.
 1SG see PL two white dog
 ‘I saw two white dogs.’

We see that the plural marker is compatible with count nouns in the examples given so far. We also see that *òtúro* is compatible with both numerals and modifiers (14c). In the next section, I discuss the incompatibility of *òtúro* in the context of some nouns in Ògè.

3.2. Ungrammaticality of *òtúro* on some nouns

This subsection shows that it is not the case that *òtúro* is grammatical when it is used to mark the plural on all categories of nouns in Ògè. First, I show that *òtúro* does not mark the plural on nouns that signify periods of time, for example, week and hour.

- | | |
|--|-----------------------------|
| (15) a. wákàtí hour ‘hour/hours’ | b. *òtúro wákàtí PL hour |
| c. ọ̀sẹ̀ week ‘hour/weeks’ | d. *òtúro ọ̀sẹ̀ PL week |

Second, *òtúro* does not occur with measure nouns (16b) and mass nouns (17b).

- | | |
|---|---|
| (16) a. òyí iwòn two kilo ‘two kilos’ | b. *òtúro òyí kílò PL two kilo |
| (17) a. òyí ìgò úgo. two bottle oil ‘two bottles of oil.’ | b. *òtúro òyí ìgò úgo. PL two bottle oil |

The example in (17) shows that *úgo*, ‘oil’ is preceded by a measure word *ìgò*, ‘bottle’, in order to enable the mass noun to be counted. *Úgo* would not be grammatical with the numeral *òyí*, ‘two’, without the measure word. Smith (2016) already made the same observation in Telegu. He argues that, in Telegu, mass nouns do not combine with a plural morphology.⁹ The example in (18) shows that *òtúro* is grammatical when it occurs with ‘year’ because its function in such a position is not to mark plurality on the noun but to mark definiteness.

- (18) Í dọwẹ (*òtúro) òyí ìgú, Í gbádun òtúro òyí ìgú nì dọwẹ
 1SG stay two year, 1SG enjoy PL two year COMP. stay
 ‘I stayed for two years, I enjoyed the two years that I stayed.’

⁹ This is a common property of mass nouns. Cross-linguistically, mass nouns do not combine with number morphology.

The first part of the sentence (18) is not grammatical with the overt realization of *òtúro* while it is grammatical when it is used to refer to an old information. In such expressions, *òtúro* is used as a marker of definiteness. The discussions in this section suggest two important things: (i), nouns are not obligatorily marked for plural with *òtúro* in Ògè (ii), *òtúro* marks definiteness on nouns.

3.3. Pronouns in Ògè¹⁰

This section discusses how pronouns are marked for plural in Ògè. In (19a), the pronoun *ú* refers to a singular entity, while *à* in (19b) refers to a plural noun.¹¹ It is important to note that pronouns in Ògè are only specified for person and number features; these features are inherently specified on the pronouns.

- (19) a. *Ú í vá.*
 3SG PROG. come
 ‘she is coming.’
- b. *À í vá.*¹²
 3PL PROG. come
 ‘They are coming.’

Pronouns in Ògè consists of three persons: first, second and third. Table 1 shows the singular pronouns.

| Person | Nominative | Accusative |
|------------|------------|------------|
| 1st person | <i>í</i> | <i>ràn</i> |
| 2nd person | <i>á</i> | <i>rìn</i> |
| 3rd person | <i>ú</i> | - |

Table 1. Singular personal pronouns in Ògè.

The pronouns in Table 1 are equivalent to the singular pronouns in English; they are inherently singular, and they only refer to singular entity. The difference lies in the form of the third person singular object; the form is not phonologically specified. The reason is that the form of the third person singular pronoun changes with the context, i.e. *í da á* ‘I bought it’, *í fẹhẹn ẹn* ‘I liked him/her’, *Í sue é* ‘I called him/her’. The third person singular pronoun takes the form of the final vowel of the preceding element.

The plural counterpart of the pronouns in Table 1 are given in Table 2. The example of the use of some of the pronouns are presented in (20) to show the contexts of occurrence.

¹⁰ This section is a response to the question of one of the reviewers of the abstract of this work on how pronouns in Ògè are marked for plural. It is a well-known fact that some languages employ the use of a plural marker to mark plural on pronouns. In Ògè, pronouns take different forms depending on the referent (singular or plural).

¹¹ I follow Cysouw’s (2001) analysis that plural pronoun refers to groups of singular participants. According to this analysis, these groups are inherently plural as they consist of more than one participant. The importance of these recategorization from plural into group, in this paper, is that it allows for the assumption that the singular and the group categories are ‘unmarked for number.’ This conclusion is plausible, because *òtúro* does not occur with pronouns in Ògè.

¹² Ògè marks tense with independent morphemes: *rá* marks future on the verbal item, *sè* marks past tense, while *í* marks progressive. The mentioned items do not change the form of the verbs and the verbs in Ògè have the same forms in all contexts. The copula verb *si* ‘is’ is not always realized in a sentence in Ògè.

| Person | Nominative | Accusative |
|------------|------------|------------|
| 1st person | ó | wò |
| 2nd person | ẹ | mẹ |
| 3rd person | à | va |

Table 2. Personal plural pronouns in Ògè.

- (20) a. Ó bẹ vá.
 1PL beg 3PL
 ‘We begged them.’
 b. À bẹ mẽ.
 3PL beg 2PL
 ‘They begged you (PL).’¹³

Ògè does not use *òtúro* to pluralize its pronouns.¹⁴ In addition, plural pronouns do not perform any other function in Ògè than to convey the plural interpretation of the pronoun involved.

- (21) a. Í bẹ rin
 1SG beg 2SG
 ‘I begged you.’
 b. Ó bẹ mẽ
 1PL beg 2PL
 ‘We begged you.’

3.4. The quantifier and *òtúro*

For the purpose of this work, I discuss *ìgào*, which has the interpretation of ‘all’ or ‘every’. The interpretation of ‘every’ with *ìgào* translates to a collective reading and not a division reading that one could get in expressions like ‘he jumped over every pole.’ Where necessary, this work makes reference to other types of quantifiers mentioned in Section 2. I show that *ìgào* is used in context where ‘all’ would be used and that, based on its multifunctional use, it is difficult to assign a one-to-one English interpretation to it.

- (22) a. ìgào éswé
 all house
 ‘all the houses’
 b. ikúwọ̀ isi
 some yam
 ‘some yams/some of the yams’

¹³ The gloss in (20b), is similar to the interpretation of the associative case marker in Hungarian. The suffix -ek is an associative marker which combines the hearer with other people.

(iii) János-ék

NAME- ASSOC

‘John and associates,’ ‘John and his group’ (Cysouw’s 2001:67).

The main difference is the feature encoded on the pronoun in Ògè, and the pronoun *mẹ* does not combine with a proper name.

¹⁴ Cysouw’s (2001:68) citing (Sohn 1994) for Korean and (Popjes & Popjes 1986) for Canela-Kraho, a Gé language from Brazil, the author noted that these languages use a nominal plural marker to mark plural on pronouns.

(iv)a. Capi te i-pupun b. Capi te me i-pupun (Canela-Kraho)
 NAME PAST 1-see NAME PAST PLUR 1-see
 ‘Capi saw me’ ‘Capi saw us (exclusive)’ (Popjes & Popjes, 1986: 175)

c. humre te me rop cahhyr
 man PAST PLUR dog beat
 ‘The men beat the dog’

(Popjes & Popjes, 1986: 186)

- | | |
|--|---|
| c. ìgàò òtúro éswe all PL house 'all the houses' | d. ikúwó òtúro isi some PL yam 'some yams/some of the yams' |
| e.*òtúro ìgàò éswe PL all house | f.*òtúro ikúwó isi PL some yam |

The expressions in (22c-d) are grammatical because *òtúro* occurs in a post-quantifier position. The position in which *òtúro* is grammatical, as we would recall in the context of the demonstratives, is a pre-demonstrative position. The data in this section reveals that *òtúro* does not occupy the highest position in the nominal spine of Ògè: the ungrammaticality of (22e-f) shows this.

4. Towards an analysis

This section is an introduction to the analysis proposed in the next section for the syntactic status of *òtúro* in Ògè. From the discussions so far, it is obvious that the strategies of marking plural in Ògè are compatible with the system of plural marking in non-inflectional languages. First, general number: nouns in Ògè show general number, that is the unmarked form of the noun has no number value, and it is compatible with reference either to a single entity or to more than one (Corbett 2000:9-10). Second, there cannot be *pluralia tantum*, i.e. words with a plural form, but with a singular interpretation, i.e., 'scissors' or 'pants' in English. This is also referred to as form meaning mismatches. Third, optionality of *òtúro* in the nominal phrase. Wiltschko (2008) argues that plural could be merged in different layers in the nominal spine. It is paramount to establish the position of occurrence of *òtúro* in the nominal phrase in Ògè. A first step is to observe the layer to which *òtúro* could adjoin in the nominal spine, i.e., the root, NumP, nP layer, the DP or the QP.¹⁵ To begin with, observe the paradigm in (23a-b), it is clear that the modifiers in Ògè are restricted to the prenominal position, while (23c) shows that *òtúro* also occurs at the pre-nominal position.

For Korean, the plural marker is *-tul*. *-tul* is a suffix which is suffixed to the noun, however, *-tul* is suffixed to the second person pronoun when the addressee is generally older than the speaker; the second person singular pronoun is *tangsin* and the second person plural pronoun is *tangsin-tul*.

Additional evidence is given in Cheng & Sybesma (1999:537), whose assumption is in line with that of Iljic (1994), that the suffix *-men* is affixed to pronouns in Chinese.

(vi) ni-men
YOU - MEN
'you (plural)'

Although, there are discrepancies on the use of *-men* as a plural marker in Chinese: Li & Thompson (1981:40) refer to it as plural suffix, while Iljic (1994) and Cheng & Sybesma (1999) refer to it as a collective marker. The relevance of this discussion to this work, however, is to show that pronouns in Ògè do not occur with such markers that mark more than oneness. The claim I make in this work is that, pronouns in Ògè are inherently specified for number, i.e., singular or more than one (a group of individuals).

¹⁵ The plural marker functions as a modifier in Halkomelem which merges with roots (Wiltschko 2008). In Persian, plural marking is licensed only at the level of a DP/QP (Ghomeshi 2003:67); in Amharic, irregular plural merges at the level of the n (Kramer 2009).

- (23) a. íhòhò áchó
white cloth
'a/the white cloth'
- b. ìyí áchó
two cloth
'two cloths'
- c. òtúro áchó
PL cloth
'cloths'

In (24), when the demonstrative co-occurs with each of the elements in (23), we see that *òtúro* occurs at the pre-demonstrative position (24c), while the adjective (24a) and the numeral (24b) retains the pre-nominal position.

- (24) a. ígé íhòhó áchó
DEM white cloth
'that white cloth'
- b. ígé ìyí áchó
DEM two cloth
'those two cloths'
- c. òtúro ígé áchó
PL DEM cloth
'those cloths'

Similarly, when all three (*òtúro*, adjective and numeral) elements occur, *òtúro* retains the pre-demonstrative position as shown in (25).

- (25) a. òtúro ígé ìyí íhòhò áchó
PL DEM two white cloth
'those two white cloths'
- b. *ígé òtúro ìyí íhòhò áchó
DEM PL two white cloth
- c. *ìyí òtúro ígé íhòhò áchó
two PL DEM white cloth
- d. *íhòhò òtúro ígé ìyí áchó
white PL DEM two cloth

Recalling what we observed in Section 3.4, the only elements that are permitted to occur to the left of *òtúro* are the quantifiers, *ikúwó* and *ìgàò*. This observation is crucial because it reveals two things: *òtúro* occupies a higher position than the traditional NumP and *òtúro* does not pluralize the quantifier in Ògè. In essence, quantifiers in Ògè do not require *òtúro* to be interpreted as plural.

5. Analysis

This section is on the analysis of plural interpretations of nouns in Ògè, as shown in Section 2.1, the NumP is projected between the DP and the NP in the nominal expressions of Ògè. Using the feature specifications, as introduced in Section 2.2, the Num-head serves as the locus of number interpretation. I claim that the featural specifications on the Num-head is paramount to the number interpretations of the noun phrase. This section proceeds as follows: based on the on-going discussion on *òtúro*, it is clear that, in all contexts of occurrence, the noun phrase is obligatorily interpreted as plural; Section 5.1 discusses how plural interpretation is determined using the feature specification algorithm. In 5.2, the overt realization of the article is discussed in relation to *òtúro*. The claim is that *òtúro* and the (in)definite article are in complimentary

distribution, which translates to the obligatory singular interpretation of the noun phrase when the (in)definite article is overt. In Section 5.3, the ambiguity of the noun is discussed; this is necessary so as to know the number feature associated with the Num-head in the context of a BN. Section 5.4 discusses other elements: demonstratives and quantifiers in relation to number interpretation. The last subsection, 5.5, gives an interim summary of the analysis in this section.

5.1. Obligatory plural interpretation

As shown in Subsection 3.1, the presence of *òtúro* obligatorily requires the plural interpretation of the noun phrase in which it occurs, as shown in the example in (26).

- (26) a. *òtúro ópú.*
 PL dog
 ‘the dog*(s)’
 ‘some (specific) dogs’
 b. *òtúro àga.*
 PL chair
 ‘the chair*(s)’
 ‘some (specific) chairs’

Following the general assumption (Ritter 1991, 1995) that noun phrases can consist of at least three distinct layers, namely, DP, which is the locus of definiteness; NumP, the locus of number marking; and NP, the lexical layer; I claim that the projection of the NP is dominated by the NumP and that the NP is the complement of the Num-head. Therefore, this work shows that *òtúro* is hosted by the D-head, which is above both the DEMP layer and the NumP layer.

- (27) [DP [D *òtúro* [DEMP [DEM [NumP [Num [NP [N *ópú*]]]]]]]]

Evidence in support of this claim is seen in the position of occurrence of *òtúro* in (28).

- (28) a. *òtúro ígé iyí íhòhò áchó*
 PL DEM two white cloth
 ‘those two white cloths’
 b. **ígé òtúro iyí íhòhò áchó*
 DEM PL two white cloth
 c. **iyí òtúro ígé íhòhò áchó*
 two PL DEM white cloth
 d. **íhòhò òtúro ígé iyí áchó*
 white PL DEM two cloth

Òtúro is grammatical only when it occurs in the highest position in the nominal expression, as shown by the ungrammaticality of (28b-d). I further provide the examples in (29) to support the claim that *òtúro* occupies the D-head.

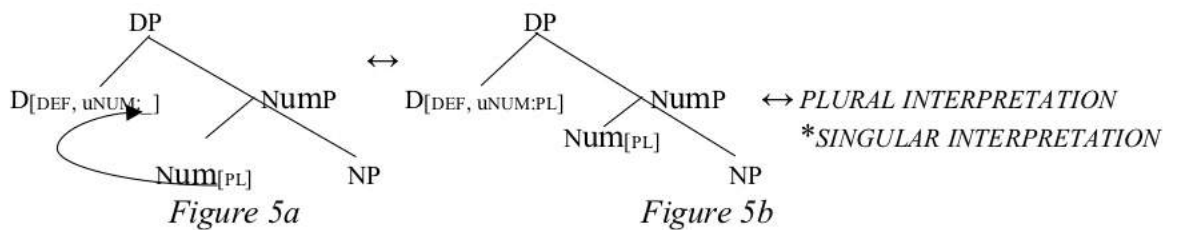
- (29) a. **òtúro íkàrí éswe*
 PL DEF house
 b. **íkàrí òtúro éswe*
 DEF PL house
 c. **òtúro ikín éswe*
 PL DEF house
 d. **ikín òtúro éwse*
 DEF PL house

The co-occurrence of the article and *òtúro* is not possible. In addition, the interpretation of the noun phrase when *òtúro* is overt could either be a plural indefinite specific or a plural definite, as in (26). This conclusion signifies that *òtúro* is hosted by the same D-head that hosts the article in Ògè.

(30) [DP [D *òtúro*/ *ikári*/*ikín* [DEMP [DEM [NumP [Num [NP [N *éswe*]]]]]]]]

The plural interpretation of the noun phrase in the presence of *òtúro* is derived by assuming an interpretable plural feature [PL] on the Num-head. This feature is justified by the fact that the Num-head is the locus of number marking in languages. I claim that the plural interpretation of the noun phrase in Ògè is derived through the feature checking configurations between the D and the Num-heads. The D-head gets its number value from the Num-head. In (31), I show that the combination of the root *ópú* with the little ‘n’ is spelt out as a lexical category ‘noun’, while the uninterpretable number feature on the D-head is spelt out as plural, [PL]. The structure in Figure 5 is obligatorily interpreted as plural.

- (31) a. [$\sqrt{\text{ópú}} + n$] \longleftrightarrow /ópú/
 b. [DEF, NUM:PL] \longleftrightarrow /òtúro/



The example in Figure 5 is a typical agreement phenomenon in which the feature on the controller; in Zwicky (1986)’s terms, it is copied or shared across syntactic structures by agreement. When *òtúro* is overt, the D-head (target) gets its number value from the Num-head in Figure 5a. In the course of the derivation, the interpretable plural feature on Num-head gives its value to the uninterpretable number feature on the D-head, as can be observed in Figure 5b. Feature value in this sense means that the interpretable feature on the Num-head is semantically interpreted.

5.2. Obligatory singular interpretation

The article is in complementary distribution with *òtúro* for the following reasons: first, as argued in Subsection 5.1, the article and *òtúro* occupy the same position in the nominal spine in Ògè. Second, overt articles in Ògè are obligatorily interpreted as singular.

- | | |
|---|--|
| (32) a. <i>ikári ópú</i> DEF dog ‘the dog’ *‘the dogs’ | b. <i>ikín ópú</i> INDEF dog ‘a dog’ *‘some dogs’ |
|---|--|

The examples in (32) show that when the article is overt, the interpretation of the noun phrase is obligatorily singular. In such contexts, the number feature specification on the Num-head is [SG]. This is schematized in Figure 6.

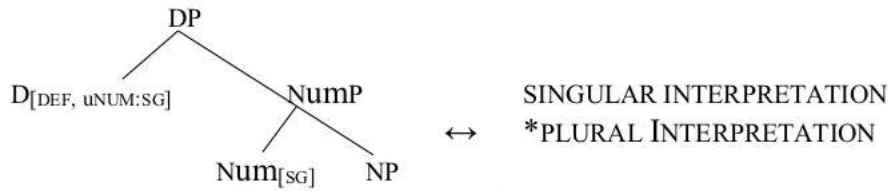


Figure 6

- (33) a. $[\text{D}_{\text{DEF}}, \text{NUM:SG}] \longleftrightarrow /ikári/$
 b. $[\text{D}_{\text{INDEF}}, \text{NUM:SG}] \longleftrightarrow /ikín/$

Recalling that, in subsection 5.1, the claim was that the Num-head values the uninterpretable number feature on D. The valued number feature $[\text{DEF/INDEF}, \text{NUM:SG}]$ on D in (33) is obligatorily spelt out as *ikári/ikín* ‘the/a’.

5.3. Unspecified for number resulting in ambiguity

This sub-section discusses elements in Ògè nominal expressions with respect to number marking: BNS, demonstratives and quantifiers.

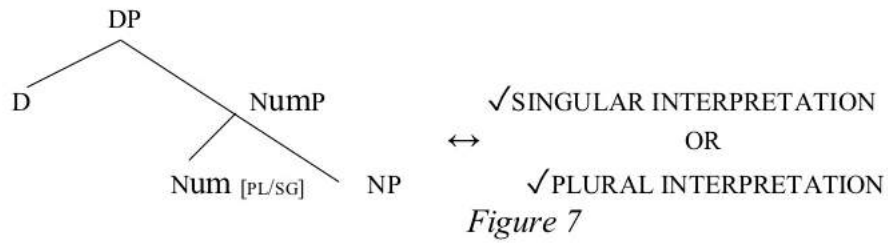
5.3.1. Bare nouns

Nouns in Ògè could be interpreted as either singular or plural without the overt realizations of either the article or *òtúro*. In such contexts, it is common for the hearer to ask a clarification question to know if the referent is one or more than one.¹⁶

- | | |
|---|---|
| <p>(34) a. $\acute{I} \quad r\acute{i} \quad \acute{o}p\acute{u}$ 1SG see dog ‘I saw a/the dog.’ ‘I saw (some) dogs.’ *‘I saw the dogs.’</p> | <p>b. $\acute{O}p\acute{u} \quad si \quad \acute{u}r\acute{u}n \quad \acute{e}swe$ dog COP PP house ‘A/The dog is in the house.’ ‘(Some) dogs are in the house.’ *‘The dogs are in the house.’</p> |
|---|---|

In (34), the noun *ópú* ‘dog’ is not overtly specified for number, invariably, the D-head is not phonologically filled. The claim that I make here is that the configurations in Figure 7 is spelt out as either singular or plural since there is no morphological element that is sensitive for number in the structure beneath D.

¹⁶ For the sake of space, I will ignore the clarification question in the examples in (34) in the body of the paper. I will concentrate only on the structure of interest: the ambiguity of a BN in Ògè. However, the question could be ‘How many dogs did you see?’ or ‘Is it one dog that you saw?’ Regarding (34b), questions like ‘How many dogs are in the room?’ or ‘I hope it is only a dog that you saw in the room’ could be asked. The questions could take any form just to clarify if the noun referred to is one or are more than one.



The D is not phonologically filled in Figure 7; as a result, the noun is bare. The only element which morphologically shows number alternations is D. Thus, in the absence of D elements, all nouns will look bare, leading to the general number character of *Ògè*.

5.3.2. Demonstratives

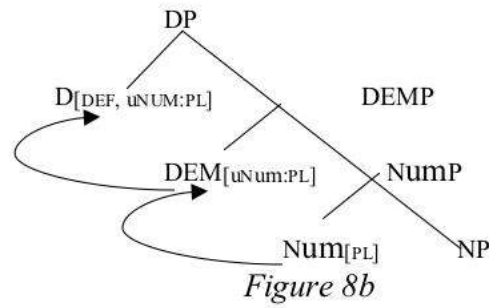
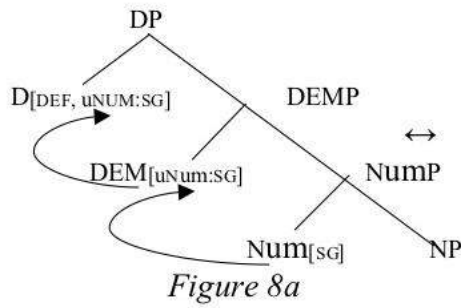
Subsections 5.1-5.2 have shown that number interpretations are associated with the feature specifications on the D and the Num-heads in relation to the overt realization of the elements in D. We see that *òtúro* is intrinsically plural and it cannot be interpreted otherwise. The articles, on the other hand, are singular, and this is illustrated by the non-co-occurrence of *òtúro* and the article. In Section 2, I postulated a DEM below the projection of the DP because of the co-occurrence of the article and the demonstrative: D-head is associated with the article while the DEM-head hosts the demonstratives. This claim is further supported by the strict order DEF > DEM that we observed in the linear order of the two elements.

In this subsection, I show that, first, the demonstrative plus the noun (35c) is ambiguous between a singular and a plural reading. Second, in the overt realization of the article (35a), the demonstrative is singular, while, in the overt realization of *òtúro* (35b), a plural reading is forced.

- | | | |
|--|--|--|
| (35) a. <i>ikári ígé ópú</i> DEF DEM dog ‘that dog’ *‘those dogs’ | b. <i>òtúro ígé ópú</i> PL DEM dog ‘those dogs’ *‘that dog’ | c. <i>ígé ópú</i> DEM dog ‘that dog’ ‘those dogs’ |
|--|--|--|

The examples in (35) show three things: (i) when D is phonologically filled with the article as in (35a), the demonstrative is spelt out as singular; (ii) when D is filled with *òtúro*, the demonstrative is spelt out as plural (35b), (iii) in the absence of both the article and *òtúro* (35c), the demonstrative is interpreted as either plural or singular.

I assume that Agree happens between an uninterpretable and an interpretable feature, simply represented as *u_* and *i:val*, respectively. In this sense, the uninterpretable feature is the probe, while the interpretable feature is the goal. The derivation in Figure 8 represents the number feature specifications on the demonstratives in each of the syntactic positions: obligatory singular interpretation, as shown in Figure 8a, obligatory plural interpretation, as presented in Figure 8b, and unspecified for number – singular/plural, as represented in Figure 8c.



For the sake of space, I represent the ambiguity of the demonstrative in the context of a BN with the representation in ‘Figure 8c’. I assume that the interpretable number feature on Num in the context of a BN receives a plural or a singular interpretation: SG/PL.

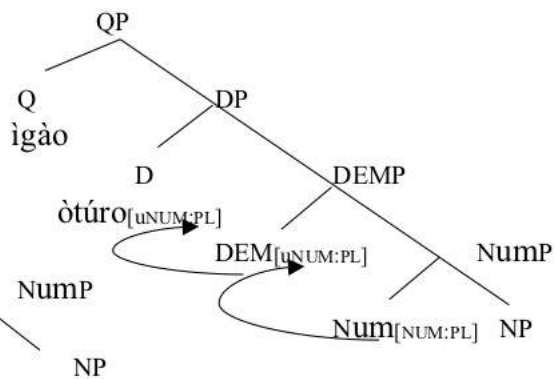
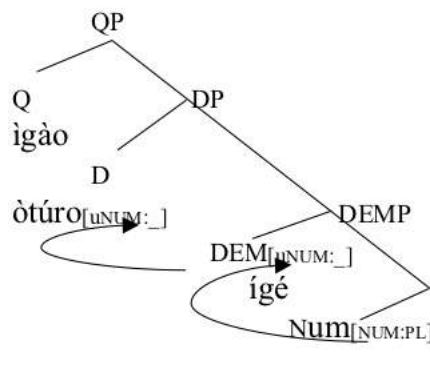
$$[\text{NUM}] + [\text{DEM, uNum_}] \leftrightarrow [\text{DEM, uNum: SG/PL}] = \begin{array}{l} \text{(i) / SG + ígé/ or / SG + íghé/} \\ \text{(ii) / PL + ígé/ or / PL + íghé/} \end{array}$$

Figure 8c

5.3.3. Quantifiers

As shown in Section 2, the quantifier occurs at the specifier position of the DP and it is in complementary distribution with the article.

- (36) a. ìgàò ópú
all dog
‘all the dogs’
b. ìgàò ígé ópú
all DEM dog
‘all those dogs’
c. *ìgàò ìkàrí ópú
all DEF dog



PLURAL INTERPRETATION
*SINGULAR INTERPRETATION

The Num-head is [SG] in some null D but [PL] in other null D - this accounts for the reason why (36a-b) cannot have a singular reading because only the [PL] version of the null D can be combined with the plural quantifier.

5.4. Interim summary

In the previous section, I have looked at the number interpretation of noun phrases in different contexts: overt realization of the articles, optional marker of plural and when both items (articles and *òtúro*) are covert. The main claim of the current section is that the elements involved in number interpretations have features that are inherent to them.

- (37) a. [DEF, uNUM:SG] ↔ /ikári/
 b. [INDEF, uNUM:SG] ↔ /ikín/
 c. [D, uNUM:PL] ↔ /òtúro/
 d. [NUM] ↔ /SG/PL/
 e. [DEM, uNUM:SG] ↔ / ikári + ígè/ ikín + íghé/
 f. [DEM uNUM:PL] ↔ /òtúro + ígè/òtúro + íghé/

This work claims that, since the presence of *òtúro* triggers the plural interpretation of all elements in the noun phrase and that on no occasion is there a case of the overt realization of *òtúro* with a singular reading (*pluralia tantum*), then, the interpretable plural feature Num [PL] on Num triggers the spell out of *òtúro* in D. This claim predicts that the D-head gets its number feature specifications from the Num-head. This prediction has two implications: first, the unvalued number feature in D is valued by the interpretable plural feature in Num-head; second, both the interpretable plural and singular features are spelt out either as singular or plural, resulting in ambiguity. The NUMP is active in the number specifications in Ògè because the D-head (target) derives its number specifications from the Num-head (controller) through an agreement process. This is an apparent selectional relation between the D and the Num-head.

The assumption of an (un)interpretable number feature for plural marking in Ògè makes it easy for the language learner to acquire the system of number marking in the language. Take, for instance, when a learner acquires the feature specifications for a given Num [PL/SG]; this is the only feature specification that is encoded in the learner's linguistic knowledge in terms of (i) an interpretable feature [PL], which is associated with *òtúro*, or (ii) an interpretable singular feature, which is associated with the article. Two cases are characterized by the absence/non-occurrence of *òtúro*: (iia), overt realization of the article is associated with singular [SG] and (iib), in the context of an empty D, the learner uses discourse context to choose between a plural and a singular feature (Adapted from Sveninuous, 2017:11). Invariably, the listed features on Num-head in (37) is paramount in the process of learning the number system in Ògè. Section 6 provides further evidence in support of the position postulated for *òtúro* in Ògè.

6. Implications of the analysis

The analysis in the preceding section classifies *òtúro* as an element situated in the D-head, which is a position that is higher than the traditional NUMP. If *òtúro* is high, it should be sensitive to definiteness. If it is low, it would more likely be connected to animacy. In this section, I provide further evidence in support of the D-head as the host of *òtúro*.

For the purpose of this work, I discuss the irregularity of *-tul* in Korean as observed in (38). *-tul* marks plural on nouns as reported in Kim & Melchin (2018), however, the authors observed that *-tul* is not regular on animals.

(38) a. sala-tul sey myeng
 person- PL three CL
 ‘three people’

b. chayk-tul sey Kwun
 book- PL three CL
 ‘three books’

c. ??kilin-tul sey mari
 giraffe- PL three CL
 ‘three giraffes’

(Kim & Melchin, 2018:13-14)

The plural suffix, *-tul* pluralizes almost any human noun and also inanimate nouns, but it is less frequent with animals. The authors, citing Kang (2007), observed that the occurrence of *-tul* on animals (non-human animate) is lower compared to its occurrence on nouns denoting human and inanimate things. The occurrence or frequency of *-tul* is not regular across non-human animate nouns; therefore, *-tul* is an irregular plural morpheme. The plural suffix *-tul* occupies the Spec nP position, which is taken to be the locus of idiosyncrasy. *-tul* is sensitive to animacy in Korean because it is close enough to the level where animacy is encoded.

If animacy sensitivity in plural marking is not universal, then the question is whether this property follows from some other independent features. Intuitively, we can assume that animacy is an inherent property of nouns or nominal roots. Invariably, there are differences between languages that spell out plural sensitivity to animacy versus those where there is no interaction between animacy and plurality. It seems that sensitivity should follow from structural closeness between the nominal root where animacy is encoded, and the inflectional head where plurality is added.

Coming back to Ògè, the question of course is ‘Is *òtúro* sensitive to animacy?’ The paradigm in (39) explains this further.

- | | |
|---|---|
| <p>(39) a. Í rì ópú. 1SG see dog a. i = ‘I saw a/the dog’ a. ii = ‘I saw some dogs.’ a. iii = ‘I saw the dog (*s) in question’</p> | <p>b. Í rì àga. 1SG see chair b. i = ‘I saw a/the chair.’ b. ii = ‘I saw some chairs.’ b. iii = ‘I saw the chair (*s) in question’</p> |
|---|---|

As mentioned earlier, BNS in Ògè are ambiguous between four readings; definite versus indefinite and plural versus singular reading. In (39), the interpretation of the animate noun in object position could have the following readings: an (in)definite singular noun (39a.i-b.i), indefinite plural reading (39a.ii-b.ii) but not a definite plural (39a.iii-b.iii). The BNS in subject positions (animate and inanimate) could receive the same reading of (in)definite singular or plural noun as the BNS in object positions, but an additional interpretation available to the BN in subject position is a generic interpretation (40a.i-b.i).

- | | |
|---|--|
| <p>(40) a. Ópú sì èégé. Dog COP there a. i = ‘Dogs are there.’ a. ii = ‘A/the dog is there.’ a. iii =*‘The dogs are there.’</p> | <p>b. Àga sì èégé. chair COP there b. i = ‘Chairs are there.’ b. ii = ‘A/the chair is there.’ b. iii =*‘The chairs are there.’</p> |
|---|--|

I claim that both animate and inanimate BNS in Ògè in subject position do not require *òtúro* to be interpreted as plural, but they require *òtúro* to receive a definite plural interpretation.

Pluralized BNS in object position will receive the following interpretations: plural indefinite (41a.i and b.i), or plural definite (41a.ii and b.ii).

- | | | | |
|---------|---|----|---|
| (41) a. | Í rì òtúro ópú 1SG see PL dog a.i = ‘I saw some (specific) dogs.’ a.ii = ‘I saw the dogs in question.’ | b. | Í rì òtúro àga 1SG see PL chair b.i = ‘I saw some (specific) chairs.’ b.ii = ‘I saw the chairs in question.’ |
|---------|---|----|---|

In *Ògè*, there is no discrepancy between animate and inanimate nouns. The divergence is rather with definiteness. *Òtúro* is not sensitive to animacy; rather, it is relative to definiteness. This of course means that it is not close to the root where animacy is encoded; it occupies a position that is far from the pluralized noun. This observation follows from the fact that Num-head-marking plural is closer to the root than Non-Num-head marking plural. In a nutshell, the implication of the analysis proposed for the status of *òtúro* is justified by the assumption that the presence of *òtúro* triggers a definite reading on the noun to which it pluralizes. This, however, is not surprising judging by the position of occurrence of *òtúro* in the DP, which is the D head, (the locus of definiteness in the DP).

7. Conclusion

Adopting the assumptions in the minimalist theory, this paper shows that the number feature specifications on the Num-head plays a vital role in the interpretation of the number feature of nouns in *Ògè*. Nouns are not morphologically marked for plural; rather, the Num-head bears an interpretable plural or singular feature from which the D-head gets its number value, which then translates into the interpretation of the noun as singular or plural. This work reveals that bare nouns in *Ògè* are interpreted based on the number feature on Num, which in most cases results in the ambiguity of the noun: plural or singular.

This work contributes to the growing knowledge of the parametric nature of markers of plural in the literature by showing that *òtúro* is a plural determiner with the interpretation of a definite plural, while, the noun could only be interpreted as indefinite plural in its absence.

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Abbreviations

| | | | |
|-------|---------------------|------|----------------------|
| 1PL | First Person Plural | n | noun |
| 3PL | Third Person Plural | nP | noun phrase |
| AUX | Auxilliary | NUMP | Number Phrase |
| BN | Bare Noun | PAST | Past Tense |
| COMP | Complementizer | PL | Plural |
| COP | Copular | PP | Prepositional Phrase |
| D | Determiner | Q | Quantifier |
| DEF | Definite | QP | Quantifier Phrase |
| DEM | Demonstrative | REL | Relative Pronoun |
| DP | Determiner Phrase | RP | Resumptive Pronoun |
| INDEF | Indefinite | SG | Singular |
| INFL | Inflection | | |

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References

- Adger, D. (2003). *Core Syntax: A Minimalist Approach*. Oxford University Press, Oxford.
- Adger, D. (2010). A minimalist theory of feature structure. In *Features: Perspectives on a Key Notion in Linguistics*, edited by Anna Kibort and Greville G. Corbett, pp. 185–218. Oxford University Press, Oxford.
- Adger, D. & D. Harbour (2008). Why phi? In *Phi-Theory: Phi Features across Modules and Interfaces*, edited by Daniel Harbour, David Adger, & Susana Béjar, pp. 1–34. Oxford University Press, Oxford.
- Ajibóyè, O. (2005). Topics on Yorùbá nominal expressions. Dissertation, University of British Columbia.
- Ajibóyè, O. (2010). Plural strategies in Yorùbá. *Studies in African Linguistics*, 39(2):141–181.
- Awobùlúyì, O. (1978a). *Essentials of Yorùbá Grammar*. Oxford University Press, Ibadán.
- Butler, L.K. (2011). *The morphosyntax and processing of number marking in Yucatec Maya*. Tuscon, AZ: University of Arizona dissertation.
- Capo, H. (1989). Defoid. *The Niger-Congo Languages*, edited by J. Bendor-Samuel, 275–90. University Press of America, Lanham Maryland.
- Cheng, L. L-S. & R. Sybesma (1999). Bare and not-so-bare nouns and the structure of NP. *Linguistic Inquiry* 30(4). 509–542. DOI: <https://doi.org/10.1162/002438999554192>
- Chomsky, N. (1995). *The Minimalist Program*. MIT Press, Cambridge, Ma.
- Chomsky, N. (2000). Minimalist Inquiries: the framework. In *Step by step. Essays in minimalist syn-tax in honor of Howard Lasnik*, eds. Roger Martin, David Michaels, and Juan Uriagereka, 8–153. Cambridge: MIT Press.
- Chomsky, N. (2001). Beyond explanatory adequacy. MIT occasional papers in linguistics 20. Cambridge: Department of Linguistics and Philosophy, MITWPL, MIT.
- Corbett, G. G. (2000). *Number*. Cambridge University Press, Cambridge, UK.
- Cysouw, M. (2001). *The Paradigmatic Structure of Person Marking*. Oxford Studies in Typology and Linguistic Theory. Oxford University Press. 2003. ISBN 0 19 925412 5. Pp. 375 + x.
- Elugbe, B. (1989). *Comparative Edoid; phonology & lexicon*. University of Port Harcourt Press.
- Ghomeshi, J. (2003). Plural marking, indefiniteness, and the noun phrase. *Studia Linguistica* 57. 47–74. DOI: <https://doi.org/10.1111/1467-9582.00099>
- Iljic, R. (1994). Quantification in Mandarin Chinese: Two markers of plurality. *Linguistics* 32. 91–116. DOI: <https://doi.org/10.1515/ling.1994.32.1.91>
- Kang, B-M. (2007). Plurality and plural marker ‘deul’. *Eoneohak Eoneohak* 47.3–31.
- Kim, K. & P. B. Melchin (2018). Modifying plurals, classifiers, and co-occurrence: The case of Korean. *Glossa: a journal of general linguistics* 3(1): 25. 1–29.

- Kramer, R. (2009). *Definite markers, phi-features, and agreement: A morphosyntactic investigation of the Amharic DP* Santa Cruz, CA: University of California dissertation.
- Kramer, R. (2015). A split analysis of plural: Evidence from Amharic. In Nathan Arnett & Ryan Bennett (eds.) *Proceedings of the 30th West Coast Conference on Formal Linguistics*, 226-236. Somerville, MA: Cascadia Proceedings Project.
- Li, C. N. & S. A. Thompson (1981). *Mandarin Chinese: a Functional Reference Grammar*. Berkeley: University of California Press.
- Longobardi, G. (1994). Reference and proper names; a theory of N-movement in syntax and logical form. *Linguistic Inquiry* 25, 609-65.
- Nweya, G.O. (2016). Plural marking strategies and devices in Igbo. *Kansas Working Papers in Linguistics*. Vol. 37 pp.1-22
- Omórúyì, T. 1986. 'Adjectives and adjectivalization processes in Edo. *Studies in African Linguistics*, Vol. 17 (3), 283-302.
- Popjes, J. & J. Popjes (1986). "Canela-Krahô". In: Desmond C. Debyshire & Geoffrey K. Pullum (eds.) *Handbook of Amazonian Languages*. Vol. 1, pp. 128-199. Berlin: Mouton de Gruyter.
- Ritter, E. (1991). Two functional categories in modern Hebrew noun phrases. *Syntax and Semantics* 25, Perspectives on phrase structure: Heads and licensing. Academic Press, New York, pp. 37-60.
- Ritter, E. (1995). On the syntactic category of pronouns and agreement. *Natural Language and Linguistic Theory* 13, 405-433.
- Schmitt, C. & A. Munn (2000). Bare nominals, morphosyntax, and nominal mapping parameter. Ms. Michigan State University.
- Smith, P. W. (2016). Lexical plurals in Telugu: Mass nouns in disguise. *Linguistic Investigations*, 39, 234-252.
- Sohn, H-M. (1994). *Korean*. London: Routledge.
- Svenonius, P. (2017). Syntactic features. CASTL, University of Tromsø – The Arctic University of Norway.
- Wiltschko, M. (2008). The syntax of non-inflectional plural marking. *Natural Language and Linguistic Theory* 26. 639–694.
- Zwicky, A. M. (1986). Imposed versus inherent feature specifications, and other multiple feature markings. *The Indiana University Linguistics Club 20th Anniversary Volume* pp. 85-106.

Licensing negative polarity items in Russian event nominalizations¹

Anastasia Gerasimova

This paper addresses the issue of licensing negative polarity items in Russian nominalizations. Negation in nominalizations provides negative concord which licenses negative pronouns. Crucially, non-specific indefinite *-nibud'* pronouns, which are usually prohibited in negative concord environments, are available in negated nominalizations, too. In this paper I determine the position of NegP within Russian nominalizations and examine licensing conditions of polarity sensitive items in nominalizations. My analysis suggests that *-nibud'* pronouns are licensed in the scope of the nonveridical operator that is introduced above NegP.

1. Introduction

This paper deals with Russian negated nominalizations, which exhibit a set of features of low frequency phenomena. While nominalizations in general are low frequent in Russian and receive relatively low scores (Pereltsvaig et al. 2018), negated nominalizations are even less used. However, investigation of non-finite structures such as nominalizations contributes to solving the Problem of indirect access (Zucchi 1999), which is that inflected verbs might differ from the uninflected verb forms that are in fact fed into the semantic interpretation component. In particular, nominalizations contain less functional structure than their finite counterparts (e.g. finite clause), and, therefore, can provide evidence for what are the properties of verbs and immediate verbal projections at early stages of syntactic derivation (Lyutikova & Tatevosov 2016). In this paper, using primarily corpus data I study the position and licensing conditions of negation within nominalizations. I hypothesize that negation in nominalizations appears high in the structure and contra clausal negation allows for the presence of polarity elements which are licensed by non-veridical operators from the matrix clause.

The rest of the paper is organized as follows. In section 2, I overview generalizations from the previous literature on negated nominalizations in Russian. Section 3 presents the results of a corpus study on the properties of negation and characteristics of polarity sensitive items licensing in negated nominalizations. In section 4, I examine the position of negation with respect to nominalizer. The observations on distribution of pronouns lead me to propose an analysis for licensing conditions in nominalizations in section 5. Section 6 concludes with some

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notes on methodological issues that have arisen when studying low frequent language phenomena.

2. Negated process nominalizations in Russian

Russian process nominalizations are derived with the productive suffixes *-nij/-tij-* from verbal stems (Shvedova 1980). Process nominalizations have an argument structure which is associated with *vP* functional layer, which correlates with several syntactic properties, viz.: availability for adverbial modification (e.g. agent-oriented modifiers), causative-inchoative alternation, and the ability of the external argument to control phonologically null pronominal phrase (PRO) in purpose clauses (Alexiadou 2001, Pazel'skaya & Tatevosov 2008). According to Pazel'skaya & Tatevosov (2008), the highest available projection which can appear in Russian process nominalizations is Aspect Phrase (AspP).

Russian process nominalizations can be negated. In Russian there are two ways of expressing negation: syntactic negation which is expressed by the particle *ne* or, less frequently, particle *ni*, and negation expressed by derivational affixes, the most frequent of which is the affix *ne-*. Syntactic negation is common for verbs, while derivational negation is mostly used with other parts of speech: adjectives, adverbs and nouns (Pazel'skaya 2006). The difference between the two types of negation is dictated by the fact that syntactic negation can be separated by other words from the predicate (Paducheva 2011). Negated nominalizations are derived by the productive derivational affix *ne-* and do not contain syntactic negation: in (2b) *ne* cannot be separated from nominalization by an adjective (if the sense of (2a) is intended); the only possible interpretation is when *ne* is attributed to the nearest adjective *vcherashnee* 'yesterday's'.

- (1) *Ne [vetry veyut buinye], Ne [mat'-zemlya kolyshetsya]*
 NEG winds blow vigorous NEG mother-earth trembels
Shumit, poet, rugaetsya ... u prazdnika narod
 roars sings swears at the feast people
 'It is not the rushing of furious whirlwinds, not Mother Earth shaking, this is people's shouting, singing, swearing at the feast'
- (2) a. *ego vcherashnee nevmeshatel'stvo v konflikt*
 his yesterday's nonintervention in conflict
 'his yesterday not intervening in a conflict'
 b. **ego ne vcherashnee vmeshatel'stvo v konflikt*
 his NEG yesterday's intervention in conflict
 int. 'his yesterday not intervening in a conflict'
 but grammatical if : int. 'his not-yesterday intervening in a conflict'

Pazel'skaya (2006) distinguishes three semantic types of negated nominalizations. First, there are nominalizations that denote negated events with the meaning that the expected event was not realized: *nepopadanie* 'not-stricking', *neprisoedinenie* 'not-attaching', *nesovpadenie* 'mismatching'. These nominalizations are compatible with modifiers that mean repeated action like *mnogokratnyi* 'multiple', *regulyarnyi* 'regular', they denote telic events and can be pluralized.

Second, there are nominalizations that denote statives and atelic events and cannot be pluralized. This second semantic type is the so-called *existential negation*: there is no time interval in which the event denoted by the verbal stem was realized: *nenapadenie* ‘nonaggression’, *nevmeshatel'stvo* ‘nonintervention’, *nerasprostranenie* ‘non-proliferation’. These negated nominalizations are compatible with adjectives denoting time periods: e.g. *trekhletnii* ‘three-year long’, *dvukhchasovoi* ‘two-hour long’. Finally, there are nominalizations that denote negated states, situation such that during a certain period of time the situation denoted by the verbal stem is not realized: *nenakhozhdenie* ‘not -finding’, *nesootvetstvie* ‘discrepancy’, *neznanie* ‘ignorance’. These nominalizations are compatible with adjectives denoting duration: e.g. *mnogoletnii* ‘long-standing’.

According to Pazel'skaya (2006), process nominalizations cannot contain negation due to semantic reasons. Specifically, it is claimed that the timeline in which no process is realized cannot be presented as another process. In particular, Pazel'skaya provides the list of possible candidates, which are unacceptable, according to her judgments: *nekormlenie* ‘NEG-feeding’, *nepodmetanie* ‘NEG-brooming’, *nepodderzhanie* ‘NEG-supporting’, *neraskachivanie* ‘NEG-swinging’, *nekhrapenie* ‘NEG-snoring’.

In this paper I argue that the statement made by Pazel'skaya is not consistent with the data from colloquial speech. In particular, I show that negated process nominalizations do not only exist but demonstrate behavior similar to that of syntactic negation, in particular, licensing of negative polarity items.

3. The Internet-Corpus Study

In order to assess Pazel'skaya's claim about negated process nominalizations, I conducted a study in The General Internet-Corpus of Russian (GICR) (Belikov et al. 2013). The GICR is a corpus of Russian internet texts that contains materials from the largest Russian Internet resources: social network VKontakte, blogging websites LiveJournal and Mail.ru, an archive of Russian literary magazines “Magazine Hall” and several news sites. The contents of the corpus present both colloquial and standardized speech in different genres and registers.

3.1. Do negated nominalizations exist?

The GICR reveals more than 30 000 results with more than 1000 instances of negated nominalizations. Curiously, the generalization about process nominalizations by Pazel'skaya is inconsistent with the data from colloquial speech. All the mentioned instances of negated process nominalizations (the “unacceptable” process nominalizations such as *nekormlenie* ‘NEG-feeding’ from Pazel'skaya (2006), listed in Section 2) were found in corpus (e.g. (3), (4)) together with other stems, e.g.: *nenapisanie* ‘NEG-writing’, *nesledovanie* ‘NEG-following’, *nevladenie* ‘NEG-mastering’, *neuspevanie* ‘NEG-keeping up’, (5).

- (3) *a tochnee nepodmetanie na moei ulitse periodicheski musora ...*
 to be precise NEG-sweeping in my street occasionally rubbish
 ‘And to be precise the occasional not sweeping the rubbish in my street’
- (4) *Yavlyaetsya li nepodderzhanie blagotvoritel'noi initsiativy grekhom*
 is whether NEG-supporting charity initiative sin
 ‘Whether not supporting a charity initiative is a sin’

- (5) *argumentiruet on svoe nerabotanie tem, chto zhizn' korotka*
 argues he his NEG-working by that life short
 'He reasons his not working by saying that life is short'

Grimshaw (1990) distinguished two types of nominalizations, namely result and process (event) nominals. Both types have an argument structure which is associated with the functional projection VP. The evidence for the distinction is based upon a set of diagnostics, viz.: nominals with a process interpretation obligatorily take internal arguments, pass the telicity test, take aspectual and agent-oriented modifiers. Importantly, negated process nominals as affirmative event nominalizations obligatorily take internal arguments (3), (4), and may take aspectual modifiers (6).

- (6) a. *postoyanno nevyderzhivanie avtorskikh dlitel'nostei*
 constant NEG-keeping original (note) values
 'the constant not keeping the original note values'
 b. *Ezhednevno neumolkanie*
 everyday NEG-going silent
 'the everyday not going silent'

3.2. Licensing of negative polarity items

The corpus study has also shown that negation in nominalizations licenses polarity sensitive items (PSIs) – elements that have distribution restricted to a set of contexts that may be characterized differently in terms of truth-conditions. Paducheva (1985) and Haspelmath (1997) distinguish the following four main classes of polarity sensitive items in Russian: negative *ni-* pronouns, non-specific indefinite *-nibud'* pronouns, negatively polarized *-libo* pronouns and free-choice NPIs *lyuboi* and *ugodno*.

Ni- pronouns belong to strict negative polarity items (Giannakidou 2011), or n-words (Laka 1990), which are licensed only under negative concord. Russian *ni-* pronouns are licensed in the context of clausemate sentential negation (7). Contrary to the claims made by Pereltsvaig (2004) the licensing of *ni-* pronouns in the scope of superordinate negation is subject to structural restrictions. According to Gerasimova (2015), the amount of functional structure dominating VP in the infinitival clause affects the licit positions of negative pronouns: they are licensed if the infinitive is not bigger than TP (8). However, *ni-* pronouns cannot appear in the scope of constituent negation (9), nor are they licensed in any other weak negative or non-veridical types of contexts.

- (7) *Vanya nichego ne sdela*
 Vanya nothing (N-WORD) NEG did
 'Vanya did nothing'
- (8) a. *Ya ne pytayus' [vp nichego istolkovyvat' v ego puti].*
 I NEG try nothing (N-WORD) interpret in his journey
 'I don't try to interpret anything (*int.* any of his decisions) in his journey'
- b. ? *On ne skazal [TP nichego smotret' po televizoru].*
 He NEG said nothing (N-WORD) watch on TV

int. ‘He didn’t say to watch something on TV’

- c. * *Emu ne nraivitsya* [_{CP} *nikogo priuchat' k poryadku*].
 He NEG likes nobody (N-WORD) teach regular habits
int. ‘He doesn’t like to teach anyone regular habits’

- (9) * *Vanya podgotovil ne nikakoi podarok*
 Vanya prepared NEG no (N-WORD) gift
int. ‘Vanya didn’t prepare any gift’

Non-specific indefinite *-nibud'* pronouns (NSI) are licensed in non-veridical contexts which are introduced by operators that do not ensure truth (Giannakidou 2011). In Russian such contexts include clauses with habitual meaning (e.g. with aspectual modifiers *chasto* ‘often’, *obychno* ‘usually’, etc.) (10), conditionals (11), interrogatives (12), clausemate nominal with a universal quantifier (13), irrealis non-specific contexts, such as futures (14), modals (15) and verbs of propositional attitude (16) (Paducheva 2015). Remarkably, *-nibud'* pronouns are not licensed by clausemate sentential negation and have to be substituted by n-words in negative concord contexts (17).

- (10) *Vasya chasto chitaet kakie-nibud' zhurnaly*
 Vasya often reads some(NSI) magazines
 ‘Vasya often reads some magazines’
- (11) *Esli budut kakie-nibud' / kakie-libo voprosy, zvoni*
 If be some(NSI) / any(NP) questions call
 ‘If you have any questions, call me’
- (12) *Vy udivleny kakimi-nibud' / kakimi-libo voprosami?*
 You be surprised some(NSI) / any(NP) questions
 ‘Are you surprised with any questions?’
- (13) *Vse studenty khoteli chto-nibud' / chto-libo skazat'*
 all students wanted some(NSI) / any(NP) say
 ‘All students wanted to say something’
- (14) *Vasya kupit kakoi-nibud' podarok*
 Vasya will buy some(NSI) present
 ‘Vasya will buy some present’
- (15) *on mozhet chto-nibud' rasskazat' na uroke*
 he can something(NSI) tell at the lesson
 ‘He can tell something at the lesson’
- (16) *Ya nadeyus', chto ob etom kto-nibud' znal zaranee*
 I hope that about this someone(NSI) knew in advance
 ‘I hope that someone knew in advance about this’

- (17) *Vanya ne priglasil^{ok} nikogo / *kogo-nibud' na festival'*
 Vanya NEG invited nobody (N-WORD) / anyone (NSI) to the festival
 'Vanya didn't invite anyone to the festival'

Negatively polarized *-libo* pronouns (NP) are not licensed in positive contexts and in irrealis non-specific contexts such as imperatives, futures, modals, verbs of propositional attitude (Pereltsvaig 2004, Paducheva 2014). *Contra* Pereltsvaig (2004) *ni-* and *-libo* pronouns do not appear in complementary distribution because *-libo* pronouns are allowed in negative concord created by both clausemate and distant negation (18).

- (18) a. *Vasya ne vstretil tam kakikh-libo prodavtsov*
 Vasya NEG met there any(NP) salesmen
 'Vasya haven't met any salesmen there'
- b. *Vasya ne dumal chto-libo pisat' v otzyve*
 Vasya NEG thought anything(NP) write in review
 'Vasya didn't think about writing anything in the review'

As *-nibud'* pronouns *-libo* elements are licensed in the context of conditionals (11), interrogatives (12), clausemate nominal with a universal quantifier (13). Interestingly, unlike *-nibud'* pronouns *-libo* items are not licensed in clauses with habitual meaning but are allowed in the context of aspectual modifier *redko* 'rarely' (19). Free-choice items are not restricted across any of the mentioned contexts and will not be considered in this paper.

- (19) *Vasya *chasto /^{ok} redko chitaet kakie-libo zhurnaly*
 Vasya often / rarely reads any(NP) magazines
 'Vasya often reads some magazines'

Pazel'skaya (2006) states that negation in nominalization creates the same context as clausal negation, therefore, NPIs are licensed in the context of the three semantic types of negated nominalizations. The corpus study has shown that negation in nominalizations indeed licenses both types of negative polarity items, *ni-* pronouns (20) and *-libo* items (21). Surprisingly, non-specific indefinite *-nibud'* pronouns, which are usually prohibited in negative concord environments, are available in negated nominalizations, too (22).

- (20) *Prichinoi avarii stalo [ne-srabatyvanie ni odnoi sistemy zashchity]*
 cause for breakdown became NEG-operating no(N-WORD) safety system
 lit. 'The failure to operate of any safety system caused the breakdown'
- (21) *neispol'zovanie chego-libo, privodit k atrofirovaniyu etogo chego-libo*
 NEG-using anything(NP) leads to atrophy of this anything(NP)
 lit. 'Not using of anything leads to the atrophy of this same thing'
- (22) *kolossal'noe [ne-vladienie kakim-nibud' tekstovym redaktorom]*
 colossal NEG-possessing some(NSI) text editor
 lit. 'Colossal not possessing the skills in any text editor'

To examine whether distant negation creates negative concord in nominalization I conducted a pilot study with 10 participants. Respondents had to give a binary response on acceptability of 10 sentences constructed similarly to (24). The pilot study has shown that *ni*-pronouns licensing is marginally acceptable when nominalization is in the subject position in the matrix clause. Remarkably, there was disagreement in judgments: 4 out of 10 respondents interpreted such constructions as if nominalization was negated, (24ii) instead of (24i).

- (24) % *ego vmeshatel'stvo ni v kakie dela ne smoglo udivit' menya*
 his intervention in no(N-WORD) business NEG could surprise me
 'his intervening in any business could not surprise me'
 (i) 'I am not surprised that he interferes in affairs'
 (ii) 'I am not surprised that he does not interfere in any affairs'

In case nominalization in the object position, *ni*-pronouns licensing becomes fully acceptable (*ok* for all 10 respondents).

- (25) *Ya ne dobilsya ego vmeshatel'stva ni v kakie dela*
 I NEG achieved his intervention in no(N-WORD)
 'I have not achieved his intervening in any business'

This diagnostic shows that the syntactic position of nominalization affects judgments on whether distant negation can license negative pronouns. I suggest that the marginality of NPI licensing in subject position results from the fact that negation no longer c-commands the nominal phrase. Consequently, the data from nominalizations in object positions allows us to draw a conclusion that n-words in nominalization can be licensed distantly from the matrix clause. As a result, the nominalizer does not serve as a barrier for the strict NPI licensing, which means that negation can be located above the nominalizer.

I propose that all arguments of a nominalization are generated before the [NEG]-feature is introduced and fall under the negative scope. The evidence for that can be provided by the diagnostic in spirit of Borschev et al. 2006. If one of the arguments is quantificational, both wide and narrow scope are allowed for the negation.

- (26) *ne-vladienie kazhdym instrumentom mozhet byt' prichinoi dlya uvol'neniya*
 NEG -possessing every instrument can be a cause for dismissal
 'not possessing the skills to use every instrument can be a cause for dismissal'
 $\forall > \text{NEG}$: employee can't use any of the instruments
 $\text{NEG} > \forall$: employee can use some instruments but not all

To sum up, the diagnostics show that negation appears high in the syntactic structure, at least above all arguments and possibly even above the nominalizer. However, the current data does not show what is the relative position of negation and nominalizer. In the next section I propose an analysis for the licensing conditions of the polarity sensitive items in nominalizations.

5. Prospect analysis for PSI licensing in nominalizations

The corpus data has shown that negated nominalization involves the context which licenses the two types of pronouns that are otherwise in complementary distribution. Herewith, the interpretation of the sentence remains the same. The phenomenon of NSIs being incompatible with negation and consequently being substituted by *ni*-pronouns is usually attributed to as the Bagel problem² (Pereltsvaig 2004). In case of nominalizations we observe an exception to this problem. However, these are not the only examples in Russian. Paducheva (2015) documents two contexts in Russian in which both NSIs and *ni*-pronouns are acceptable under negative scope with equivalent interpretation: subjunctive sentences (27) and embedded purpose *čtoby*-clauses (28). As in case of nominalizations, the interpretation is the same with NSIs and *ni*-pronouns.

- (27) *Ne naiti sem'i*
 NEG find family
 [*v kotoroi by ^{ok}nikto / ^{ok}kto-nibud' ne postradal*]
 in which SUBJ no one (N-WORD) / someone (NSI) NEG be hurt
 'It's almost impossible to find a family, in which no one was hurt'

- (28) *My shli ostorozhno*
 we were going cautiously
 a. [*čtoby ^{ok}nigde ne upast'*]
 COMP nowhere (N-WORD) NEG fall down
 b. [*čtoby ^{ok}gde-nibud' ne upast'*]
 COMP anywhere (NSI) NEG fall down
 'We were going slowly to avoid falling from anywhere'

Paducheva argues that NSIs in such contexts are licensed by non-veridical subjunctive operator. In this way, nonveridicality outweighs negative concord and licenses NSIs. I propose that licensing conditions in nominalization function similarly. I hypothesize that *-nibud'* pronouns are licensed by nonveridical context introduced above NegP.

An interesting question is where the position of nonveridical operators is with respect to nominalizer. When there is no NegP in nominalization, the position may vary. On the one hand, nonveridical operator may be introduced within nominalization. In (29a) the DP that contains nominalization is specific, which means that no non-veridical operator from the main clause can influence its contents. That is, there is no sentential nonveridical operator and nonveridicality is introduced by the overt operator *postoyannoe* 'constant' in the nominalization itself. This overt nonveridical operator in nominalization licenses *-nibud'* pronouns.

Another possibility is that nonveridicality is introduced later with sentential aspectual operators such as habitual, generic and iterative: e.g. *vsegda* 'always' in (29b).

- (29) a. *ego postoyannoe podrazhanie kakomu-nibud' masteru*
 his constant copying some(NSI) master

² Clausemate negation creates an anti-morphic context. Anti-morphic contexts constitute a subset of non-veridical contexts. NSIs are licensed by non-veridical contexts, therefore, one would expect that NSIs are licensed by negation. However, this is not true: the anti-morphic context figuratively speaking creates "a bagel hole" with respect to NSIs as they are not licensed.

ubilo v nem individual'nost'
 killed in him individuality
 'his_i constant copying after some master killed individuality in him_i'

- b. *podrazhanie kakomu-nibud' masteru vseгда ubivaet individual'nost'*
 copying some(NSI) master always kills individuality
 'copying after some master always kills individuality'

It is important to note that *-libo* pronouns are prohibited in the presence of aspectual operators. It was previously suggested by Paducheva (2014) that *-libo* series are also licensed in non-veridical contexts. However, that would mean that nonveridicality from the main clause could license *-libo* pronouns in nominalization, which is not the case (30a). I propose that *-libo* pronouns in nominalization are licensed by negation. This idea is supported by the fact that in specific nominalizations without any aspectual modifiers *-libo* pronouns are absolutely acceptable (30b).

- (30) a. **podrazhanie kakomu-libo' masteru vseгда ubivaet individual'nost'*
 copying any(NP) master always kills individuality
 'copying after some master always kills individuality'
- b. *ego neispytyvanie kakikh-libo' chuvstv*
 his NEG -experiencing any(NP) feelings
proizvelo na menya vpechatlenie
 impressed me
 'his not feeling anything impressed me'

An interesting observation is that when nominalization contains both negation and nonveridical operator (29c), NSIs become less acceptable than n-words.

- (31) ?*ego postoyanno neispytyvanie kakikh-nibud' chuvstv*
 his constant NEG -experiencing some(NSI) feelings
proizvelo na menya vpechatlenie
 impressed me
 'his constant not feeling anything impressed me'

Although a secure conclusion must be based on a formal collection of judgements, this piece of evidence speaks to the fact that the nonveridical operator is indeed located above nominalizer. Then the nominalizer restricts the scope of the negative operator and does not affect the scope of the nonveridical operator.

6. Conclusion

To sum up, in this paper I have examined Russian negated nominalizations. I conducted a corpus study that has provided evidence for the existence of negated process nominalizations. It was shown that negation in nominalizations provides negative concord which licenses negative pronouns. A remarkable result was that all three types of Russian polarity sensitive

items are licensed in negated nominalizations. In order to capture contradictory observations, I determined the position of NegP within Russian nominalizations. I hypothesize that *-nibud'* pronouns are licensed in the scope of the nonveridical operator that is introduced above NegP, while *-libo* and *ni-* pronouns are licensed by negative concord. The results of the paper are in concord with crosslinguistic generalization from (Giannakidou 2006): n-words obey syntactic locality restrictions and are licensed by a clausemate antiveridical expression, while non-veridical operators exhibit long distance licensing.

The obtained result highlights a methodological issue connected to the usage of low frequent construction when developing language theory. As nominalizations are not frequent constructions, in general they receive low acceptability scores. Negated nominalizations are even less frequent, and therefore are judged less acceptable. However, the analysis revealed that different combinations of semantic operators can improve acceptability of negated nominalizations. This finding confirms that exploration of rare constructions helps to develop linguistic theory for acceptable cases.

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References

- Alexiadou, A. (2001). *Functional Structure in Nominals: Nominalization and Ergativity*. Amsterdam: J. Benjamins Publishing.
- Belikov, V., N. Kopylov, A. Piperski, V. Selegey & S. Sharoff. (2013). Corpus as language: from scalability to register variation. *Komp'juternaja Lingvistika i Intellektual'nye Tehnologii* 12, pp. 83-95.
- Borschev, V., E.V. Paducheva, B.H. Partee, Y.G. Testeleis & I. Yanovich. (2006). Sentential and constituent negation in Russian BE-sentences revisited. *Formal Approaches to Slavic Linguistics: The Princeton Meeting 2005 (FASL 14)*, pp. 50-65.
- Gerasimova, A. (2015). Licensing negative pronouns in Russian infinitives. Lyutikova, E.A., Zimmerling, A.V. & M.B. Konoshenko (eds.), *Tipologija Morfosintaksicheskikh Parametrov. Materialy mezhdunarodnoj konferencii "TMP-2015"* [Typology of Morphosyntactic Parameters 2014. Proceedings of The International Conference "TMP-2015"] 2, MSPU, Moscow, pp. 47-61.
- Giannakidou, A. (2006). Only, emotive factive verbs, and the dual nature of polarity dependency. *Language* 82, pp. 575-603.
- Giannakidou A. (2011). Positive polarity items and negative polarity items: variation, licensing, and compositionality. Maienborn, C., von Heusinger, K. & P. Portner (eds.), *Semantics: An International Handbook of Natural Language Meaning*, De Gruyter Mouton, pp. 1660-1712.
- Grimshaw, J. (1990). *Argument Structure*. Cambridge: The MIT Press.
- Haspelmath, M. (1997). *From space to time*. Lincom.
- Laka, I. (1990). *Negation in Syntax: on the Nature of Functional Categories and Projections*. PhD dissertation, MIT.
- Lyutikova, E., & S. Tatevosov. (2016). Nominalization and the problem of indirect access: Evidence from Ossetian. *The Linguistic Review* 33:3, pp. 321-363.
- Paducheva, E. V. (1985). *Vyskazyvanie i ego sootnesennost's deistvitel'nost'yu (referentsial'nye aspekty semantiki mestoimeniy)* [The statement and its correlation with reality (referential aspects of the semantics of pronouns)]. Nauka, Moscow.
- Paducheva, E. V. (2011). Otritsanie [Negation]. *Materials for the Russian corpus-based grammar description project* (<http://rusgram.ru>). Moscow.
- Paducheva, E.V. (2014). Suspended assertion and nonveridicality. *Komp'juternaja Lingvistika i Intellektual'nye Tehnologii* 13, pp. 489-505.

- Paducheva, E. V. (2015). Nereferentnye mestoimeniya na -nibud' [Non-specific -nibud' pronouns]. *Materials for the Russian corpus-based grammar description project* (<http://rusgram.ru>). Moscow.
- Pazel'skaya A. (2006). *Inheritance of verbal categories by deverbal nouns in Russian*. PhD dissertation, Moscow State University.
- Pazel'skaya, A. & S. Tatevosov. (2008). Deverbal nouns and the structure of Russian verb. Plungyan, V.A. & S.G. Tatevosov (eds.), *Studies on verbal derivation*, Yazyki slavyanskikh kul'tur, Moscow, pp. 348-80.
- Pereltsvaig, A. (2004). Negative polarity items in Russian and the 'Bagel Problem'. Brown, S. & A. Przepiorkowski (eds.), *Negation in Slavic*, Bloomington: Slavica Publishers, pp. 153-178.
- Pereltsvaig A., E. Lyutikova & A. Gerasimova. (2018). Case marking in Russian eventive nominalizations: inherent vs. dependent case theory. *Russian Linguistics* 37:2, pp. 1-16.
- Shvedova N. (1980). *Russkaja Grammatika* [Russian Grammar]. AN SSSR Publ., Moscow.
- Zucchi, S. (1999). Incomplete events, intensionality and imperfective aspect. *Natural Language Semantics* 7:2, pp. 179-215.

Agent entailments induce manner properties: evidence from verbs of killing

Josep Ausensi

Rappaport Hovav & Levin (2010) argue that verbs fall into two classes, i.e. result verbs (e.g. *kill*), which encode a result state, and manner verbs (e.g. *poison*), which encode a manner of action. Crucially, though, a single verb cannot encode both a manner of action and a result state. Following Beavers & Koontz-Garboden (2012), I argue that such a limitation on possible verb meanings is contrary to fact. I contend that what I call *murder verbs* (i.e. *murder*, *slay*, *slaughter*, *massacre* and *assassinate*) encode both a manner of action and a result state. More specifically, *murder verbs* encode an intentional action that is carried out with the intention to bring about the result state of *death*.

1. Introduction

Over the last twenty-five years, Levin & Rappaport Hovav (1991, 2013, 2014), Rappaport Hovav & Levin (1998, 2010), Rappaport Hovav (2017) and Levin (2017) have been arguing that eventive verbs fall into two wide semantic classes: manner verbs (1a), which encode the manner in which some action is carried out, but not any result state from that action, and result verbs (1b), which encode a result state, but not the manner in which the result state is attained.

- (1) a. Manner verbs: *run*, *swim*, *blink*, *sweep*, *poison*, *wipe*, *scrub*, etc.
- b. Result verbs: *break*, *kill*, *clean*, *destroy*, *arrive*, *go*, *shatter*, etc.

Rappaport Hovav & Levin (2010) (hereafter, RHL) strongly argue that a simplex verb cannot encode both meanings, i.e. a single (non-derived/monomorphemic) verb cannot express both a manner of action and a result state. This restriction in verb meaning was formalized as Manner/Result Complementarity (hereafter, MRC).¹

¹ RHL:26 insist that MRC does not apply to verbs *per se*, but to roots. The motivation for this claim comes from the structure of verbs in other languages (e.g. Lakhota) in which a single verb can encode both manner and

- (2) Manner/Result Complementarity: Manner and result meaning components are in complementary distribution: a verb lexicalizes only one. (Levin & Rappaport Hovav 2013: 50)

RHL argue that MRC is a consequence of how roots are inserted into the event structure, i.e. a single root can only be inserted as a modifier of the so-called ACT predicate (3a) (i.e. manner), or as an argument of the so-called BECOME predicate (3b) (i.e. result) (see Rappaport Hovav & Levin 1998).

- (3) a. [x ACT <ROOT>]
b. [[x ACT] CAUSE [y BECOME <ROOT>]]]

Crucially, though, RHL argue that roots are inserted either as modifiers or arguments depending upon their root ontology, manner and result taken to be root ontologies.² Thus, MRC also holds as a restriction on the entailments that a root can encode, as a single root either encodes a manner of action or a result state, but never both.

MRC, however, has been challenged and shown to not hold categorically (Férez 2007; Zlatev & Yangklang 2004; Goldberg 2010; Husband 2011, and see Levin & Rappaport Hovav 2013, 2014; Rappaport Hovav 2017 for some responses). An important contribution in this respect is that of Beavers & Koontz-Garboden (2012) (see also Beavers & Koontz-Garboden 2017) (hereafter, BKG) as they argue that what they call manner of killing verbs (i.e. *drown*, *guillotine*, *hang*, *electrocute* and *crucify*) counterexemplify MRC since manner of killing verbs encode both a manner of action and a result state. However, Rappaport Hovav (2017) has recently argued that manner of killing verbs are not relevant to MRC in that they are denominal, and therefore morphologically derived despite not displaying any overt morphology (i.e. *guillotine*) or they are not monomorphemic (i.e. *crucify*, *electrocute*), and therefore irrelevant to MRC as this is a restriction on root meaning.³ In a similar vein, Rappaport Hovav argues that *drown* does not encode any manner of action, but only a result state, and therefore it does not counterexemplify MRC.

In the present paper, following BKG, I focus on the simplex verbs of killing *murder*, *slay*, *slaughter*, *massacre* and *assassinate* (hereafter, *murder* verbs) in order to argue that MRC does not hold as a restriction on possible verb meanings. I contend that *murder* verbs encode both a manner of action and a result state despite being simplex, i.e. monomorphemic and nonderived, therefore providing further evidence in favor of BKG's claim that MRC is contrary to fact. Thus, the analysis of *murder* verbs as manner-result verbs has consequences for the role that

result, but they are clearly bimorphemic in that prefixes and stems combine to form complex verbs (see Rappaport Hovav 2017). In this respect, RHL:23 understand root as '[...] an idiosyncratic component of verb meaning, [...]' which is 'common to a wide variety of uses of a verb' (Rappaport Hovav 2017:83). More specifically, they argue that 'each root has an ontological categorization, chosen from a fixed set of types, including state, result state, thing, stuff, surface/container, manner, instrument.' (RHL:23-24). While it is reasonable to assume that roots have an ontological classification which is relevant when determining grammatical properties (Rappaport Hovav & Levin 1998 *et seq.*), this does not necessarily imply that manner and result cannot be part of the entailments of a single root.

² For root ontologies see Rappaport Hovav & Levin (1998); Reinhart (2002); Ramchand (2014); Alexiadou, Anagnostopoulou, & Schäfer (2015); Rappaport Hovav (2017), amongst others. Instead, the view that roots have an ontological classification relevant when determining grammatical properties is rejected in Borer (2003, 2005); Acquaviva (2008, 2014); Mateu & Acedo-Matellán (2012); Acedo-Matellán & Mateu (2014), amongst others.

³ See Kiparsky (1997) for an analysis of verbs named after a specific machine.

intentionality plays within the study of verb meaning since intentionality appears to be of more importance than previously acknowledged, as I argue that agent entailments, i.e. performing an intentional action, are sufficient to induce manner properties.⁴

This paper is structured as follows. In Section 2, I briefly summarize the proposal by RHL to equate manner verbs with nonscalar changes and result verbs with scalar changes. In the same section, I briefly summarize Rappaport Hovav's (2017) arguments regarding the fact that the series of manner of killing verbs by BKG are not relevant for MRC.⁵ In Section 3, I discuss first some preliminary data and then use the result and manner diagnostics as implemented in both RHL and BKG in order to show that *murder* verbs encode both a manner and a result, and therefore counterexemplify MRC. I argue then that encoding intentionality, as in *murder* verbs, is enough for a verb to encode a manner of action, i.e. that agent entailments are sufficient to induce manner properties. Section 4 concludes the paper.

2. Manner and Result

RHL argue that the crucial difference between result and manner verbs is that whereas the former encode scalar changes, the latter encode nonscalar changes. In this respect, a scale is formed by a set of degrees (which specify measurement values) on a specific dimension, i.e. width, length, alive-dead etc., with an ordering relation.⁶ More specifically, a scalar change '[...] involves a change in value of this attribute in a particular direction along the scale, with the direction specified by the ordering relation' (RHL:28). For instance, the verb *die* is related to an attribute (i.e. *dead*) which holds of an argument when it undergoes a dying event. Thus, a result relates to a change in some property of a patient. Roughly put, when a patient participates in a change of state event (i.e. a scalar change), at the end of it, there is a modification in the degree of some value/property of the patient (e.g. a soup becoming cooler/warmer after an event of cooling/warming).

In contrast, nonscalar changes are defined as 'any changes that cannot be characterized in terms of an ordered set of values of a single attribute.' (RHL:32). Manner verbs thus encode nonscalar changes since they relate to complex combinations of various changes, but these complex combinations do not constitute an ordered relation and therefore no scalar change follows (e.g. *run*, *walk*, *exercise*). In short, 'a manner is a complex sequence of separate changes that collectively define an action, but do not necessarily add up to a single cumulative change along any one dimension' (BKG:343).

⁴ I use *encode* as in Levin & Rappaport Hovav (2013:49) to make reference to those '[...] facets of meaning that are strictly contributed by the verb [...]' Thus, this includes a verb's core meaning which is consistent across all uses of such verb, i.e. regardless of context, a verb always includes its specific entailments.

⁵ BKG also include two other verb classes (i.e. ballistic motion and manner of cooking verbs) which they claim to be counterexamples to MRC as well. However, verbs of killing are the main case study they consider when arguing against MRC. Thus, I focus on this verb class and center on the idea that agent entailments are enough to induce manner properties, as I show that this is the case in *murder* verbs.

⁶ For scalar change and scale structure see Hay et al. (1999); Kennedy & McNally (2005); Beavers (2008, 2011); Kennedy & Levin (2008); Rappaport Hovav (2008, 2014); Rappaport Hovav & Levin (2010); Beavers & Koontz-Garboden (2012, 2017), amongst others.

2.1. Manner of killing verbs

Verbs of killing are often divided into those that only encode a result state, but not a manner of killing (e.g. *kill*), and those that encode a manner of killing, but not a result state (e.g. *poison*) (see Levin 1993). However, regarding some manner of killing verbs, Levin (1993:232) herself acknowledges that ‘[...] these verbs need not entail that the action they denote results in death; however, some of them do appear to have this entailment.’ Drawing on Levin’s disclaimer, BKG argue that some of the verbs previously classified as manner by Levin encode both a result and a manner of action, i.e. what they call manner of killing verbs. Nonetheless, as pointed out before, Rappaport Hovav (2017) argues that manner of killing verbs do not actually pose a problem for MRC if ‘MRC is a constraint on what is encoded in roots’ (Rappaport Hovav 2017:83), since they are not monomorphemic (i.e. *electrocute*, *crucify*) or morphologically simple (i.e. *guillotine*). In this respect, Rappaport Hovav points out the following:

An analysis in the case of the first two verbs [*crucify*, *electrocute*, JA] would determine the contribution of each morpheme to the meaning of the verb, and in the case of the latter [*guillotine*, JA], the contribution of the nominal root and the derivation of the verb. (Rappaport Hovav 2017:84)

Regarding *drown*, Rappaport Hovav argues that it does not encode a manner of action, but only a result state.⁷ Rappaport Hovav argues that *drown* does not encode any manner of action in that, among other things, it permits the anticausative in English and natural forces as causers, where the notion of an action (of an agent) is irrelevant.

- (4) a. John drowned.
- b. The water drowned him. (adapted from Rappaport Hovav 2017:85)

Last, regarding *hang*, BKG:338 argue that it encodes a result since it is contradictory to utter that *#John just hanged Joe, but nothing is different about him*. They argue that what exactly the result is is not important; the important fact, according to them, is that it involves some result, and they add that they ‘believe it to be death’ (BKG:339). Following Rappaport Hovav (2017), I argue that death in *hang* is an inference from the context in that, amongst other things, someone can survive being hanged.

- (5) Iranian man who survived execution [hanging, JA] must be hanged again, judges say.⁸

In addition, *hang* is compatible with a *to death* resultative, whereas verbs of killing that clearly encode this result do not permit it (e.g. *murder*, *slay*, *assassinate*, etc). Although BKG argue that some of their manner of killing verbs allow *to death* resultatives redundantly specifying death, these verbs permit *to death* resultatives since they do not appear to encode the death of their patient; rather, this is an inference from context.

- (6) a. #John murdered/slew/assassinated the president to death.

⁷ Rappaport Hovav argues that the result state is not death, by rather death is an inference from the context, as ‘not all uses of the root √DROWN involve a manner of killing’ (Rappaport Hovav 2017:83).

⁸ <https://www.theguardian.com/world/2013/oct/16/iranian-man-execution-hanged-alireza-meth>

- b. They were hanged to death.⁹
- c. Man ‘electrocuted to death’ when cherry picker hits power lines.¹⁰

This is in line with what Arsenijevic (2010) argues regarding BKG’s manner of killing verbs:

This [the result of death, JA] is rather a matter of inference relying on real world knowledge, than a real entailment of the verb. In other words, manner of killing verbs are certainly manner-incorporating verbs, but the result incorporation is not so certain. (Arsenijevic 2010:18)

In a similar vein, it could be argued that, as BKG argue for *crucify*, the result in *hang* could be related to a change of location. However, while it seems to be the case that in order to *crucify* somebody they must be placed in a cross (as BKG note), and therefore a change of location follows, it is not clear whether this is also the case with *hang*.

Having summarized why manner of killing verbs have been claimed not to be relevant for MRC, in the next section I argue that *murder* verbs pattern as both manner and result verbs, and therefore counterexemplify MRC. I first discuss some preliminary data on *kill* and *murder* verbs as they are relevant for the analysis of *murder* verbs as manner-result encoding verbs. I then turn to the result and manner diagnostics as implemented in both RHL and BKG in order to show that *murder* verbs are simplex verbs encoding both a manner of action and a result state. I claim then that agent entailments (i.e. intentionality) appear to be sufficient to induce manner properties, since I argue that such entailments are what induce the manner properties in *murder* verbs.

3. The semantics of murder verbs

It has been long acknowledged that *kill* does not impose any kind of selectional restrictions upon its subject, whereas *murder* verbs do. This has been said to follow from the fact that whereas verbs such as *murder* entail intentionality, *kill* does not (Talmy 1985; Dowty 1991; Lemmens 1998; Van Valin & Wilkins 1996; Van Valin 2005; Rooryck & Vanden Wyngaerd 2011; Grano 2016; Solstad & Bott 2017, amongst others). Thus, *murder* verbs require their subject to be intentional, whereas *kill* does not. This is shown in the following examples, in which the presumed intentionality in *kill* can be either canceled (7) or reinforced (8) (since it is an inference from context), something not possible with *murder* verbs, since intentionality, in this case, is an entailment of such verbs.

- (7)
 - a. John killed Tom unintentionally/by accident.
 - b. #John murdered/slew/assassinated the president unintentionally/by accident.
 - c. #John massacred/slaughtered the civilians unintentionally/by accident.
- (8)
 - a. John killed Tom intentionally/on purpose.
 - b. #John murdered/slew/assassinated the president intentionally/on purpose.
 - c. #John slaughtered/massacred the civilians intentionally/on purpose.

⁹ <https://www.theguardian.com/world/2016/mar/25/malaysia-hangs-three-men-for-in-sective-execution>

¹⁰ <http://metro.co.uk/2017/11/21/man-electrocuted-to-death-when-cherry-picker-hits-power-lines-7097446/>

Roughly speaking, then, intentionality is understood in the present paper as a verb entailment that relates to performing an action intentionally (i.e. the entity denoted by the subject is volitional in performing an action with a specific intention, in this case, the causing of the death of the entity denoted by the patient). Thus, as shown in (7) and (8), and further illustrated below, intentionality is part of the lexical semantics of *murder* verbs, as it is an entailment, but not of *kill*.

- (9) a. John killed Tom, but didn't intend to/but it wasn't his intention.
 b. #John murdered/assassinated/slew the president, but didn't intend to/but it wasn't his intention.
 c. #John slaughtered/massacred the civilians, but didn't intend to/but it wasn't his intention.

In the next two sections, I make use of the result and manner diagnostics as implemented in RHL and BKG in order to show that *murder* verbs encode both a manner of action and a result state, which contrasts with *kill* in that it only encodes a result state. Contra RHL, this shows that manner and result can be part of the lexical entailments of some roots.

3.1. Encoding result states

The first result diagnostic relates to the fact that, since result verbs encode scalar changes, if a participant engages in an event involving a change along a scale, at the end of the event, the participant must have an altered degree of some property/value. Thus, denying this change results in a contradiction with result verbs as they encode a result state (RHL; BKG).¹¹

- (10) a. #John just broke the vase, but it is not broken/but nothing is different about it.
 b. #John just shattered the bottle, but it is not shattered/but nothing is different about it.
 c. #John just destroyed the city, but it is not destroyed/but nothing is different about it.

In contrast, the same diagnostic with manner verbs does not result in a contradiction, as only a manner of action, but not a result state, is encoded.

- (11) a. John just wiped the table, but it is not clean/but nothing is different about it.
 b. John just hit the wall, but it is not dented/but nothing is different about it.
 c. John just swept the floor, but it is still dirty/but nothing is different about it.

BKG:338 note that 'these diagnostics are insensitive to manner encoding; a verb passing one of these tests may also encode manner'. Thus, this diagnostic simply picks out verbs which encode a result, regardless of the fact that the same verb could also encode a manner of action.

¹¹ In addition to the original diagnostic by RHL, i.e. denying that the result state named by the verb holds of a patient, I also make use of the diagnostic as implemented in Beavers (2011), namely *something is different about x*, in order to capture that a participant has undergone a more general change. As noted by BKG:357, the original diagnostic by RHL could be subject to the criticism that this diagnostic does not show that all result verbs encode the 'same notion of result'. Hence, the *something is different about x* diagnostic by Beavers (2011) identifies a notion of change/result which is not specific to a particular verb.

In this respect, *murder* verbs (together with *kill* (cf. *#John just killed Tom, but he is not dead/but nothing is different about him*)) pattern like canonical result verbs in that it is contradictory to claim that nothing is different about the patient or that the referent of the patient does not die after the event, i.e. that the entity denoted by the patient does not undergo the result state named by the verb.

- (12) a. *#John just murdered/slew/assassinated the President, but he is not dead/but nothing is different about him.*
 b. *#John just slaughtered/massacred the civilians, but they are not dead/but nothing is different about them.*

The second result diagnostic follows from RHL's claim that result verbs permit a narrower range of possible result phrases, whereas manner verbs tend to allow a wider range, and this is taken as a diagnostic by RHL to tell manner and result verbs apart.¹²

Roughly put, this difference follows from the fact that result verbs already have a specific result state in their lexical semantics, whereas manner verbs do not.¹³ Thus, manner verbs permit a wide range of result phrases predicated of their object (13a), as well as result phrases predicated of a nonselected object (13b) or predicated of a fake reflexive (13c).

- (13) a. *John wiped the table clean/dry/shiny/spotless.*
 b. *John ran his shoes ragged.*
 c. *John laughed himself silly.*

This contrasts with result verbs since the only result phrases they permit are those that further specify the result state encoded by the verb (14d). Thus, result verbs do not permit result phrases that introduce a new result state different from the one encoded by the verb (14a) and result phrases predicated of a nonselected object (14b) or of a fake reflexive (14c).

- (14) a. **John broke the vase off the table/valueless.*
 b. **Kim dimmed her eyes sore. (BKG:340)*
 c. **John broke himself tired.*
 d. *John broke the vase into pieces/in half/open.*

In this respect, *murder* verbs also pattern like result verbs in showing limited result phrases.

- (15) a. **John murdered/assassinated/slew the President into pieces/off the stage.*
 b. **John murdered/assassinated/slew his hands bloody.*
 c. **John murdered/assassinated/slew himself tired. (adapted from Goldberg 2001)*
 (16) a. **John slaughtered/massacred the civilians into pieces/up in the air.*

¹² As Goldberg (2001) already notes, result phrases with result verbs may not be as restricted as initially thought. For instance, result path phrases are compatible with result verbs:

- (i) a. *John broke the eggs into the bowl.*
 b. *The machine melted the chocolate into the bowl.*

¹³ According to Rappaport Hovav (2008:22) this restriction in limited result phrases is due to the fact that verbs 'with no lexically specified scale [manner verbs, JA] can appear with a variety of results. [...] In contrast, verbs which have lexically specified scales [result verbs, JA] [...] are very restricted in the kinds of resultatives they can appear with.'

- b. *John slaughtered/massacred his hands bloody.
- c. *John slaughtered/massacred himself tired.

The last result diagnostic relates to the claim by RHL that manner verbs permit more argument realization options than result verbs as they allow nonselected objects as well as the deletion of the object, whereas result verbs cannot. This is shown in (17) where we can see that manner verbs permit nonselected objects (e.g. fake reflexives (17a), the *way*-construction (17b), etc) and constructions that involve the deletion of the object (e.g., *out*- prefixation (17c)), whereas this is not generally possible with result verbs (18).

- (17) a. John laughed himself silly.
- b. John kicked his way into the concert.
- c. John outscrubbed Tom.
- d. All last night, John swept/scrubbed.
- (18) a. *The toddler broke his hands bloody. (RHL:22)
- b. ??John destroyed his way into the concert.
- c. ??Kim outshattered the other bottle-shatterer. (BKG:339)
- d. *All last night, John broke/shattered.

As pointed out by BKG, the motivation for this claim can be found in Rappaport Hovav (2008:24) as she argues that object deletion (and also nonselected objects) in result verbs is not possible because ‘[...] scales require that the participant whose property is measured out by them is overtly realized.’¹⁴

¹⁴ As I note in Ausensi (2019) (also see Ausensi *to appear a*), however, result verbs can appear with some nonselected objects, contra RHL. More specifically, in Ausensi (2019) I note that result verbs frequently appear in the *way*-construction, i.e. which is a case of a nonselected object construction (see Levin & Rapoport 1988; Salkoff 1988; Jackendoff, 1992; Marantz, 1992; Tenny, 1994; Goldberg, 1995, 1996; Israel, 1996; Kuno & Takami, 2004), as illustrated in the following examples (from Ausensi 2019:86).

- (i) a. The cold froze its way into her skull and eye sockets like a razor.
- b. Several more explosions ripped their way along the street, blowing a group of old people into a bloody heap.
- c. Radiation and chemo tore their way through Jeff, sores opened up all over his body.
- d. Over 800 lightning strikes this afternoon shattered their way into central California.
- e. The heat of the 1 million candle stick powered light melted its way through the resin floor of the ambulance.
- f. [...] a fire which burnt its way into the computer networks room from outside.

Murder verbs are also found in the *way*-construction, and therefore showing that they pattern like canonical result verbs in permitting this type of nonselected object.

- (ii) a. Spartacus wanted to engage Crassus in battle, slaughtering his way toward the general’s position. (from Ausensi 2019:84)
- b. He murdered his way to the head of the Cult of Frost. (from *Corpus of Contemporary American English*)
- c. The superior forces of the North conquered and massacred their way through the jungles. (from *Google Books*)

In short, in Ausensi (2019) I argue that result verbs can permit some nonselected objects, thus showing that this result diagnostic needs to be revisited since result verbs appear to be more elastic with regard to their argument realization options than previously claimed.

In this respect, *murder* verbs pattern like result verbs in that they generally disallow the deletion of the object (19) or nonselected objects (as already shown in examples (15) and (16), repeated here as (20)-(21)).

- (19) a. *All last night, John murdered/slew/assassinated.
b. *All last night, John slaughtered/massacred.
- (20) a. *John murdered/slew/assassinated his hands bloody.
b. *John murdered/slew/assassinated himself tired.
- (21) a. *John slaughtered/massacred his hands bloody.
b. *John slaughtered/massacred himself tired.

In short, it has been shown that *murder* verbs pattern like canonical result verbs when subject to the diagnostics by RHL. In the next section, I make use of the manner diagnostics as implemented in BKG in order to argue that *murder* verbs also encode a manner of action. More specifically, I contend that *murder* verbs encode an intentional action that is performed by the entity denoted by the subject with the intention to bring about the result state of *death* of the patient.

3.2. Encoding manners of action

The first manner diagnostic BKG propose relates to selectional restrictions manner verbs impose on their subjects. In this respect, BKG:344 argue that if a verb encodes a manner of action then it restricts the range of subjects it can appear with since ‘result but not manner verbs require no specific action of their subjects.’ This is shown in (22) in which canonical result verbs such as *break* or *destroy* do not place selectional restrictions upon their subject, whereas canonical manner verbs such as *wipe* and *sweep* do, as shown in (23).¹⁵

- (22) a. John accidentally broke/destroyed the vase.
b. The earthquake broke/destroyed the vase.
c. The hammer broke/destroyed the vase.
- (23) a. #John accidentally wiped/swept the floor.
b. #The wind wiped/swept the floor.
c. #The mop wiped/swept the floor.

Roughly put, if a verb encodes some manner of action then that verb restricts the types of subjects it permits according to that manner of action (see Beavers & Koontz-Garboden 2017), e.g. a verb like *wipe* only permits subjects that denote entities capable of carrying out the action denoted by the verb, in this case, wiping. Result verbs are not restricted in this sense, as no manner of action is encoded.

In this respect, *murder* verbs pattern like manner verbs since they restrict their subjects depending on the (manner of) action encoded: only volitional entities capable of performing an intentional action are permitted as subjects. This contrasts with *kill*, since this verb does not

¹⁵ BKG:44 note that there may be exceptions to this. For instance, certain machines or instruments can appear with manner verbs, especially when the instrument is being controlled by the agent, as in *I like how this mop scrubs the floor*.

encode any manner of action and therefore it does not impose any kind of selectional restrictions upon its subject. Thus, *kill* can appear with nonintentional causers (24a), natural forces (24b), general causers (24c) and instruments (24d) as subjects, whereas this is not possible with *murder* verbs (25)–(26).

- (24) a. John killed Tom by accident/unintentionally.
- b. The floods killed thousands.
- c. Cancer killed two million people last year.
- d. That machine weapon killed thousands.
- (25) a. #John murdered/slew/assassinated the president unintentionally/by accident.
- b. #The floods murdered/slew/assassinated the president.
- c. #Cancer murdered/slew/assassinated every president in the US.
- d. #The machine weapon murdered/slew/assassinated the president.
- (26) a. #John slaughtered/massacred the civilians unintentionally/by accident.
- b. #The floods slaughtered/massacred the civilians.
- c. #Cancer slaughtered/massacred all the citizens in that town.
- d. #The atomic bombs slaughtered/massacred the civilians.

Thus, *murder* verbs pattern like manner verbs in restricting their subjects according to the manner of action encoded, this not being the case with *kill*, as no manner of action is encoded and thus no selectional restrictions arise.

The second manner diagnostic by BKG relates to what they consider to be the most prototypical kind of manner of action, i.e. moving parts of the human body when carrying out an action, what they call *actor-oriented manner*. BKG argue that if a subject is an actor, then ‘it should be impossible to assert that they performed the action specified by the verb and yet didn’t move a muscle’ (BKG:345). This seems to be a correct intuition since in prototypical manner verbs the *didn’t move a muscle* diagnostic results in a contradiction.

- (27) a. #John ran, but didn’t move a muscle.
- b. #John wiped the table, but didn’t move a muscle.
- c. #John exercised at the gym, but didn’t move a muscle.

As BKG argue, with result verbs then it should be possible to deny that any action has been performed in causing a change, as the verb encodes causation but not any (manner of) action. However, BKG:345 in this respect note the following:

If all that result verbs encode is a result but not (any specific type of) action, then it should be possible to deny that action occurred. [...] But, [...] how can one cause something without acting in some way? [...] an example might be negligence—failing to act in some (expected) way to prevent a change from occurring, thereby being responsible for it.

Thus, result verbs should be compatible with the *didn’t move a muscle* diagnostic, especially in a negligence context, as they lexicalize causation but not any sort of action. This is shown in (28).

- (28) Jim destroyed his car, but didn’t move a muscle—rather, after he bought it he just

let it sit on his neighbor's lawn on cinder blocks, untouched, until it disintegrated.
(BKG:346)

In this respect, *murder* verbs pattern like manner verbs in that it is not possible to deny that an action has been performed when bringing about the result state encoded by the verb. This contrasts with *kill* as no action is encoded and thus it is not contradictory to deny that an action has been performed.¹⁶

- (29) a. John killed Tom, his son, but didn't move a muscle—rather, he did not give consent to his operation on his tumor due to religious beliefs.
b. #John murdered Tom, his son, but didn't move a muscle—rather, he did not give consent to his operation on his tumor due to religious beliefs.
- (30) a. John killed the president, but didn't move a muscle—rather, he refused to alert the Secret Service to the hidden bomb.
b. #John assassinated the president, but didn't move a muscle—rather, he refused to alert the Secret Service to the hidden bomb.
- (31) a. John killed all the passers-by, but didn't move a muscle—rather, he failed to alert security services to the car bomb.
b. #John slew all the passers-by, but didn't move a muscle—rather, he failed to alert security services to the car bomb.
- (32) a. John killed all the citizens, but didn't move a muscle—rather, he refused to warn them about the incoming hurricane.
b. #John slaughtered/massacred all the citizens, but didn't move a muscle—rather, he refused to warn them about the incoming hurricane.

As BKG argue, this does not mean that in the aforementioned scenarios John cannot be held accountable for the death of such people, but what is not possible is to express this with *murder* verbs. More specifically, BKG:347 claim that 'one cannot be accused of electrocuting, hanging, drowning, or crucifying someone simply by negligently failing to prevent it [...].' I propose to include here *murder* verbs: whereas one can be accused of killing someone simply by negligently failing to prevent it, as in the examples above, this is not possible with *murder* verbs.

The last diagnostic by BKG derives from the fact that most manner verbs are complex, as they encode nonscalar changes, as argued by RHL. Thus, BKG assume that complex manners should be durative, and this is taken as a diagnostic. BKG follow Beavers (2008) and the diagnostics laid out by Kearns (2000:206) to capture durativity, namely the *take-time* diagnostic, considered to be a standard durativity test. The *take-time* diagnostic conveys an *after x time* reading with punctual events and both an *after* and a *during x time* reading with telic events with duration. Durative predicates which are atelic only have the *during x time* reading in the *spend x time* test.

¹⁶ As a reviewer points out, there appears to be some variation amongst speakers about whether it is possible to deny that an action has been performed in the case of *murder*. More specifically, a reviewer notes that if a doctor tacitly refuses to treat a patient with the intention of letting the patient die, it can be then categorized as a murdering event by some speakers. I agree that there may be some variation amongst speakers, especially with *murder*, since, as I point out next, its manner is highly unspecified and therefore subject to variation. Other *murder* verbs such as *massacre*, which encode a manner that has more specific entailments about the causing of the result state (i.e. in this case, it refers to magnitude of killing) do not seem to allow such variation, since (as the same reviewer points out) sentences like *John massacred the city by refusing to alert the people about the hurricane* are clearly out.

Thus, BKG argue that simplex actions (i.e. simplex manners) correlate with punctuality and complex actions with durativity. This is shown in (33) (from BKG:348).

- (33) a. It took John five minutes to blink (once). (after five minutes, punctual)
 b. John spent five minutes running. (during five minutes, durative)

Murder verbs encode a two-point scale, i.e. alive-dead, and, therefore, they are expected to be punctual, since as Beavers (2008) shows, scales which are open typically involve durative predicates, whereas closed scales (i.e. two-point scales) involve punctual predicates by default (e.g. *break*). More precisely, BKG:348 argue the following:

[...] if we know independently that the change for some verb is simplex, so that the scale has only two points, then if the predicate is durative, it must be because there is a complex manner.

This seems to be the case with *murder* verbs, as they have a *during* and an *after* reading, proving that the events these verbs describe are durative despite encoding two-point scales.

- (34) a. It took John 5 minutes to murder/assassinate/slay the president. (after/during 5 minutes)
 b. It took John 5 minutes to slaughter/massacre all the citizens. (after/during 5 minutes)

Murder verbs then pattern like manner verbs in this last diagnostic as well in that the events they describe are durative, despite encoding nongradable scales. The change of state encoded by *murder* verbs is simplex, since the scale has only two points, but they are durative, which strongly suggests that they encode a complex manner as well. Roughly put and following BKG, the result state in *murder* verbs, i.e. death, is nongradable and therefore this result cannot be contributing the durativity. Consequentially, the manner of action encoded in *murder* verbs is actually the component which contributes the durativity. This in line with the observation by Beavers and Koontz-Garboden (2017:862) with regard to the fact that ‘some manners force a predicate to be durative even if the scale is nongradable.’

In short, I have shown that *murder* verbs, when making use of the diagnostics by both RHL and BKG, pattern like manner and result verbs. More specifically, *murder* verbs pattern like canonical manner verbs (e.g. *run*, *wipe*) in restricting their subjects depending on the manner of action encoded: only volitional entities capable of carrying out an intentional action are permitted. Further, *murder* verbs pattern like manner verbs since it cannot be denied that an action has taken place when bringing about the result state encoded by the verb. Lastly, *murder* verbs describe durative events despite encoding nongradable scales.

The analysis of *murder* verbs as manner-result encoding verbs poses a problem for MRC since *murder* verbs are simplex verbs that have both manner and result entailments encoded in a single root. Consequently, I conclude that agent entailments, i.e. intentionality in this case, are sufficient to induce manner properties, as these agent entailments are responsible for inducing the manner properties in *murder* verbs.

Lastly, an important caveat is in order: following what BKG:349 note for manner of killing verbs, it could be argued that *murder* verbs encode a manner which is somewhat different from the manner encoded by canonical manner verbs (e.g. *run*, *wipe*). However, BKG:349 note the

following in this respect:

[The diagnostics in BKG, JA] were rooted in canonical manner and result verbs, and thus it seems clear that the relevant components that give rise to these behaviors are the same. [...] these verbs [manner of killing verbs, JA] really do encode exactly the type of content found in both pure manner and pure results.

Thus, in one of its possible many senses, manner simply relates to carrying out an action, and this sense is also encoded in canonical manner verb such as *run*, *wipe* or *sweep*. Of course, the manner meaning can be more complex in other verbs, but the canonical manner component stays constant, i.e. that of performing an action. Other manner verbs such as *run* or *swim* have a more detailed manner since they encode an action (in this case, a manner of movement) in a specific way (running differs from jogging, walking and swimming since the movement of the legs and hands and pace are different). In this respect, RHL:33 note that ‘verbs of non-scalar change [manner verbs, JA] need not always be so specific about the precise changes [manners, JA] they involve.’ Hence, manner verbs can encode specific manners of actions or leave this manner of action not so specified, yet regardless of the degree of specification, manner verbs always encode an action.

In a similar vein, one could object to the claim that *murder* verbs encode a manner of action by arguing that it is possible to provide ‘actual’ manners of action (i.e. murder someone by poisoning/shooting/hanging/etc. them). I argue that this is parallel to the fact that one can also provide more specific manners with some canonical manner verbs such as *exercise* (e.g. exercise by running/swimming/jumping/etc). However, the fact that *exercise* can be modified by more specific manners does not mean that it does not encode a manner of action; it simply tells us that its manner is highly unspecified (as with other manner verbs like *work*). As a matter of fact, RHL note that the manner of action in *exercise* is not so specific:

The verb *exercise*, for example, requires an unspecified set of movements, whose only defining characteristic is that they involve some sort of activity, typically physical, but on occasion mental. (RHL:33)

Thus, this low degree of specificity of the manner of action is found in *murder*. Although it is true that you can murder someone by poisoning/shooting/crucifying/etc. them, these means are just extra modifiers of the manner of action encoded, i.e. carrying out an intentional action, and they simply provide the specific means the subject employs when performing the intentional action encoded by the verb.

In short, I have isolated a manner of action that is common to all *murder* verbs. However, this does not exclude the possibility that some *murder* verbs have, apart from this unspecified manner of action, more specific lexical entailments regarding the manner of action. For instance, it seems that *slay* not only refers to a manner of action related to an intentional action, but it also seems to involve violence or even the use of a sharp object.

(35) ??John slew the dragon by poisoning it. (cf. John slew the dragon with this magic sword)

Similarly, *massacre* also appears to have some more specific lexical entailments than simply encoding an intentional action, i.e. it also refers to magnitude of killing (Husband 2011).

(36) #John massacred Tom/the citizen- (cf. John massacred all the men/all the citizens)

In short, as expressed above, what is relevant is whether a verb encodes an action, and this is the case for *murder* verbs (and for any other manner verb) as I have argued, employing the diagnostics as laid out in BKG and RHL, that *murder* verbs are simplex verbs and yet have both manner and result entailments.¹⁷

4. Concluding remarks

This paper has focused on what I have called *murder* verbs in order to argue that it is possible for some simplex verbs to encode both a manner of action and a result state. Subsequently, this poses a problem for MRC as a constraint on the entailments that can be encoded in a single root, as I have argued that *murder* verbs encode a manner of action, i.e. an intentional action, and a result state, i.e. the death of the patient, which contrasts with *kill* as it only encodes a result state.

The analysis of *murder* verbs as manner-result encoding verbs has consequences for the role that intentionality and agent entailments play within the analysis of verb meaning, as intentionality appears to have more significant consequences than previously acknowledged. As I have argued, encoding intentionality, i.e. agent entailments, appears to be sufficient to induce manner properties, since such entailments are responsible for inducing the manner properties in *murder* verbs.

Lastly, I agree with BKG and Mateu & Acedo-Matellán (2012) that MRC does hold at the event structure level in that a single root cannot be inserted into two different positions, or the same event structure cannot have more than one root. Thus, at this level there exists a complementarity between manner and result. However, the data seem to show that, contra RHL, manner and result can be both part of the lexical entailments of some roots. This strongly suggests that MRC is contrary to fact, as roots generally encode a result state by leaving unspecified how such result state was brought about or they encode a manner of action without specifying any result state from that action, but there are clearly some roots that encode a manner of action that brings about a result state.

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¹⁷ A reviewer asks about where *murder* roots appear in the event structure level, i.e. as a modifier of the ACT predicate or as an argument of BECOME, since such roots already encode both a manner and a result. Although this falls out of the scope of the present paper, in Ausensi (*to appear b*) I show that the roots of *murder* verbs differ from the roots of verbs such as *kill* in that while both types of roots specify that the state they encode must be caused, only *murder* roots further specify that it must be caused by a specific action, i.e. an intentional action, and therefore accounting for the requirement of *murder* verbs for a specific type of cause, i.e. an Agent. Thus, *murder* roots would appear as an argument of the BECOME predicate in the event structure, but the semantics of such roots specify that the state the root denotes must be brought about by a specific cause (see also Beavers and Koontz-Garboden (*to appear*) for a similar analysis, i.e. about the fact that some roots place constraints on the verb's subject).

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References

- Acedo-Matellán, V. & J. Mateu. (2014). From syntax to roots: A syntactic approach to root interpretation. Alexiadou, A., H. Borer & F. Schäfer (eds.), *The Syntax of Roots and the Roots of Syntax*, Oxford: Oxford University Press, pp. 14-32.
- Acquaviva, P. (2008). *Lexical plurals: A morphosemantic approach*. Oxford: Oxford University Press.
- Acquaviva, P. (2014). The roots of nominality, the nominality of roots. Alexiadou, A., H. Borer & F. Schäfer (eds.), *The Syntax of Roots and the Roots of Syntax*, Oxford: Oxford University Press, pp. 33-56.
- Alexiadou, A., E. Anagnostopoulou & F. Schäfer. (2015). *External arguments in transitivity alternations: A layering approach*. Oxford: Oxford University Press.
- Arsenijevic, B. (2010). On the syntactic nature of manner-incorporation. [Ms].
- Ausensi, J. (2019). Revisiting the elasticity of verb meaning and the way-construction in English. Espinal, M. T., E. Castroviejo, M. Leonetti, L. McNally & C. Real-Puigdollers (eds.), *Proceedings of Sinn und Bedeutung 23*, pp. 75-92.
- Ausensi, J. (to appear a). Unaccusativity and the way-construction in English. *Linguistic Analysis* (Special Issue)
- Ausensi, J. (to appear b). Agent entailments in the semantics of roots. Budnick, R. & N. Rhee (eds.), *University of Pennsylvania Working Papers in Linguistics* 26(1).
- Beavers, J. (2008). Scalar complexity and the structure of events. J. Dölling, T. Heyde-Zybatow & Martin Schäfer (eds.), *Event structures in linguistic form and interpretation*, Berlin: Walter de Gruyter, pp. 245-265.
- Beavers, J. (2011). On affectedness. *Natural Language and Linguistic Theory* 29, pp. 335-370.
- Beavers, J. & A. Koontz-Garboden. (2012). Manner and result in the roots of verbal meaning. *Linguistic Inquiry* 43:3, pp. 331-369.
- Beavers, J. & A. Koontz-Garboden. (2017). Result verbs, scalar change, and the typology of motion verbs. *Language* 93:4, pp. 842-876.
- Beavers, J. & A. Koontz-Garboden. (to appear). *The Meaning of Verbal Roots and the Roots of Verbal Meaning*. Oxford: Oxford University Press.
- Borer, H. (2003). Exo-skeletal vs. endo-skeletal explanations: Syntactic projections and the lexicon. Polinsky, M. & J. Moore (eds.), *Explanation in linguistic theory*, Stanford: CSLI, pp. 31-67.
- Borer, H. (2005). *Structuring sense*. Oxford: Oxford University Press.
- Dowty, D. R. (1991). Thematic proto-roles and argument selection. *Language* 67, pp. 574-619.
- Férez, P. C. (2007). Human locomotion verbs in English and Spanish. *International journal of English studies* 7, pp. 117-136.
- Goldberg, A. E. (1995). *Constructions: A construction grammar approach to argument structure*. Chicago: University of Chicago Press.
- Goldberg, A. (1996). Making one's way through the data. Shibatani, M. & S. A. Thompson (eds.), *Grammatical constructions: their form and meaning*, Oxford: Oxford University Press, pp. 29-53.
- Goldberg, A. (2001). Patient arguments of causative verbs can be omitted: the role of information structure in argument distribution. *Language Sciences* 23, pp. 503-524.
- Goldberg, A. E. (2010). Verbs, constructions and semantic frames. Doron, M. M. Rappaport Hovav & I. Sichel (eds.), *Syntax, Lexical Semantics, and Event Structure*, Oxford: Oxford University Press, pp. 39-58.
- Grano, T. (2016). A coercion-free semantics for intend. *Proceedings from 51st Annual Meeting of the Chicago Linguistic Society*, pp. 213-223.
- Hay, J., C. Kennedy & B. Levin. (1999). Scalar structure underlies telicity in 'degree achievements'. *Proceedings of SALT 9*, pp. 127-144.
- Husband, E. M. (2011). Rescuing manner/result complementarity from certain death. *Proceedings from the 47th Annual Meeting of the Chicago Linguistic Society*, pp. 111-124.

- Israel, M. (1996). The Way Constructions Grow. Goldberg, A. E. (eds.), *Conceptual Structure, Discourse and Language*, Stanford, CA: CSLI Publications, pp. 217-230.
- Jackendoff, R. (1992). Babe Ruth Homered His Way into the Hearts of America. Wehrli, E. & T. Stowell (eds.), *Syntax and the Lexicon. Syntax and Semantics 26*, Academic Press Inc, pp. 155-178.
- Kennedy, C. & L. McNally. (2005). Scale structure, degree modification, and the semantics of gradable predicates. *Language* 81, pp. 345-381.
- Kennedy, C. & B. Levin. (2008). Measure of change: The adjectival core of degree achievements. McNally, L. & C. Kennedy (eds.), *Adjectives and Adverbs: Syntax, Semantics and Discourse*, Oxford: Oxford University Press, pp. 156-82.
- Kearns, K. (2000). *Semantics*. New York: St. Martin's.
- Kiparsky, P. (1997). Remarks on denominal verbs. Alsina, A., J. Bresnan & P. Sells (eds.), *Complex Predicates*, Stanford: CSLI, pp. 473-499.
- Lemmens, M. (1998). *Lexical perspectives on transitivity and ergativity: Causative constructions in English*. John Benjamins Publishing Company.
- Levin, B. (1993). *English verb classes and alternations: A preliminary investigation*. Chicago: University of Chicago Press.
- Levin, B. (2017). The elasticity of verb meaning revisited. *Proceedings of Semantics and Linguistic Theory 27*, pp. 571-599.
- Levin, B. and T. Rapoport. (1988). Lexical Subordination. In *Proceedings of the Chicago Linguistic Society 24*, pp. 275-289.
- Levin, B. & M. Rappaport Hovav. (1991). Wiping the slate clean. *Cognition* 41, pp. 123-151.
- Levin, B. & M. Rappaport Hovav. (2013). Lexicalized meaning and manner/result complementarity. Arsenijević, B., B. Gehrke & R. Marín (eds.), *Studies in the composition and decomposition of event predicates*, Springer Netherlands, pp. 49-70.
- Levin, B. & M. Rappaport Hovav. (2014). Manner and result: The view from clean. Pensalfini, R., M. Turpin & D. Guillemin (eds.), *Language Description Informed by Theory*, John Benjamins Publishing Company, pp. 337-358.
- Marantz, A. (1992). The way construction and the semantics of direct arguments in English. Wehrli, E. & T. Stowell (eds.), *Syntax and the Lexicon. Syntax and Semantics 26*, Academic Press Inc, pp. 155-178.
- Mateu, J. & V. Acedo-Matellán. (2012). The manner result complementarity revisited: A syntactic approach. Cuervo, M.C. & Y. Roberge (eds.), *The end of argument structure? Syntax and semantics 38*, New York: Academic Press, pp. 209-228.
- Ramchand, G. (2014). On structural meaning vs. conceptual meaning in verb semantics. *Linguistic Analysis* 39, pp. 207-244.
- Rappaport Hovav, M. & B. Levin. (1998). Building verb meanings. Butt, M. & W. Geuder (eds.), *The projection of arguments: Lexical and compositional factors*, Stanford, CA: CSLI Publications, pp. 97-134.
- Rappaport Hovav, M. & Beth Levin. (2010). Reflections on manner/result complementarity. Doron, E., M. Rappaport Hovav & I. Sichel (eds.), *Syntax, lexical semantics, and event structure*, Oxford: Oxford University Press, pp. 21-38.
- Rappaport Hovav, M. (2008). Lexicalized meaning and the internal structure of events. Rothstein, S. (eds.), *Theoretical and crosslinguistic approaches to the semantics of aspect*, Amsterdam: John Benjamins, pp. 13-42.
- Rappaport Hovav, M. (2014). Building scalar changes. Alexiadou, A., H. Borer & F. Schäfer (eds.), *The Syntax of Roots and the Roots of Syntax*, Oxford University Press, pp. 259-281.
- Rappaport Hovav, M. (2017). Grammatically relevant ontological categories underlie manner/result complementarity. *Proceedings of IATL 32*, pp. 77-98.
- Reinhart, T. (2002). The theta system – an overview. *Theoretical Linguistics* 28, pp. 229-290.
- Rooryck, J. & G. Vanden Wyngaerd. (2011). *Dissolving Binding Theory*. Oxford: Oxford University Press.
- Salkoff, M. (1998). Analysis by Fusion. *Linguisticae Investigationes* 12:1, pp. 49-84.
- Solstad, T. & O. Bott. (2017). Causality and Causal Reasoning in Natural Language. Waldmann, M.R. (eds.), *The Oxford Handbook of Causal Reasoning*, Oxford: Oxford University Press, pp. 619-644.
- Talmy, L. (1985). Lexicalization patterns: semantic structure in lexical forms. Shopen, T. (eds.), *Language typology and syntactic description III: Grammatical categories and the lexicon*, Cambridge: Cambridge University Press, pp. 57-149.
- Tenny, C. (1994). *Aspectual roles and the syntax-semantics interface*. Dordrecht: Kluwer.

- Van Valin, R. D. Jr. & D. P. Wilkins. (1996). The case for 'effector': Case roles, agents, and agency revisited. Shibatani, M. & S. A. Thompson, *Grammatical constructions: Their form and meaning*, Oxford: Oxford University Press, pp. 289–322.
- Van Valin, R. D. Jr. (2005). *Exploring the Syntax-Semantics Interface*. Cambridge: Cambridge University Press.
- Zlatev, J. & P. Yangklang. (2004). A third way to travel: The place of Thai in motion-event typology. Strömquist, S. & L. Verhoeven (eds), *Relating events in narrative 2: Typological and contextual perspectives*, Mahwah, NJ: Lawrence Erlbaum, pp. 219–257.

On the syntax of comitative constructions in some Finno-Ugric languages

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This paper deals with comitative constructions in some Finno-Ugric languages, mainly in Hill Mari, Moksha Mordvin and Kazym Khanty, using the data of other languages as an intragenetic background. I argue that in the three named languages a comitative phrase in the comitative construction appears at the VP level. Comitative coordination [X Y COM V-PL] is compatible with distributive predicates, while comitative constructions do not allow a distributive interpretation. However, a comitative phrase in this construction can be detached from the central NP, while parts of a coordinate structure cannot appear non-contiguously, which complicates the explanation of plural verbal agreement.

1. Introduction

This paper deals with comitative markers and coordinating conjunctions in some Finno-Ugric languages, mainly in Hill Mari, Moksha Mordvin and Kazym Khanty, using the data of some other languages (Estonian, Hungarian, Komi, Udmurt) as an intragenetic background.

First, I rely on my data elicited in the field at the village of Kazym (Khanty: Khanty-Mansi Autonomous District, Russia) in 2018, at the village of Kuznetsovo and its surroundings (Hill Mari: Mari El Republic, Russia) in 2017–2018, at the village of Staryj Kyzyl-Jar and its surroundings (Udmurt: The Republic of Bashkortostan, Russia) and at the village of Lesnoje Tsibajevo (Moksha: The Republic of Mordovia, Russia) in 2019. Second, I use the Kazym Khanty, Hill Mari, Izhma Komi and Moksha corpora. The Khanty corpus consists of Western Khanty texts (including Kazym Khanty subcorpus) and is available at <https://osf.io/uraqx/files/>. The Hill Mari corpus was collected during the Lomonosov Moscow State University field trips in 2014–2018. It is available at <http://hillmari-exp.tilda.ws/corpus>. The Moksha corpus was collected during the Lomonosov Moscow State University field trips in 2013–2016. The Izhma Komi corpus was prepared as part of the project devoted to the creation of the Dialectological Atlas of the Uralic languages spoken in the Yamalo-Nenets Autonomous District. The corpora of Moksha and Izhma Komi are available upon request. Third, I have consulted theoretically-oriented descriptions of comitative constructions, e.g. Hetzron (1973) on Hungarian, Erelt (2008) on Estonian. Unfortunately, resources like reference grammars do not provide very detailed information on comitatives.

Finno-Ugric languages are agglutinative. Many Finno-Ugric languages have a large set of grammatical cases, e.g. from 17 (Abondolo 1988:26) to 26 (Tomba 1968:206-209)

in Hungarian, 16-17 in Komi dialects (Batalova 1982:90), 14 in Estonian (Viitso 2003:32), from 12 to 21 cases in Udmurt (Kelmakov 1998:117). There are 16 cases in Moksha Mordvin (Kholodilova 2018:66) and 10 cases in Hill Mari. While some Khanty dialects have as many cases as other Finno-Ugric languages (8 in Vakh Khanty, see Tereshkin 1967:130), Kazym Khanty has only 3 cases (Kaksin 2010:82). Finno-Ugric languages lack grammatical gender (including one pronoun for both ‘he’ and ‘she’, cf. *tädä* in Hill Mari). Mostly postpositions are used. Another notable feature is the use of possessive affixes, cf. Hill Mari *moren-em* ‘hare-POSS.1SG’. Many Finno-Ugric languages are rigidly verb-final, while some of them are not: e.g., Khanty, Hungarian, Udmurt and Mari are SOV, Komi, Moksha and Estonian are SVO (Hájdu 1975:149).

Stassen (2000) describes two main strategies of NP-conjunction: the coordinate strategy ([X COORD Y V-PL]) and the comitative strategy ([X Y COM V-SG]).¹ In the coordinate strategy NPs have the same structural rank, NPs form a constituent, and there is plural (or dual) agreement on verbs. On the contrary, in the comitative strategy, NPs differ in structural rank, they do not form a constituent, and there is singular agreement on verbs. Compare *Mary and I go to the market* and *Mary goes to the market with me*: the first sentence illustrates the coordinate strategy, since [*Mary and I*] is a constituent, both NPs are parts of the subject, and the verb is plural; the second sentence illustrates the comitative strategy, since [*Mary*] and [*with me*] do not form a constituent, [*Mary*] is the subject, while [*with me*] is a prepositional phrase in the oblique position, and the verb is singular. In comitative constructions X is called the ‘central noun phrase’ (central NP) and Y is called ‘the comitative phrase’ (Comp): [*Mary*]_{THE CENTRAL NP} *came* [*with me*]_{COMP}, see also Arkhipov (2009).

Besides comitative and coordinating constructions, many Finno-Ugric languages have comitative coordinating constructions, which exhibit mixed properties. I will investigate two types of comitative coordination: [X Y COM V-PL] and [Y COM X V-PL], in the latter Comp precedes the central NP. I will analyze the structure of comitative coordination, comparing it to coordinating and comitative constructions (see Table 1).

In Hill Mari there is a comitative-instrumental postposition *dono* and a coordinating conjunction *dä*, the latter was borrowed from Russian (Galkin 1964:177; Majtinskaja 1982:103). There is also a coordinating conjunction *don*, which developed from *dono* (Galkin 1964:178-179). In Moksha there is a comitative-instrumental postposition *mar̥tə* and a coordinating conjunction *i*, which was borrowed from Russian (Kolyadenkov 1954:269-270).² In Kazym Khanty there is a comitative postposition *pila* and an additive particle *pa*, which functions (inter alia) as a coordinating conjunction. The postposition *pila* has a complex structure — it contains a dative marker *-a*. It is also worth noting that in some Khanty dialects the comitative postposition has several forms: *pilna* in the Obdorsk dialect, *pilən* in the Shuryshkary dialect (see Koshkaryova 2011:101), *pila* and *pilən* in the Tegi subdialect (Shapiro 2011), where *-ən* or *-na* is a locative case marker. However, in Kazym Khanty the form with the locative marker (which could be *pilən*) has not been attested (see also Koshkaryova 1996:55; Solovar 2014:246).³

¹ Some languages use both these strategies to encode NP conjunction (AND-languages, e.g. English), while some languages use only comitative strategy (WITH-languages, e.g. Akan < Kwa < Niger-Kordofanian, see Stassen 2000:22). Still, WITH-languages tend to drift towards AND-status, developing coordinating constructions (e.g. Even < Tungusic < Altaic, see Stassen 2000:32).

² Besides the postposition *mar̥tə*, the inessive marker also has some functions typical of comitatives, (see Kozlov 2018:162ff.), but it cannot be used in the constructions I am interested in.

³ In Hill Mari and in Kazym Khanty there are some other markers that can convey comitative meaning. In Hill Mari these are in particular the postposition *saga* and the case marker *-ge*. In Khanty there are postpositions *mujn* and *san̥ǵn* (see Koshkaryova 1996). The focus of my paper is the syntax of the prototypical comitative

| Construction | Hill Mari | Moksha | Khanty |
|----------------------------|--------------------------|-----------------------|---------------------------------|
| Coordination | <i>X dă Y V-PL</i> (1) | <i>X i Y V-PL</i> | <i>X pa Y V-DU</i> ⁴ |
| Comitative coordination I | <i>X Y dono V-PL</i> (2) | <i>X Y martə V-PL</i> | <i>X Y piła V-DU</i> |
| Comitative coordination II | <i>Y don X V-PL</i> (3) | <i>Y martə X V-PL</i> | — |
| Comitative | <i>X Y dono V-SG</i> (4) | <i>X Y martə V-SG</i> | <i>X Y piła V-SG</i> |

Table 1. Constructions under investigation.

I illustrate the constructions under investigation with Hill Mari examples (1)–(4) also marked in Table 1.

HILL MARI

- (1) maša dă pet'a škol-əš ke-ät
 Mary and Peter school-ILL go-NPST.3PL
 'Mary and Peter go to school.'
- (2) maša pet'a dono škol-əš ke-ät
 Mary Peter with school-ILL go-NPST.3PL
 'Mary and Peter go to school.'
- (3) maša don pet'a škol-əš ke-ät
 Mary with Peter school-ILL go-NPST.3PL
 'Mary and Peter go to school.'
- (4) maša pet'a dono škol-əš ke-ä
 Mary Peter with school-ILL go-NPST.3SG
 'Mary goes to school with Peter.'

Both in Hill Mari and in Moksha there are two types of comitative coordination (see Hill Mari examples (2) and (3), and Moksha examples (5) and (6)), while Kazym Khanty has only the first type of comitative coordination (7) and lacks the second type with the reverse order of the central NP and ComP (8).

MOKSHA

- (5) maša pet'ε martə tu-s'-t' kino-s
 Mary Peter with go-PST.3-PL movie-ILL
 'Mary and Peter went to the cinema.'
- (6) maša martə pet'ε tu-s'-t' kino-s
 Mary with Peter go-PST.3-PL movie-ILL
 'Mary and Peter went to the cinema.'

constructions, in which *dono* and *piła* are used (in Hill Mari and in Kazym Khanty respectively), so for now I leave the other markers out.

⁴ In Khanty there is a ternary opposition: SG, DU and PL, while in Hill Mari and in Moksha there is a binary one: SG and PL.

KAZYM KHANTY

- (7) maša-jen pet'a-jen piła went-a mǎn-s-əŋən
 Mary-POSS.2SG Peter-POSS.2SG with forest-DAT go-PST-3DU
 'Mary and Peter went to the forest.'
- (8) *maša-jen piła pet'a-jen wənt-a mǎn-s-əŋən
 Mary-POSS.2SG with Peter-POSS.2SG forest-DAT go-PST-3DU
 Expected: 'Mary and Peter went to the forest.'

The paper is organized as follows. In Section 2 I discuss the status of the comitative phrase in comitative constructions and in comitative coordinating constructions. Section 3 describes the properties of comitative coordinating constructions in comparison to canonical comitative and coordinating constructions and the agreement mechanism in these constructions, since non-singular verbal agreement may arise because of different reasons: either ComP and the central NP form a constituent, which licenses it, cf. Russian (see, i.a. Ionin & Matushansky 2003), or ComP and the central NP do not form a constituent, so the agreement is licenced by something else, cf. Tzotzil comitatives (Aissen 1989). Section 4 provides an intragenetic background, because 'grammaticalization of comitatives into coordinate-like structures is a process which may have proceeded further in some languages than in others' (Stassen 2000:41). Conclusions are drawn in Section 5.

2. The status of the comitative phrase

There are many possible ways to analyze comitative constructions. Comitatives proper can be analyzed, for instance, as DP-adjuncts (Ionin & Matushansky 2003) or VP-adjuncts (Vassilieva & Larson 2005). Coordinating comitatives can be analysed, for example, as conjunctionless ordinary coordination (Dyła 1988) or as DP-adjuncts (Ionin & Matushansky 2003).

In order to find out whether the ComP is a VP- or DP-adjunct, I will examine whether the ComP can be associated with noun phrases in different structural positions. Ionin & Matushansky (2003) analyse the ComP in Russian uniformly both in the coordinating comitative construction (*Maša s Petej prišli* 'Mary with Peter come.PST.PL') and in the comitative construction (*Maša prišla s Petej* 'Mary come.PST.SG.F with Peter') — it is regarded as a DP-adjunct. One of the arguments in favor of this analysis is that the ComP can be associated not only with subjects, but also with direct objects (9) and indirect objects (10).

RUSSIAN

- (9) Pet'a udari-l Maš-u s Kat-ej.
 Peter hit-PST Mary-ACC with Kate-INSTR
 'Peter hit Mary and Kate.'
- (10) Ja da-l-a Pet'-e s Maš-ej jabloko.
 I give-PST-F Peter-DAT with Mary-INSTR apple
 'I gave an apple to Peter and to Mary.'

The analysis of the ComP as a VP-adjunct is difficult in this case: 'if a VP-adjunct is to be associated with the subject, this adjunct must be base-generated in a specific position inside a

VP. But if this VP-adjunct can also be interpreted as associated with a non-subject, then a VP-adjunction analysis would need to say something additional about its base-generation site. It is unclear how a VP-internal adjunct can be interpreted to modify a possessive or how a high VP-adjunct can modify an object or an indirect object' (Ionin & Matushansky 2003:14).

In Hill Mari the ComP can be associated only with the subject (11) and the direct object (12), and not with the indirect object (13).

HILL MARI

- (11) maša pet'a dono tol-ên
 Mary Peter with come-PRET
 'Mary came with Peter.'
- (12) tädö plat'ê-žê-m êžar pojas dono šu-en kolt-en
 (s)he dress-POSS.3SG-ACC green belt with throw-CVB send-PRET
 '(S)he threw away her dress together with the green belt.'
- (13) *mën' pet'a-lan maša dono olma-m pu-en-äm
 I Peter-DAT Mary with apple-ACC give-PRET-1SG
 Expected: 'I gave an apple to Peter and Mary.'

Only the coordination proper (14) and the comitative coordination II (15) with the reverse order of the central NP and the ComP can make the last sentence grammatical:

- (14) mën' pet'a-lan dā maša-lan olma-m pu-en-äm
 I Peter-DAT and Mary-DAT apple-ACC give-PRET-1SG
 'I gave an apple to Peter and Mary.'
- (15) mën' pet'a don maša-lan olma-m pu-en-äm
 I Peter and Mary-DAT apple-ACC give-PRET-1SG
 'I gave an apple to Peter and Mary.'

In Kazym Khanty the situation is the same: the ComP can be associated with the subject (16) and the direct object (17), but not with the indirect object (18).

KAZYM KHANTY

- (16) pet'a-jen went-a maša-jen pił-a măn-əs
 Peter-POSS.2SG forest-DAT Mary-POSS.2SG with-DAT go-PST
 'Peter went to the forest with Mary.'
- (17) xəp jux joxi λoŋ-εmə-s, tɔrəm xən iki
 aspen stick home enter-PUNCT-PST sky king man
 λaλ' jəx-λ-aλ pił-a xəj-ti ši pit-s-aj-ət
 war person-PL-3SG with-DAT touch-INF FOC become-PST-PASS-3PL
 'The aspen stick entered the house and began to hit soldiers and the sky king.'
- (Khanty corpus, Kazym Khanty subcorpus)

- (18) a. ma an-en aŋk-εm-a pa aś-εm-a
 I cup-POSS.2SG mother-POSS.1SG-DAT ADD father-POSS.1SG-DAT
 mā-s-əm
 give-PST-1SG
 'I gave a cup to my mother and my father.'
- b. *ma an-en aŋk-εm-a aś-εm piλ-a
 I cup-POSS.2SG mother-POSS.1SG-DAT father-POSS.1SG with-DAT
 mā-s-əm
 give-PST-1SG
 Expected: 'I gave a cup to my mother and my father.'

In a similar manner, in Moksha the ComP can occur in positions except the subject and the direct object ones only preceding the central NP, see example (19) with the PP in the oblique position:

- MOKSHA
- (19) a. mon keš-ən' maša maṛtə pet'ε-n' ezdə
 I hide-PST.1SG Mary with Peter-GEN from
 'I hid from Mary and Peter.'
- b. #mon keš-ən' maša-n' ezdə daša maṛtə
 I hide-PST.1SG Mary-GEN from Daria with
 'I hid with Daria from Mary.'

Thus, in Hill Mari, Moksha and Kazym Khanty, the fact that the central NP, which is followed by the ComP, can only function either as a subject or direct object is an argument for VP-adjunction analysis of this construction (comitative coordination I). The fact that the central NP, which is preceded by the ComP, can function not only as a subject but also as a direct object is an argument for NP-adjunction analysis of this construction (comitative coordination II), see schematic representation for these two analyses in Figure 1.

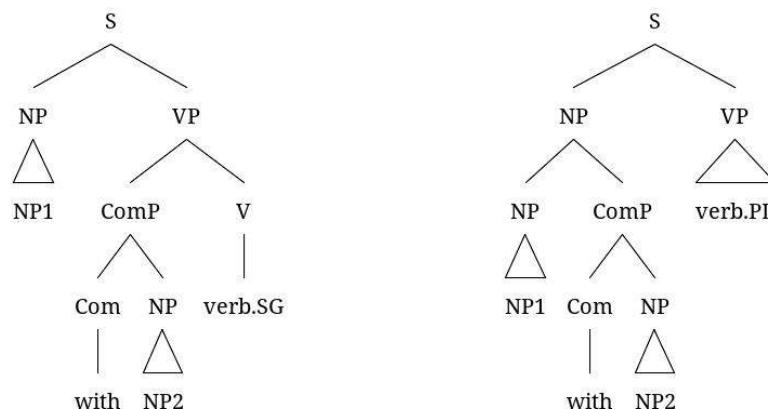


Figure 1. Two types of comitative constructions. The left tree illustrates a VP-adjunction analysis, the right tree illustrates an NP-adjunction analysis.

In the next section I will look more closely at the comitative coordinating construction I.

3. Comitative coordination

3.1. Comitative features

On the one hand, the comitative coordinating construction is different from (canonical) coordination. In coordinating constructions two NPs form a constituent and cannot be separated:

HILL MARI

- (20) *maša šərgə-škə də pet'a ke-n-ət
 Mary forest-ILL and Peter go-PRET-3PL
 Expected: 'Mary and Peter went to the forest.'

MOKSHA

- (21) *maša is'ak i pet'ε tu-s'-t'
 Mary yesterday and Peter go-PST.3-PL
 Expected: 'Mary and Peter yesterday left.'

KAZYM KHANTY

- (22) *maša-jen went-a pa daša-jen mǎn-s-əŋən
 Mary-POSS.2SG forest-DAT ADD Daria-POSS.2SG go-PST-3DU
 Expected: 'Mary and Daria came to the forest.'

The insertion of linguistic material between the central NP and the ComP is possible both in comitative constructions (23), (25), (27) and in coordinating comitative ones (24), (26), (28), so the central NP and the ComP do not form a constituent.⁵

HILL MARI, COMC

- (23) maša šərgə-škə pet'a dono ke-n
 Mary forest-ILL Peter with go-PRET
 'Mary went to the forest with Peter.'

COMCOORDC I

- (24) maša šərgə-škə pet'a dono ke-n-ət
 Mary forest-ILL Peter with go-PRET-3PL
 'Mary and Peter went to the forest.'

MOKSHA, COMC

- (25) maša is'ak pet'ε martə tu-s'
 Mary yesterday Peter with go-PST.3[SG]
 'Yesterday Mary left with Peter.'

⁵ It should be noted that coordinating comitative constructions with non-contiguous subject and comitative phrase were not attested in the Hill Mari, Moksha and Kazym Khanty corpora, so this is not a construction that one can come across in spontaneous speech. Still, many consultants confirmed their possibility in all three languages during elicitation.

COMCOORDC I

- (26) maša is'ak pet'ε mar̩tə tu-s'-t'
 Mary yesterday Peter with go-PST.3-PL
 'Yesterday Mary and Peter left.'

KAZYM KHANTY, COMC

- (27) maša-jen wənt-a pet'a-jen piλ-a mǎn-əs
 Mary-POSS.2SG forest-DAT Peter-POSS.2SG with-DAT go-PST
 'Mary and Peter went to the forest.'

(28) COMCOORDC I

- maša-jen wənt-a pet'aj-en piλ-a mǎn-s-əŋən
 Mary-POSS.2SG forest-DAT Peter-POSS.2SG with-DAT go-PST-3DU
 'Mary and Peter went to the forest.'

3.2. Coordinating features

On the other hand, the coordinating comitative construction is different from the comitative construction. One of the tests that distinguish the former from the latter is distributive predicates.⁶ Comitatives tend to disallow distributive interpretation and to allow collective interpretation: cf. **Mary believes in God with Peter* and *Mary met with Peter*. Coordination can be compatible with both distributive and collective interpretations: cf. *Mary and Peter believe in God* and *Mary and Peter met*, see e.g. McNally (1993:370ff.). This can be explained by the fact that a distributivity operator is applicable to coordinate NPs because of the presence of a plural-denoting phrase. On the contrary, comitative constructions do not involve a plural-denoting phrase in their semantic composition, so there is no phrase with which the distributivity operator can combine (Paperno 2012:120).

In Hill Mari, distributive verbs cannot be used in comitative constructions, (29), unlike in coordinating ones, (30). Comitative coordinating construction I, (31), allows the use of distributive predicates.

HILL MARI

- (29) *maša kat'a dono jəm̩-lan ən̩n̩-ä
 Mary Kate with God-DAT believe-NPST.3SG
 Expected: 'Mary and Kate believe in God.'
- (30) maša də kat'a jəm̩-lan ən̩n̩-ät
 Mary and Kate God-DAT believe-NPST.3PL
 'Mary and Kate believe in God.'
- (31) maša kat'a dono jəm̩-lan ən̩n̩-ät
 Mary Kate with God-DAT believe-NPST.3PL
 'Mary and Kate believe in God.'

⁶ Predicates can be distributive, collective and mixed, see e.g. Champollion (to appear). For example, *smile* is a distributive predicate: *The boys smiled* ⇔ *Every boy smiled*. *Gather* is a collective predicate: *The boys gathered* ⇔ **Every boy gathered*. *Plant a tree* is a mixed predicate: there can be both distributive and collective readings.

The same applies to Moksha and to Khanty: distributive verbs cannot be used in comitative constructions, (32), (35), unlike in coordination, (33), (36), and in comitative coordinating construction I, (34), (37).

MOKSHA, COMC

- (32) *maša kat'a maṛtə soda-si anglijskej-t'
 Mary Kate with know-NPST.3SG.O.3SG.S English-DEF.SG.GEN
 Expected: 'Mary and Kate know English.'

COORDC

- (33) maša i kat'a soda-saz' anglijskej-t'
 Mary and Kate know-NPST.3SG.O.3PL.S English-DEF.SG.GEN
 'Mary and Kate know English.'

COMCOORDC I

- (34) a. maša kat'a maṛtə soda-saz' anglijskej-t'
 Mary Kate with know-NPST.3SG.O.3PL.S English-DEF.SG.GEN
 'Mary and Kate know English.'
- b. *maša kat'a maṛtə soda-si anglijskej-t'
 Mary Kate with know-NPST.3SG.O.3SG.S English-DEF.SG.GEN
 Expected: 'Mary and Kate know English.'

KAZYM KHANTY, COMC

- (35) *maša-jen tərəm aś-en-a pet'a-jen pił-a
 Mary-POSS.2SG sky father-POSS.2SG-DAT Peter-POSS.2SG with-DAT
 ewəl-əł
 believe-NPST.3SG
 Expected: 'Mary and Peter believe in God.'

COORDC

- (36) maša-jen pa pet'a-jen tərəm aś-en-a ewəl-λ-əηən
 Mary-POSS.2SG ADD Peter-POSS.2SG sky father-POSS.2SG-DAT believe-NPST.3DU
 'Mary and Peter believe in God.'

COMCOORDC I

- (37) maša-jen tərəm aś-en-a pet'a-jen pił-a
 Mary-POSS.2SG sky father-POSS.2SG-DAT Peter-POSS.2SG with-DAT
 ewəl-λ-əηən
 believe-NPST-3DU
 'Mary and Peter believe in God.'

3.3. The agreement mechanism

As has been shown in Section 3.1 and Section 3.2, the comitative coordinating construction I has features of both comitative and coordinating constructions. The features, discussed in Section 3.1, give rise to the structure where the central NP does not form a constituent with the

CompP. The question arises which element of this construction licenses the dual verbal agreement.

A similar problem has been attested in Tzotzil < Mayan: the central NP and the CompP do not form a constituent, but the verb can be in the plural form (Aissen 1989). This fact is explained by means of associative plurality.⁷ In (38) two interpretations are available: a central NP can refer either to one individual person or to a group of people including this person.

- TZOTZIL (Aissen 1989:533)
- (38) ʔi-veʔ-ik xchiʔuk jkaxlan li Xune.
 ASP-eat-PL with Jkahlan DEF Xune
 1. 'Xune ate with Jkahlan.'
 2. 'Xune and someone else ate with Jkahlan.'

This analysis is supported by (39): the use of a NP without a CompP but with plural verbal agreement is possible.

- TZOTZIL (Aissen 1989:533)
- (39) ʔi-veʔ-ik li Xune.
 ASP-eat-PL DEF Xune
 'Xune ate with someone.'

In Kazym Khanty associative plural can be expressed with a zero marker as well — in (40) there is singular NP (a verbal agreement controller) and plural target verb form (see Daniel & Moravcsik 2013 on possible types of associative plurals).

- KAZYM KHANTY (Sokolova 2018:157)
- (40) waša-jen wəš-a kasəλ-λ-əŋən
 Vasya-POSS.2SG town-DAT move-NPST-3DU
 'Vasya is moving to the town with someone else.'

The associative plural analysis might be available for Kazym Khanty: the non-singular verbal agreement is licensed by a zero associative plural marker on the central NP. Literally (41) means that 'Mary and X went to the forest, where X = Peter'.

- (41) maša-jen-ø pet'a-jen piλ-a went-a măn-s-əŋən
 Mary-POSS.2SG-ASSOC.PL Peter-POSS.2SG with-DAT forest-DAT go-PST-3DU
 'Mary and Peter went to the forest.'

However, as opposed to Tzotzil example (38), in Khanty there is no reading, in which the referents of zero associative plural and a comitative phrase do not coincide (42). Thus, this analysis is not correct.

- (42) *maša-jen went-a pet'a-jen piλ-a măn-s-ət
 Mary-POSS.2SG forest-DAT Peter-POSS.2SG with-DAT go-PST-3PL
 Expected: 'Mary and someone else went to the forest with Peter.'

⁷ The meaning of the associative plural construction is 'X and other people associated with X', see more about the associative plurality in (Daniel & Moravcsik 2013).

Moreover, in Hill Mari (43) the associative plural cannot be expressed with a zero marker. A plural marker is obligatory in this case:

- HILL MARI
 (43) maša-vlä / *maša tol-ân-ât
 Mary-PL Mary come-PRET-3PL
 ‘Mary and someone from her family / her friends came.’

At the same time sentences with ComPs, where the central NP bears an associative plural marker (in the case of Hill Mari it is a basic plural affix) are judged as acceptable by only some speakers:

- (44) maša / ?? maša-vlä pet'a dono tol-ân-ât
 Mary Mary-PL Peter with come-PRET-3PL
 ‘Mary and Peter came.’

In Moksha the associative plural marker is expressed with the basic plural affix as well, see Kholodilova (2018:74ff.):

- MOKSHA (Serdjukova 2017:16, cit. from Kholodilova 2018:74)
 (45) mar'ε-t'n'ə sa-j-°t' pəl-nək užana-mə
 Mary-DEF.PL come-NPST.3-PL at.LAT-1PL.POSS have_dinner-INF
 ‘Mary and her family will come to us to have dinner.’

Consequently, the (zero) associative analysis of comitative coordination I is not borne out, and the exact mechanism of this phenomenon needs some other explanation.

From the typological point of view, this phenomenon can be viewed as an instance of so-called split conjunction. According to Palancar (2012:2), ‘split conjunction comprises various types of conjunctive structures which share two properties: (i) the fact of having two discontinuous conjuncts in a clause and (ii) a clausal predicate that shows resolved agreement with both of the conjuncts’. There are three types of splits: splits by elision, splits by extraction and splits by integration, and my case falls under the ‘splits by integration’ group — the secondary conjunct is upgraded by encoding it as a core participant of the action through adding resolved agreement on the verb: [NP₁]_{TOP/SUB} V+DU/PL [COMIT NP₂] (Palancar 2012:21). Palancar (2012:23–25) notes that ‘how the resolved agreement on the verb is achieved remains an intriguing question’. He also mentions associative constructions with zero associative markers as one of the possible ways to analyse this verbal agreement.

4. Intragenetic background

The first thing that should be noted is that the presence of an associative plural marker does not influence the possibility of comitative coordinating constructions. For example, in Hungarian there is an associative plural (Kenesei et al. 1998), but plural verbal agreement with a NP and a ComP is very rare (46), it is only allowed in colloquial Hungarian provided that the subject and the comitative are contiguous (Hetzron 1973:494).

HUNGARIAN (Hetzron 1973:493)

- (46) ?A férfi a vezetö-jé-vel elindul-t-ak
 DEF man DEF guide-POSS.3SG-COM leave-PST-3PL
 'The man left with his guide.'

In Estonian there is no associative plural (Daniel & Moravcsik 2013), and verbal agreement with a NP and a ComP is extremely rare as well. It only occurs if the ComP is not detached from the central NP. In the Võru dialect of Estonian this construction is becoming more widespread (Erelt 2008:103).

In Izhma Komi and Tatyshly Udmurt there is comitative coordinating construction I (with the ComP following the central NP). Interestingly, in both languages the ComP can be non-contiguous with the central NP, see (47), (48) respectively.

IZHMA KOMI (N. Muraviev, p.c.)

- (47) maša törýt vas'a-ked jag-e mun-is / ?mun-isnys
 Mary yesterday Vasya-COM forest-ILL go-PST.3 go-PST.3PL
 'Mary yesterday went to the forest with Vasya.'

TATYSHLY UDMURT

- (48) ruslan tolon maša-en n'ülesk-ê košk-i-z / ?košk-i-z-ê
 Ruslan yesterday Mary-INSTR forest-ILL go-PST-3 go-PST-3-PL
 'Ruslan yesterday went to the forest with Mary.'

There is associative plural in both languages, but it is expressed with non-zero basic plural markers, see Shmatova (2011) and (49) for Izhma Komi and (50) for Tatyshly Udmurt. Preliminary data show that comitative constructions in these languages behave similarly to comitative constructions in Hill Mari and Moksha.

IZHMA KOMI (Shmatova 2011:227)

- (49) petra-jas törýt vo-l-isnys gäst'i
 Peter-PL yesterday come-ITER-PST.3PL guests
 'Peter and his family (or friends) came on a visit.'

TATYSHLY UDMURT

- (50) ruslan-jos lăkt-i-z-ê
 Ruslan-PL leave-PST-3-PL
 'Ruslan and his family (or friends) left.'

The data from Izhma Komi, Tatyshly Udmurt, Hill Mari, Moksha, Kazym Khanty, Hungarian and Estonian are summarized in Table 2 (the presence of comitative coordinating construction I with the ComP following the central NP; the possibility of distant order of the subject and comitative phrases; the presence of the associative plural marker).

| Language | [X Y COM V-PL] | Distant Subj & ComP | Associative plural |
|-----------------|----------------|---------------------|--------------------|
| Izhma Komi | OK | OK | OK (non-zero) |
| Tatyshly Udmurt | OK | OK | OK (non-zero) |
| Hill Mari | OK | OK | OK (non-zero) |
| Moksha | OK | OK | OK (non-zero) |
| Kazym Khanty | OK | OK | OK (zero) |
| Hungarian | ? | * | OK (non-zero) |
| Estonian | ? | * | * |

Table 2. Comitatives and related constructions in some Finno-Ugric languages.

Thus, the presence of the associative plural marker does not imply either the possibility of the distant order of subject and comitative phrase, or the presence of comitative coordination I (see Hungarian data). Only Kazym Khanty has a zero associative plural marker, so the analysis with the zero associative plural marker licensing the plural verbal agreement is not borne out. The subject and the ComP can probably be detached from each other, because the connection between elements in coordination is more ‘tight’ than in comitative coordination.

5. Discussion and conclusion

To sum up, in Hill Mari, Moksha Mordvin and Kazym Khanty, a comitative phrase in the comitative construction ([X Y COM V-SG]) appears at the VP level. A comitative phrase in comitative coordination II with the ComP preceding the central NP ([Y COM X V-PL]) appears at the DP level. Comitative coordination I with the ComP following the central NP ([X Y COM V-PL]) has features of both (canonical) comitative and (canonical) coordinating constructions. Coordinating features include compatibility with distributive predicates, while comitative features include non-contiguity of the ComP with the subject.

The latter fact makes it possible to attribute this construction to split conjunction, however, its exact mechanism is still not clear (Palancar 2012). So supposing that the ComP appears at VP level, there is no explanation for plural verbal agreement, since the zero associative plural analysis is not borne out because in Hill Mari, Moksha, Izhma Komi and Tatyshly Udmurt there is an only non-zero associative plural marker. Moreover, this analysis has counterarguments even for Kazym Khanty, a language with the zero associative plural marker.

Another important point that should be reemphasized is that in some languages split conjunction by integration (where the secondary conjunct is upgraded by encoding it as a core participant of the action through adding resolved agreement on the verb) may be preferred to contiguous coordination (Newman 1970:49, cited from Vassilieva 2005:97), while in Hill Mari, Moksha and Kazym Khanty it is not at all the default strategy. Language consultants acknowledge the grammaticality of this non-contiguous comitative coordinating construction, however, they do not produce such examples in spontaneous speech. Thus, there might be an alternative explanation: the ComP appears at the DP level, and the subject and the ComP can be detached from each other via scrambling, because the connection between elements in coordination is more ‘tight’ than in comitative coordination. However, more data are needed to draw any accurate conclusions.

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Abbreviations

| | | | |
|----------|--|-------|------------------------|
| 1, 2, 3 | 1 st , 2 nd , 3 rd person | INF | INFINITIVE |
| ACC | accusative | INSTR | instrumental |
| ADD | additive | ITER | iterative |
| ASP | aspect | LAT | lative |
| ASSOC.PL | associative plural | NPST | non-past tense |
| COM | comitative | O | objective conjugation |
| CVB | converb | PASS | passive |
| DAT | dative | PL | plural |
| DEF | definite | POSS | possessive |
| DU | dual | PRET | preterite |
| F | feminine | PST | past tense |
| FOC | focus particle | PUNCT | punctive |
| GEN | genitive | S | subjective conjugation |
| ILL | illative | SG | singular |

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References

- Abondolo, A. M. (1988). *Hungarian inflectional morphology*. Akadémiai Kiadó, Budapest.
- Aissen, J. L. (1989). Agreement controllers and Tzotzil comitatives. *Language* 65:3, pp. 518-536.
- Arhipov, A. V. (2009). Tipologija comitativnyh konstrukcij [*Typology of comitative constructions*]. Znaki, Moscow.
- Batalova, R. M. (1982). Arealnye issledovanija po vostochnym finno-ugorskim jazykam (komi jazyki) [*Areal studies on Eastern Finno-Ugric languages (Komi)*]. Nauka, Moscow.
- Champollion, L. (to appear). Distributivity, collectivity and cumulativity. In preparation for Gutzmann, D., L. Matthewson, C. Meier, H. Rullmann & T. E. Zimmermann (eds.), *Companion to semantics*. Wiley.
- Daniel, M. & E. Moravcsik (2013). The Associative Plural. Dryer, M. S. & M. Haspelmath (eds.), *The World Atlas of Language Structures Online*, Max Planck Institute for Evolutionary Anthropology, Leipzig. <http://wals.info/chapter/36>
- Dyła, S. (1988). Quasi-comitative coordination in Polish. *Linguistics* 26, pp. 383-414.
- Erelt, M. (2008). Concerning the relationship of the comitative construction to the coordinating construction in Estonian. *Linguistica Uralica* 44:2, pp. 97-107.
- Galkin, I. S. (1964). Istoričeskaja grammatika marijskogo jazyka, morfologija [*Historical grammar of Mari, morphology*]. Marijskoje knozhnoje izdatelstvo, Yoshkar-Ola.
- Hájdu, P. (1975). Arealógia és urálsztika. *Nyelvtudományi Közlemények* 77, pp. 147-152.
- Hetzron, R. (1973). Conjoining and comitativization in Hungarian: A case study of rule ordering. *Foundations of Language* 10, pp. 493-507.

- Ionin, T. & O. Matushansky (2003). DPs with a twist: A unified analysis of Russian comitatives. Browne, W., J.-Y. Kim, B. Partee & R. Rothstein (eds.), *Formal Approaches to Slavic Linguistics 11: The Amherst Meeting 2002*, Michigan Slavic Publications, Ann Arbor, pp. 255-274.
- Kaksin, A. D. (2010). Kazymiskij dialekt khantyjskogo jazyka [*Kazym Khanty*]. IIC UGU, Khanty-Mansiysk.
- Kashkin, E. et al. (2014). Western Khanty corpus. [Corpus]. Lomonosov Moscow State University. <https://osf.io/uraqx/files/>
- Kashkin, E. et al. (2018). Izhma Komi corpus. [Corpus]. Lomonosov Moscow State University.
- Kashkin, E. et al. (2019). Hill Mari corpus. [Corpus]. Lomonosov Moscow State University. <http://hillmari-exp.tilda.ws/corpus>
- Kelmakov, V. K. (1998). Kratkij kurs udmurtskoj dialektologii [*Short course on Udmurt dialectology*]. Izdatelstvo udmurtskogo universiteta [Udmurt university publishing], Izhevsk.
- Kenesei, I., R. M. Vago & A. Fenyvesi (1998). *Hungarian*. Routledge, London/New York.
- Kholodilova, M. A. (2018). Morfologija imeni [Nominal morphology]. Toldova, S. Yu., M. A. Kholodilova, S. G. Tatevosov, E. V. Kashkin, A. A. Kozlov, L. S. Kozlov, A. V. Kukhto, M. Yu. Privizentseva & I. A. Stenin (eds.), *Elementy mokshanskogo jazyka v tipologicheskom osveshchenii* [*Elements of Moksha from the typological point of view*], Buki Vedi Publ., Moscow, pp. 63-121.
- Kolyadenkov, M. N. (1954). Grammatika mordovskih (mokshanskogo i erzyanskogo) jazykov. Ch. II. Sintaksis [*A grammar of Mordvin (Moksha and Erzya) languages. P. II. Syntax*]. Mordovskoe knizhnoje izdatelstvo [Mordvin book publishing], Saransk.
- Koshkaryova, N. B. (1996) Poslelogi hantyjskogo jazyka (na materiale kazymskogo dialecta) [Khanty postpositions (in Kazym Khanty dialect)]. *Jazykovye edinicy v semanticheskom i leksikograficheskom aspektah* 1, Novosib. un-t, Novosibirsk, pp. 45-61.
- Koshkaryova, N. B., E. V. Kashkin, Ju. B. Koryakov, O. A. Kazakevich, S. I. Burkova, N. A. Muraviev & E. M. Budianskaja (2011). Dialektologicheskij slovar' hantyjskogo jazyka (shuryshkarskij i priural'skij dialecty) [*Dialectological dictionary of Khanty (Shuryshkarskij and Priural'skij dialects)*], Basko, Ekaterinburg.
- Kozlov, L. S. (2018). Locativnye padezhi [Locative cases]. Toldova, S. Yu., M. A. Kholodilova, S. G. Tatevosov, E. V. Kashkin, A. A. Kozlov, L. S. Kozlov, A. V. Kukhto, M. Yu. Privizentseva & I. A. Stenin (eds.), *Elementy mokshanskogo jazyka v tipologicheskom osveshchenii* [*Elements of Moksha from the typological point of view*], Buki Vedi Publ., Moscow, pp. 154-182.
- Majtinskaja, K. E. (1982). Sluzhebnye slova v finno-ugorskih jazykah [*Functional words in Finno-Ugric languages*]. Nauka, Moscow.
- Newman, P. (1970). *A grammar of Tera*. University of California Press, Berkeley/Los Angeles.
- Palancar, E. (2012). A typology of split conjunction. *Linguistic Typology* 16:2, pp. 265-320.
- Paperno, D. (2012). Comitative Coordination in Q'anjob'al. *UCLA Working Papers in Linguistics, Papers in Semantics* 16, pp. 111-130.
- Serdjukova, A. I. (2017). Imennoe chislo v mokshanskom jazyke v tipologicheskom osveshchenii [Noun plural in Moksha in typological perspective]. [BA Thesis]. Lomonosov Moscow State University.
- Shapiro, M. (2011). Postpositions in Tegi Khanty. [Ms].
- Shmatova, M. S. (2011). Znachenija form suschestvitelnyh s pokazatelem mnozhestvennosti -jas v izhmskom dialekte komi-zyryanskogo jazyka [The meanings of nouns with the plural marker -jas in Izhma dialect of Komi-Zyryan]. *Acta Linguistica Petropolitana* 7:3, Nauka, St Petersburg, pp. 225-230.
- Sokolova, I. S. (2018). Associativy v Kazymskom dialekte khantyjskogo jazyka [Associatives in Kazym Khanty]. Mishchenko, D. (ed.), *XV Conference on typology and grammar for young scholars (St. Petersburg, 22-24 November 2018). Book of abstracts*, ILS RAS, St. Petersburg, pp. 156-158.
- Solovar, V. N. (2014). Hantyjsko-russkij slovar' (kazymiskij dialect) [*Khanty-Russian dictionary (Kazym dialect)*]. Format, Tumen.
- Stassen, L. (2000). AND-languages and WITH-languages. *Linguistic Typology* 1:4, pp. 1-54.
- Tereshkin, N. I. (1967). Vakhovskij dialekt khantyjskogo jazyka (fonetika i morfologija) [Vakh Khanty (phonetics and morphology)]. [PhD Thesis]. Institute of Linguistics of Russian Academy of Science.
- Tompa, J. (1968). *Ungarische Grammatik*. Mouton, The Hague.
- Vassilieva, M. & R. Larson (2005). The semantics of the Plural Pronoun Construction. *Natural Language Semantics* 13:2, pp. 101-124.
- Vassilieva, M. (2005). *Associative and pronominal plurality*. [PhD thesis]. Stony Brook University. https://linguistics.stonybrook.edu/_pdf/Vassilieva2005.pdf
- Viitso, T. (2003). Structure of the Estonian language. Phonology, morphology and word formation. Erelt M. (eds.), *Estonian language*, Estonian Academy Publishers, Tallinn.
- Zhornik, D. et al. (2016). Moksha corpus. [Corpus]. Lomonosov Moscow State University.

***Ang*-marking and Givenness in Tagalog**

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This study revisits the debate on the Tagalog alignment system, more specifically, on the puzzling nature of the phrase marked by *ang*. We argue that verbal agreement with the *ang*-phrase in Tagalog is triggered by Givenness. This account is based on close examination of *ang*'s compatibility with the reference of different cognitive statuses in discourse and of *ang*'s interaction with left-peripheral phenomena. Our analysis proposes that an argument Given in discourse moves to the highest phrase in the ν P phase, where Givenness is encoded and where it gets *ang*-marked, subsequently determining agreement in T.

1. Introduction

Austronesian languages, spoken throughout the Philippines, Taiwan, Malaysia, Indonesia, and Madagascar, are best known for their extremely rich voice system whereby the thematic role of the subject of the sentence is reflected by a verbal affix (see Reid & Liao 2004 and Kaufman 2009 for an overview). This system exhibits basic agreement patterns with voices such as the patient and actor voice together with typologically unusual voices such as the instrumental and locative voice. Interestingly, all voices in this type of system are considered equally marked (Himmelman 1991). The alignment system of these types of languages has been the focus of many studies, in so generating a number of accounts that are still under scrutiny.

Tagalog belongs to the Western Malayo-Polynesian branch of the Austronesian family, spoken in the Philippines with roughly 24 million speakers in the world. Like its relatives in so-called 'Philippine-type languages' (i.e., Cebuano, Kapampangan, Palawan, Ilocano, etc.), it is a predicate and head initial language with relatively free word order¹ well-known for its complex voice system and its peculiar way of verbal agreement. In particular, in Tagalog different constituents can serve as subjects, which are marked by the subject marker *ang* (or *si* for person

¹Consequently, the surface order does not necessarily reflect the underlying word order we discuss in the analysis section.

names) and whose thematic role determines verbal morphology (pace Schachter 1976, 1996; Naylor 1995, who reject the subjecthood of the *ang* phrase). The sentences in (1) exemplify this voice system in Tagalog. In (1a), the referent of the *ang* phrase plays the role of the actor, which is shown in its verbal agreement via the infix *-um-*; in (1b) marking the patient/theme with *ang* is manifested in the verb with the infix *-in-* and a null morpheme; in (1c) the locative *ang* phrase triggers *-in-* and the suffix *-an*, and in (1d) the beneficiary subject triggers the prefix *i-* and the infix *-in-* (adapted from Rackowski & Richards 2005:2).

- (1) a. B⟨um⟩ili **ang bata** ng tela sa palengke.
 ⟨PERF.ACTOR⟩buy SUBJ child GEN cloth OBL market.
 ‘The **child** bought cloth at the market.’ ACTOR
- b. B⟨in⟩ili-∅ ng bata **ang tela** sa palengke.
 ⟨PERF⟩buy-THEME GEN child SUBJ cloth OBL market.
 ‘The child bought **the cloth** at the market.’ THEME
- c. B⟨in⟩ilih-**an** ng bata ng tela **ang palengke**.
 ⟨PERF⟩buy-LOC GEN child GEN cloth SUBJ market.
 ‘The child bought the cloth **at the market**.’ LOCATIVE
- d. I-b⟨in⟩ili-∅ ng bata ng tela sa palengke **ang nanay**.
 BENEF-⟨PERF⟩buy GEN child GEN cloth OBL market SUBJ mother.
 ‘The child bought the cloth at the market **for his mother**.’ BENEFACTIVE

We will refer to the examples in (1) as actor-subject sentences, theme-subject sentences, locative-subject sentences, and benefactive-subject sentences, respectively. The tables below show the glossing we follow for the distribution of (non-)pronominal markers in Tagalog, adapted from Sabbagh (2014). However, as will become clear in the next sections, terming them case markers is problematic for several reasons.

| | GEN | OBL | SUBJ |
|----------|-----------|------------|------------|
| COMMON N | <i>ng</i> | <i>sa</i> | <i>ang</i> |
| PERSON N | <i>ni</i> | <i>kay</i> | <i>si</i> |

Table 1: Non-pronominal case

| | GEN | OBL | SUBJ |
|-----|-------------|--------------|-------------|
| 1SG | <i>ko</i> | <i>akin</i> | <i>ako</i> |
| 2SG | <i>mo</i> | <i>iyo</i> | <i>ka</i> |
| 3SG | <i>niya</i> | <i>kanya</i> | <i>siya</i> |
| ... | ... | ... | ... |

Table 2: Pronominal case

Generally speaking, while *ang* may mark any argument role, allowing for any constituent to become the subject of the sentence, the oblique *sa* is used mostly for goals, beneficiaries, locations, and definite object, and *ng* seems to be used elsewhere, that is, for possessors, actors, instruments, and indefinite objects (Kroeger 1993). What is crucial in this work is that we will call the *ang* (*si* with person names) that is object of this study the ‘subject marker’, even though it will become clear in our analysis that this use of *subject* is fundamentally different from traditional uses of *subject*.

In this paper, we will propose an analysis that links *ang*-marking and subsequent verbal agreement to information structure. More concretely, we assume that *ang* marks an element as *Given* in the left periphery of vP. The verb, which has moved to T, then agrees with this element, as it is the highest XP in the verb’s c-command domain, and consequently the given element

determines verbal agreement. In order to do so, we will set the stage by discussing previous analyses in section 2 before we make our assumptions about information structure more concrete, followed by our analysis. Consequences of linking *ang*-marking and verbal agreement to information structure will be discussed in section 4 and section 5 concludes and outlines directions for possible further research.

2. Previous accounts

As mentioned above, a great deal of the literature on Tagalog, and by extension, Austronesian languages, has attempted to provide an analysis for the pattern in (1). The *ang* phrase has been given many different labels in the literature: ‘nominative’, ‘absolutive’, ‘specifier’, ‘trigger’, ‘focus’, ‘topic’, etc., none of which has gone undebated. This section briefly summarizes the most widespread proposals, focusing mainly on their respective shortcomings.

2.1. Case-based accounts

Early grammars of Tagalog, written by missionaries whose grammar knowledge was heavily influenced by Latin traditional terminology, described its system as nominative-accusative, rendering the *ang* phrase as the one taking nominative case, the *sa* phrase as locative/dative, and the *ng* phrase as accusative. Such approach was later taken by some prominent authors (Bloomfield 1917; Bell 1978; Maclachlan & Nakamura 1994), among which especially Guilfoyle et al. (1992) and Kroeger (1993) inspired many subsequent Tagalog and other Austronesian language studies up to this day. Conventionally, said alignment assumes that actor-subject sentences are equivalent to active sentences and patient/theme-subject ones correspond to passive sentences. As pointed out by Schachter & Otones (1972); Shibatani (1988) and Foley (1998), this is problematic since in Tagalog all of the sentences in (1) are considered equally syntactically unmarked, unlike active/passive pairings, in which by default the active voice is taken to be the unmarked one.

Other works such as those of Cena (1977), Payne (1982), De Guzman (1988), Nakamura (1996), or Aldridge (2004), *inter alia*, departed from an accusative-like system, in so embracing an ergative or ergative-like analysis, whereby *ang* phrases are considered absolutive and two *ng* markers are assumed: an ergative marking one with Actor DPs and an oblique marking one with Patient DPs. This approach was particularly recurrent in the 1980s in relational frameworks (Gerds 1988), lexicase grammar (De Guzman 1988), discourse-functional perspective (Payne 1982), a.o. Under an ergative analysis, the traditional active sentence would be analyzed as antipassive. Once again, this approach may be rejected as well, given that the ergative construction is assumed to be unmarked, yet this does not hold for the Tagalog facts, where none of the constructions from (1) is marked.

We will not dwell on the motivation behind these accounts and so we refer the interested reader to the references herein. It is important though to note that appealing to case marking to account for the verbal agreement pattern in Tagalog is problematic. First, *ang*-marking is not tied to the initial position of the argument. Whereas the external argument typically receives nominative case and determines verbal agreement, the examples above have already shown that the same can be true for the internal arguments.

Second, case marking cannot be determined by the verb. Therefore, the variation cannot be reduced to lexical case, since different arguments can be marked ‘subject’ of the same verb. Otherwise, we would expect the same inflection on the verb whenever we get *ang*-marking, regardless of the thematic role of the phrase.

2.2. Topic and focus

Some other characterizations of the Tagalog basic argument structure type involve usage of information-structural notions such as focus and topic. One of the most famous and cited examples is that of the seminal work of Schachter & Otanes (1972). The authors referred to a so-called ‘focus system’ that is unique to Philippine-type languages, according to which focus is the feature that determines the semantic relationship between a verb and the agreed-with *ang* phrase. Under this account, the *ang* phrase is the most prominent argument and is in focus. This assumes that the different sentences in (1) are to be labeled ‘actor-focus’, ‘object-focus’, ‘directional-focus’, etc. However, a focus system was shown to be untenable assuming a conventional definition of focused constituent as the element expressing contrast, is not presupposed, and is new or unpredictable information (Kroeger 1993; Naylor 1995). If the *ang* phrase is considered a focused element, we would only expect it with new information. One of the standard environments that involves focus is that of question-answer pairs. When answering a wh-question, the questioned element is not expected to be known by the hearer, and so it is crucially new information. Yet, (2) shows it is possible to find perfectly acceptable answers to the wh-question in (2a) where *ang* does not necessarily mark the focused constituent: in (2b) the *ang*-phrase refers to the element being questioned, but in (2c) the *ang*-phrase refers to the child that was already mentioned.² Hence, the *ang* phrase is neutral with respect to focus.³

- (2) a. Ano-ng b<in>ili ng bata?
 what-CLEFT <PERF.THEME>buy GEN child
 ‘What did the child buy?’
 b. B<in>ili ng bata **ang tela**.
 <PERF.THEME>buy GEN child SUBJ cloth
 ‘The child bought the cloth.’
 c. B<um>ili **ang bata** ng tela.
 <PERF.ACTOR>buy SUBJ child GEN cloth
 ‘The child bought the cloth.’

Likewise, in line with Shibatani (1988), Richards (2000) proposes that *ang*-marking involves topicalization. Let us assume a general definition of topic as what is under discussion, whether previously mentioned or assumed in discourse. Under this conception, a topic (or topicalized) constituent is taken to be given or presupposed information. Standard pragmatic topichood tests however do not straightforwardly support this view. For instance, it is easily assumed that the Question Under Discussion in (3a) is *Juan*, which would then be expected to get *ang*-marked,

²If not indicated otherwise with a reference, data in this study come from the author’s introspection; grammaticality judgments were provided by two anonymous native speakers from the area of Metro Manila, Philippines.

³The cleft marker, i.e. a true marker of focus, may be realized as *ang* or *-ng* after vowels. We take this alternation as basic evidence that the clefing marker cannot be the same *ang* being examined here, although this claim of course requires further research.

which is indeed what shows (3b), but not necessarily always the case, as (3c) shows by having *ang*-marked the spouse instead of Juan. As a matter of fact, (3b) and (3c) even allows dropping the pronoun, as reflected by the parentheses the *ang*-pronoun is found within.

- (3) a. Ano-ng nangyari kay Juan?
 what-CLEFT happened OBL Juan
 ‘What happened to Juan?’
 b. Iniwanan (**siya**) ng kanya-ng asawa.
 left (SUBJ.3SG) GEN his-LNK spouse
 ‘His spouse left him.’
 c. Iniwanan (niya) **ang** kanya-ng asawa.
 left (GEN.3SG) SUBJ his-LNK spouse
 ‘He left his spouse.’

Finally, within the lexicalist framework (Latrouite 2011, et seq.), it is argued that there are three prominent factors involved in *ang*-marking, namely information structure (topic and focus), referentiality (specificity and animacy), and event-structural prominence. While for space reasons we may not be able to examine the last factor, we do agree that all three interact in a very intricate manner, but, in contrast to the author’s proposal, in this study we argue that the three aspects may be subsumed under another information-structural notion, Givenness, considering that topic or focus accounts are debatable, as we have seen in this subsection.

2.3. Rackowski (2002) and movement to the vP-edge

A more promising syntactic proposal to account for *ang*-marking is provided by Rackowski (2002). According to her, *ang*-marking is directly linked to specificity – concretely, actor subjects are obligatorily specific while patient/theme subjects are obligatorily non-specific. The examples below, adapted from Rackowski (2002:76), appear to show that when the actor is *ang* marked (4), it is impossible to have an interpretation (ii) whereby it receives an unspecific/indefinite reading, nor an interpretation (iii) whereby the theme gets specific reading, and when the patient/theme gets *ang* marked, (5), it is impossible to have an interpretation (ii) whereby it is only the actor that gets a specific interpretation and not the theme.

- (4) Mag-lu~luto **ang** lalaki ng adobo para sa asawa.
 PERF.PAG.ACTOR-CONT~cook SUBJ man GEN adobo for OBL spouse
 i. ‘The man will cook adobo for his spouse.’
 ii. ‘*A man will cook adobo for his spouse.’
 iii. ‘*The man will cook *the* adobo for his spouse.’⁴
 (5) Lu~lutu-in ng lalaki **ang** adobo para sa asawa.
 CONT~cook-theme GEN man SUBJ adobo for OBL spouse
 i. ‘The man will cook the adobo for his spouse.’
 ii. ‘*The man will cook adobo for his spouse.’

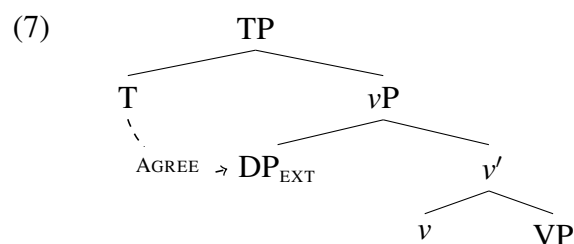
In light of the examples above, the author proposes an analysis of *ang*-marking and verbal

⁴On the *pag*-morpheme in (*m*)*agluluto*, which has been characterized as a lexical causative, see Rackowski (2002:88-92), who claims it is conditioned by the presence of a [+EPP] feature.

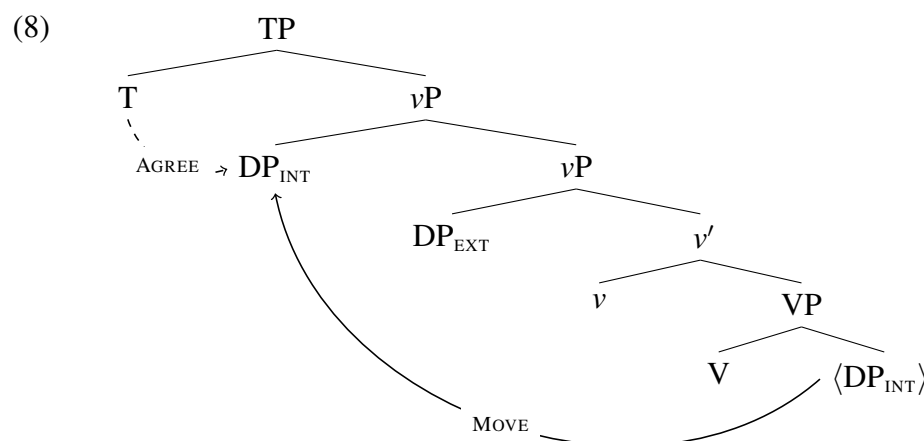
agreement triggered by specificity. Concretely, she assumes that Tagalog sentences are TPs with the verb moving up to T, which carries a set of unvalued features, probably ϕ -features that turn it into an active probe, probing its c-command domain for a valued counterpart of the ϕ -feature set. These valued features are provided by the highest DP in T's c-command domain which is active due to an unvalued case feature. When Agree between T and this DP takes place, T can value its ϕ -features while at the same time the DP receives a value for its unvalued case feature from T. This valued case feature is then spelled out as *ang/si*.⁵ Two different scenarios need to be distinguished in this approach, agreement with the external argument and agreement with an internal argument.

- (6) a. K⟨um⟩uha **siya/ang** **babae** ng talong.
 ⟨PERF.ACTOR⟩take SUBJ.3SG/SUBJ woman GEN eggplant
 ‘She/the woman took an eggplant.’
 b. K⟨in⟩uha niya/ng babae **ang talong**.
 ⟨PERF.THEME⟩take GEN.3SG/GEN woman SUBJ eggplant
 ‘She/the woman took the eggplant.’

If the external argument is to determine verbal agreement (6a), no additional movement is required since the correct configuration is already given. The external argument occupies the highest position in the ν P and therefore serves as agreement goal for the probing T (7).



Concerning agreement with the internal argument (6b), an additional movement step is necessary: in its base position the internal argument is merged as complement to V, which makes it too distant to serve as agreement goal for T; consequently, the internal argument needs to be moved into the ν P-peripheral position above the external argument, so it can serve as closest agreement goal for T, (8).



⁵Note that the agreement that surfaces on T is not really ϕ -agreement but reflects the thematic role of the *ang*-marked phrase.

Rackowski (2002) refers to this movement as ‘object shift’, which she links to specificity, i.e. a particular interpretation suggested already by Chomsky (2001) and that goes back to the Mapping Hypothesis of Diesing (1992). According to this hypothesis, only arguments that introduce free variables (i.e., indefinites) are allowed to remain in the VP. These variables are then bound by an existential quantifier that is introduced at the end of the VP derivation (existential closure) and which leads to an indefinite, non-specific interpretation of those DPs. On the other hand, all indefinites that are interpreted as specific need to evacuate the VP before existential closure applies. The author assumes that it is precisely this VP-evacuating movement to escape existential closure that leads to internal arguments ending up in the highest position in the *v*P. Consequently, only non-specific internal arguments can be objects of actor-subject sentences while only specific internal arguments can become the subject of theme-subject sentences.

This account may easily derive the pattern above, and does not need to make reference to any kind of case in the traditional sense, thus avoiding the nominative/accusative or ergative/absolutive controversy. It also predicts the facts on Tagalog extraction from the *v*P. An XP agrees with T because it is the highest XP in the *v*P phase. Since extraction from the *v*P necessarily proceeds through the phase edge, we expect that extracted XPs always determine agreement on the verb. This can be seen in (DP)wh-questions which are formed by clefting the wh-element.

- (9) a. Sino-**ng** k⟨um⟩ain ng kanin?
 who-CLEFT ⟨PERF.ACTOR⟩eat GEN rice
 ‘Who ate rice?’
 b. Ano-**ng** k⟨in⟩ain ng bata?
 what-CLEFT ⟨PERF.THEME⟩eat GEN child
 ‘What did the child eat?’

However, the Tagalog facts are not as straightforward as described by her analysis, which also fails to account for interactions with topicalization, as we will see later.

2.4. Sabbagh (2014, 2016): Specificity does not equal *ang*-marking

Recent literature (e.g., Merchant 2006; Sabbagh 2014, 2016) notes that, despite previous attempts of describing *ang* as a specificity marker (e.g. Himmelmann 1991, et seq., or Rackowski 2002), it is not always specificity that determines verbal agreement. And so while Rackowski (2002)’s proposal was advantageous in several ways, it needs some modification. Moreover, Foley & Van Valin (1984) claimed that the *ang* phrase is necessarily referential and usually definite. While the *ang* phrase tends to be translated in literature with the English article *the*, that is, with a definite interpretation, it has been pointed out that definite arguments do not necessarily require *ang* marking. Let us bear in mind that specificity and definiteness are, despite being two distinct semantic categories according to von Stechow (2002), closely related, but as shown here, neither is a satisfactory motivation for *ang*-marking. (10a), taken from Bloomfield (1917:154) showcases that the *ang* phrase is not always definite, as the interpretation in (ii) is impossible. (10b) has a definite interpretation, but it is not specific, as the speaker clearly has no specific reference in mind upon uttering the sentence. Moreover, more than one argument may be specific in the sentence, yet only one can be *ang*-marked in each clause (10c). Therefore, neither a ‘specific’ nor ‘definite’ determiner label is inaccurate for *ang*.

- (10) a. K<in>uha niya **ang isa-ng aklat**.
 <PERF.THEME>take 3SG.GEN SUBJ one-LNK book
 (i) ‘(S)he took a (certain) book.’
 (ii) ‘*(S)he took the one and only book.’
 b. H<in>a~hanap ko **ang pari**, kung sino man yon.
 <PERF.THEME>-cont~look.for 1SG.GEN SUBJ priest if who ever that
 ‘I am looking for the priest, whoever that may be.’
 c. *K<in>uha **si Pablo ang aklat**.
 <PERF.THEME>take GEN Pablo SUBJ book
 Intended: ‘Pablo took the book.’

Adopting the Definiteness Hierarchy by Aissen (2003) in (11) as starting point, this fact was taken by Sabbagh (2014, 2016) to prove that *ang* does not necessarily mark the most definite argument in the sentence.

- (11) DEFINITENESS HIERARCHY (Aissen 2003:437)
 pro > proper name > definite NP > indefinite specific NP > non-specific

For instance, in (12a), the actor is marked genitive, even though it is a proper name and is definitely higher in the scale than definite NPs. The same holds for (12b), where the object is specific due to the accompanying genitive, yet it does not get *ang*-marked. As for the donkey sentence in (12c), the referentiality/specificity of *noodles* is left open, but it is still marked by *ang* regardless.

- (12) a. In-ubos **ni Pablo ang pansit**.
 PERF.THEME-finished GEN Pablo SUBJ noodles
 ‘Pablo finished the noodles.’
 b. K<um>ain **ang aso** ng kanin ko.
 <PERF.ACTOR>eat SUBJ dog GEN rice 1SG.GEN
 ‘The dog ate my rice.’
 c. Kung may pansit at tinapay sa bahay, sigurado-ng naubos na **ni Pablo ang pansit**.
 if EXIS noodles and bread OBL home surely-LNK finished already GEN
 Pablo SUBJ noodles
 ‘If there are noodles and bread at home, Pablo will have surely finished the noodles already.’

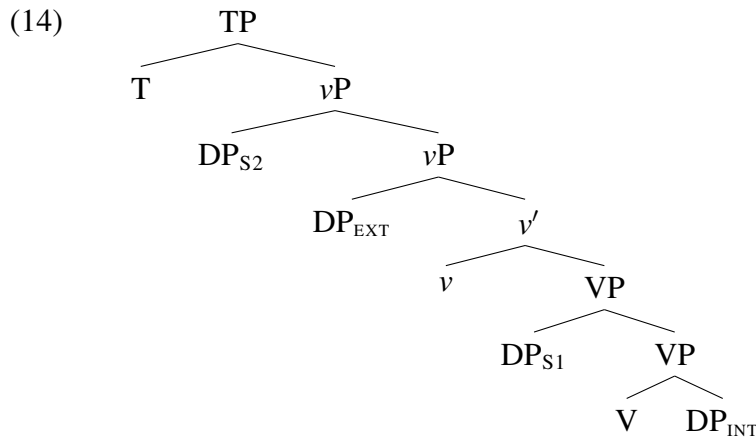
Importantly, while Rackowski (2002)’s assumptions about the relation between specificity and *ang*-marking do not hold in general, they are valid for pronominal and proper name THEME arguments. Thus, these two classes of themes always require *ang*-marking and consequently determine verbal agreement.⁶

- (13) a. T<in>ingnan **si Pedro** ng babae.
 <PERF.THEME>look SUBJ Pedro GEN woman
 ‘The woman looked at Pedro.’

⁶Sabbagh also discusses the option of OBL marking of the pronominal or proper name theme. We will discuss that option when discussing our analysis.

- b. K<in>aon **siya** ng babae.
 <PERF.THEME>pick.up SUBJ.3S GEN woman
 ‘The woman picked him/her up.’

This leaves us with the need for two positions the VP elements can move to: first, they can move to a position just outside the VP to get their specific interpretation and escape existential closure (DP_{S1} in (14)); second, there needs to exist a high position at the vP edge that is obligatorily targeted by proper names and pronouns as well as those specific themes that end up receiving *ang*-marking (DP_{S2} in (14)). This second, higher position is the agreement goal for T.



Since specificity triggers movement into the lower of the two positions, the question arises what triggers the movement to the higher, vP peripheral position, which we will argue in the following section is related to information structure.

2.5. *Ang*-phrase as Given

Our analysis will be based on the assumption that the *ang* phrase is Given in discourse. We take a definition of Given as that which is known to both speaker and hearer and so belongs to the Common Ground (CG, Stalnaker 2002). Taking into account Gundel et al. (1993)’s Givenness Hierarchy in (15a), we acknowledge that all cognitive statuses in the scale conform to different environments in which *ang* is perfectly compatible. (15b) provides an illustration of said hierarchy for English pronouns and determiners.

- (15) GIVENNESS HIERARCHY (Gundel et al. 1993)
- a. in focus > activated > familiar > uniquely identifiable > referential > type identifiable
 - b. *it* > *this*, *that*, *this* N > *that* N > *the* N > indefinite *this* N > *a* N

As we have seen throughout this study and as we see in the bolded arguments in the examples that follow, these degrees of cognitive status in discourse may be *ang* marked: (16A) marks with *ang* the element in focus, as the answer to (16Q), (17) has an activated (i.e., partly based on preceding sentences) and familiar *ang* phrase (i.e. previously mentioned in discourse or known to the hearer via encyclopedic knowledge), (18)’s *ang* phrase is uniquely identifiable (i.e. with

a unique referent) and is referential (i.e. evident from the context that the speaker intends to refer to some specific entity), and, lastly, the type identifiable use in (19) (i.e., the addressee can associate a representation of the type of entity described by the expression), provided it occurs with the quantifier *isang* ‘one’.

- (16) Q: Ano-ng b<in>ili ng bata?
 what-CLEFT <PERF.THEME>buy GEN child
 ‘What did the child buy?’
 A: B<in>ili ng bata **ang tela**.
 <PERF.THEME>buy GEN child SUBJ cloth
 ‘The child bought the cloth.’
- (17) B<in>ili ng bata **ang tela**. **Ang tela** ay maganda.
 <PERF.THEME>buy GEN child SUBJ cloth SUBJ cloth TOP beautiful
 ‘The child bought the cloth. The cloth was beautiful.’
- (18) B<in>ili ng bata **ang tela**-ng ito.
 <PERF.THEME>buy GEN child SUBJ cloth-LNK this
 ‘The child bought this cloth.’
- (19) K<in>uha niya **ang isa-ng aklat**.
 <PERF.THEME>take 3SG.GEN SUBJ one-LNK book
 ‘(S)he took a (certain) book.’

As was expected, the ranges of the Givenness Hierarchy are covered by different usages of *ang*, and so it may receive any of the interpretations it has been described to have so far under a Givenness-account.⁷

At this point, we want to briefly address the observation made above that *ang*-marking is compatible with focus, (16), which gives the impression of a contradiction, if *ang*-marking is related to Givenness and focus is related to new information. However, it is important to note that focus and information status, i.e. Givenness, are two different information-structural dimensions. It is easily possible for a focussed element to already be part of the CG, with a very simple case given in (20).

- (20) Q: Who came to the party, Frank or Chase?
 A: [FRANK]_F came to the party.

⁷An anonymous reviewer points out that under such proposal one might expect the possibility of having *de se* readings, and not *de re*, with *ang* phrases. After all, in a *de se* context for (i), where John, the attitude holder, is aware that he dreamt of himself, we may hypothesize that the givenness of John in the dream world is more likely than in a *de re* context where he was unaware he was the one appearing in his own dream. No such distinction seems to arise for the *ang*-pronoun in (i) though, that is, it is ambiguous between a *de se* and *de re* reading. Still, we take it that the semantic relation of coreference certainly subsumes both readings, a relation that is of course at the core of the Givenness notion (Schwarzschild 1999). Thus, the ambiguity does not challenge the current proposal, although we hope to investigate in the future the syntax and semantics of the *ang* phrase under attitude predicates.

(i) Na-panag<in>ipan ni John na nakakabasa **siya**_{de se/de re} ng isipan.
 PERF(theme)-dream GEN John COMP be.able.to.read SUBJ.3SG GEN mind
 ‘John dreamt that he_{de se/de re} could read minds.’

In addition, an element can count as Given in various ways, some more compatible with also being in focus than others. An in-depth discussion of this topic is beyond the scope of this paper, so we refer the interested reader to the relevant literature, for example Baumann & Riester (2012, 2013), Selkirk (2008), and the references cited therein. Already foreshadowing a later discussion, this becomes relevant in examples like (41), where the combination of focusing via a cleft and Givenness marking via *ang* leads to a contrastive focus interpretation, suggesting that a contrastive interpretation requires an element to be (at least in part) Given.

However, where *ang*, as a Given element marker, is not expected is in existential predicates where new items are being introduced into the context (21).

- (21) May (**ang*) tinapay sa bahay.
 EXIS SUBJ bread OBL home
 Intended: ‘There is bread at home.’

Now, this would imply that in out-of-the-blue contexts, where no constituent may be considered Given, the hearer is forced to accommodate the existence and identifiability of the referent marked by *ang*. Hence, in example (22), we expect the hearer to accommodate a given cat’s existence and identifiability. If its referent is not identifiable because it is still not in the CG, it is perfectly acceptable for the hearer to reply with a *Hey, wait a minute!* (HWAM) utterance like the one in (22). Following the assumption of the HWAM diagnostic from Shanon (1976), whereby presupposed content may be targeted by the hearer with HWAM replies (i.e. ‘Hey, wait a minute, I didn’t know that *x*’), the new informative presupposition is accommodated and incorporated into an updated CG.⁸

- (22) Context: You rent a house for the weekend, and the owner tells you his cat often comes by. You catch a glimpse of the cat when you enter the house. After a while in, you say:
 A: H<in>a~hanap ko **ang pusa**.
 <PERF.THEME>-CONT~look.for GEN.1SG SUBJ cat
 ‘I am looking for the cat.’
 B: Teka lang, hindi ko alam na may pusa dito.
 wait only not GEN.1SG know COMP EXIS cat here
 ‘Wait a minute, I didn’t know there was a cat here.’

On the contrary, if the cat is not marked by *ang*, as in (23), it is not expected to be known and subsequently accommodated by the hearer. Correspondingly, the HWAM reply in (23) is infelicitous, because *ng* does not impose a presupposition that any given cat does indeed exist.

- (23) A: Nag-ha~hanap ako **ng pusa**.
 PERF.MAG.ACTOR-CONT~look.for SUBJ.1SG GEN cat
 ‘I am looking for a cat.’
 B: #Teka lang, hindi ko alam na may pusa dito.
 wait only not GEN.1SG know COMP EXIS cat here
 ‘Wait a minute, I didn’t know there was a cat here.’

In what follows, we develop a syntactic analysis of *ang* and discuss the predictions of a Givenness account.

⁸Note that we are suggesting that *ang* may be semantically considered a presupposition trigger, along the lines of *ang* marking of a given *x* as assuming it is known to hearer and speaker. We leave this matter for future research.

3. Analysis

In this section, we develop our analysis. In short, we follow Rackowski (2002) in assuming that the element determining verbal agreement first moves to the left edge of the ν P. However, we argue that this movement is related to information structure, more particularly Givenness, which accounts for the close relation to specificity and makes predictions for further information structural interactions that will be discussed in the next section.

Before we present our analysis, the next subsection will make our assumptions about information structure explicit.

3.1. Preliminaries

Following Rizzi (1997) and much other work, information structural information is encoded in dedicated functional projections. While most work on information structure is concerned with information-structural projection in the CP periphery of the clause, it is also frequently argued that comparable projections can be found in other parts of the clause, especially in the periphery of the ν P (Belletti 2001, 2004; Mursell 2018). Initially, the discussion of low information-structural projections was centered around the encoding of focus. It is well known that many languages make a difference in encoding contrastive, or any kind of more emphatic, focus on the one hand, and new information focus on the other. Looking at the syntactic positions in which these two different foci are encoded, the general trend emerges that a focused constituent in the left periphery of the clause receive a somewhat stronger interpretation than focused constituents in clause-medial position. To illustrate this, consider for example the difference between identificational focus and information focus in Hungarian (Kiss 1998:249) as shown in (24). Exhaustive identificational focus in Hungarian is encoded in a preverbal position, to which exhaustively focussed elements are moved (24a). On the other hand, new information focus does not seem to be restricted to a particular position but is typically encoded postverbally (24b).

- (24) a. Mari egy kalapot nézett ki magának.
 Mary a hat picked out herself
 'It was a hat that Mary picked out herself.'
- b. Mari ki nezett maganak egy kalapot.
 Mary out picked herself a hat
 'Mary picked for herself [a hat]_{FOC}.'

A remarkably similar observation can be made for various West-African languages (Fiedler et al. 2010). Taking Dagbani, a Mabia language, as example, Issah (2018) argues that focus can be encoded in two different ways in this language. To encode exhaustive focus, a constituent can be moved to the left periphery of the clause, where it is then followed by a focus marker, the overt realization of Rizzi's Foc-head (25a). Focus can also be encoded in-situ, without any explicit marking, but in the in-situ position, the focussed constituent can then only be interpreted as new information focus and never as contrastive or exhaustive focus (25b) (examples from Issah 2018:142-143 with slightly modified translation).

- (25) a. Búkù kà páyà máá sà dá
 book FOC woman DEF PST buy.PFV
 'It was a book that she bought yesterday.'
 b. Páyà máá sà dá là búkù.
 woman DEF PST buy LA book
 'The woman bought [a book]_{FOC} yesterday.'

Considerations like this led Belletti (2004) to assume that in Italian, a dedicated low position exists in which new information focus is encoded. In the examples in (26), the question leads to new information focus on the subject, which occurs in post-verbal position. Fronting the subject, i.e. contrastive or exhaustive focus, leads to an inappropriate response. Importantly, post-verbal subjects can also receive a different interpretation: given the right intonation, they can be interpreted as topics, more specifically as Given information, as shown in (27) (Belletti 2004:21–22).

- | | |
|---|--|
| <p>(26) Q: Chi è partito? who is left 'Who has left?' A: È partito Gianni. is left Gianni 'Gianni has left.' A': #Gianni è partito.</p> | <p>(27) Q: Che cosa ha poi fatto Gianni? what has finally done Gianni 'What has Gianni finally done?' A: Ha parlato, Gianni. has spoken Gianni 'He has spoken, Gianni.'</p> |
|---|--|

Thus, (26) seems to show that low in the structure exists a dedicated functional projection that hosts elements that carry new information focus. This position linearly follows low adverbs (Cinque 1999; Belletti 2001), which we take to indicate that this position can be found in the left edge of vP. Importantly, this low focus position is interpretationally different from a high focus position, which encodes contrastive or exhaustive focus. A similar argument can be made for a low topic position. This low topic position can host elements that are given, as shown in (27), which, again, sets it apart from high topic projections in the CP area, where Aboutness-topics, Familiarity-topics, and others can be found (Frascarelli & Hinterhölzl 2007).

Low information-structural projections, especially low topical projections, have also been employed to account for other phenomena, most prominently object marking (Dalrymple & Nikolaeva 2011). Taking object marking in several Bantu languages as example, it has been argued by various researchers that the phenomenon, which at first glance appears to be optional, is in fact related to information structure, more specifically to anti-focus (Zulu, Zeller 2014, 2015), non-focus/familiarity (Manyika, Bax & Diercks 2012), or Givenness (Swahili, Seidl & Dimitriadis 1997; Mursell 2018). For example, as argued for in Mursell (2018), object marking in Swahili is triggered by the Givenness of the co-referenced object, leading to frequent object marking of proper names and pronouns (28), and at the same time blocking object marking of focused objects, i.e. wh-elements and their corresponding answers, (29).

- (28) Hao a-li-*(**wa-**)pa uwezo.
 2.DEM 1.S-PST-**2.O**-give 2.ability
 'Them, he gave an ability.' (Joswig 1996)
- (29) Q: Mwanamke a-li-*(**ki-**)vunja nini?
 1.woman 1.S-PST-**7.O**-break what

- ‘What did the woman break?’
 A: A-li-(***ki**)-vunja kikombe.
 1.S-PST-7.O-break 7.cup
 ‘She broke a cup.’ (Mursell 2018)

In addition, from a conceptual point of view, information-structural projections in the ν P periphery are not unexpected, as both ν P and CP are often considered to be phases, which undergo spell-out and are therefore connected to the wider discourse. In what follows we will capitalize on this argument and focus on the low topic projection in the ν P periphery that hosts given information.

Before turning to the analysis, a second important point concerning information structure needs to be mentioned, namely the function of information structural features in the derivation. Traditionally, the impact of information-structural features was restricted to the CP, while inside the TP, ϕ -features are the driving force of the derivation. However, Miyagawa (2010, 2017) has convincingly argued that languages actually differ with respect to the type of features that drive the syntactic computation. More specifically, he assumes that all languages start out with having information-structural features (δ) and ϕ -features both merged on C. In English, δ stays in C and ϕ is inherited by T (*feature inheritance*, Chomsky 2008; Richards 2007), leading to the familiar picture in which ϕ -features seem to drive the derivation in the TP while information structure is restricted to the left periphery. But which type of feature is actually inherited by T and which remains in C is subject to cross-linguistic variation. Logically, four possibilities exist, given in table 3, and according to Miyagawa, all types are attested.

| | | |
|---------------|-----------------------|----------|
| Category I: | C_ϕ, T_δ | Japanese |
| Category II: | C_δ, T_ϕ | English |
| Category III: | $C, T_{\phi, \delta}$ | Spanish |
| Category IV: | $C_{\phi, \delta}, T$ | Dinka |

Table 3: Some predicted types of languages (Miyagawa 2017:ex. 5)

We take Miyagawa’s insight not just to be valid for information structural information in the left periphery but for all information-structural features. As discussed above, information-structural features can also be found in the periphery of ν P, and similar to those initially merged in CP, they are very well able to drive the syntactic computation in a way that so far has often been restricted to ϕ -features.⁹

This concludes the discussion of theoretical background. In the next subsection, we employ the insights discussed in this section to develop our analysis of *ang*-marking in Tagalog.

⁹It is still unclear how many and which information-structural projections can be found in the ν P periphery and if the features merged there behave completely parallel to those in the CP. In the analysis developed below, we assume a topic projection above ν P, so that the Agent occupies spec- ν P below that. A different possibility would be for ν to inherit the topic feature and that ν subsequently projects a second specifier. For ease of exposition, we assume the first option.

3.2. Subject agreement as determined by Givenness

Against this background, our analysis is straightforward. We stick to the fundamental insights of Rackowski (2002) and Sabbagh (2014) that the verb in T agrees with the highest element in its c-command domain, and this element then determines verbal morphology and itself receives the *ang*-marker. In contrast to those approaches, however, we assume that the movement into the position just below T is movement into an information-structural projection in the *vP*, a projection that is used to encode Givenness, i.e. the complement of new information.¹⁰ More concretely, we assume that the *vP* periphery hosts information structural projections in Tagalog, based on the analytical parallels discussed in the last sections. In the case at hand, the *vP* periphery hosts a topic projection in Tagalog that encodes Givenness, i.e. a head, projecting a phrase, that has an unvalued topic feature for given topics, TOP_{giv}. This topic feature acts as a probe and agrees with an element that carries the valued counterpart and in addition attracts this element to its specifier. As this element is then the highest element in the *vP*, specifically, it occupies the phase edge of *vP*, it is the closest element to T and serves as agreement goal for probing T, determining the verbal morphology.

For concreteness, consider the structure in (31) first. (31) exemplifies a case in which the agent/actor is responsible for verbal agreement, i.e. a sentence similar to (1a), repeated in (30) for convenience.

- (30) B⟨um⟩ili **ang** bata ng tela sa palengke.
 ⟨PERF.ACTOR⟩buy SUBJ child GEN cloth OBL market.
 ‘The child bought cloth at the market.’

In this case, we assume that the subject carries a topic feature for Givenness. It agrees with the topic head in the left periphery and moves to the specifier of that projection. When T is merged in the derivation, the subject in the phase edge of *vP* is the closest possible agreement goal for probing T and therefore determines verbal agreement. Note that our analysis differs significantly from Rackowski (2002) in this point, as for her, external arguments do not need to move to determine verbal agreement. In the next section, we will discuss effects of this movement to the *vP* edge, which apply to external and internal arguments alike, supporting this assumption. In addition, assuming that the topic agreement attracts the agreement goal to its specifier in all cases without exceptions appears to us to be a more straightforward assumption.¹¹

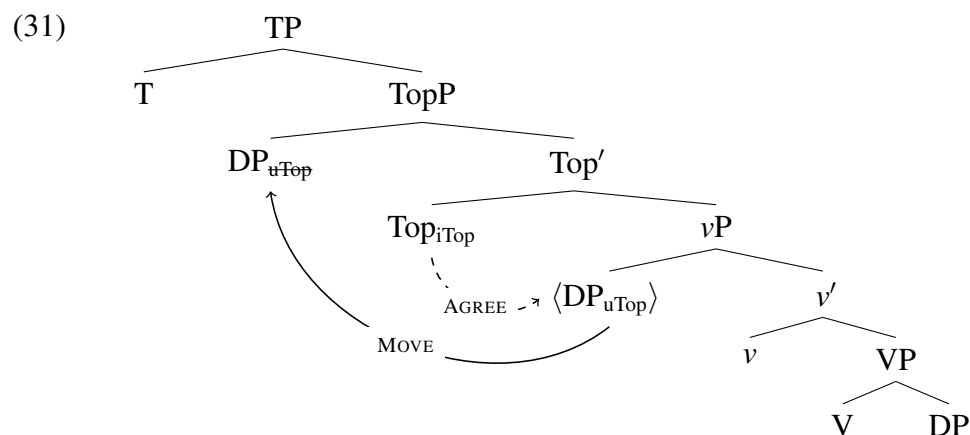
The analysis of internal arguments determining verbal agreement is not much different. Consider the example in (32), repeated for convenience from (1b).

- (32) B⟨in⟩ili-∅ ng bata **ang** tela sa palengke.
 ⟨PERF⟩buy-THEME GEN child SUBJ cloth OBL market.
 ‘The child bought the cloth at the market.’

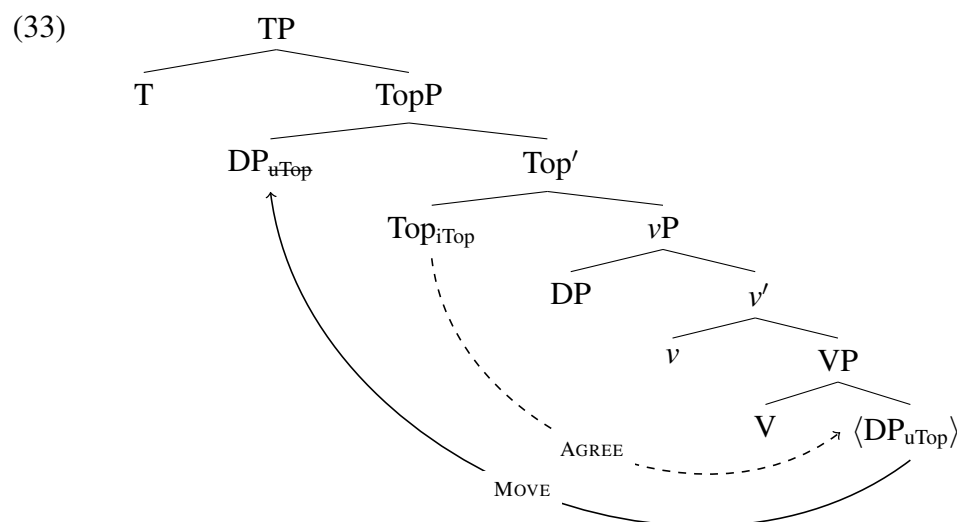
In these cases it is not the external argument that carries the topic feature for Givenness, but the internal argument. It is therefore targeted for agreement by the probing topic head in the periphery of the *vP* and subsequently moves to the specifier of this low information-structural

¹⁰For other syntactic phenomena that seem to involve this low topic position, see among others Bax & Diercks (2012) and Mursell (2018).

¹¹~~Strikethrough~~ represents deleted uninterpretable features, while ⟨angled brackets⟩ represent traces of movement.



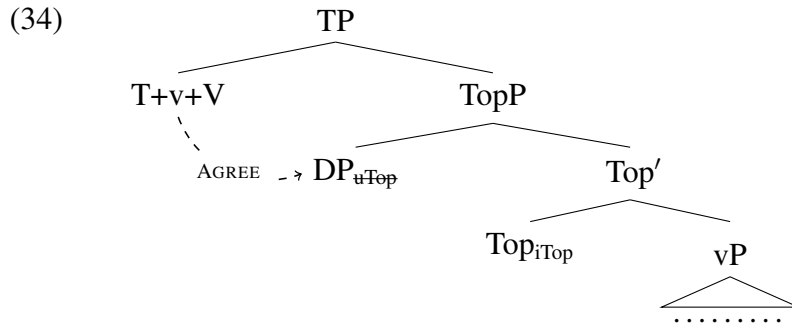
projection (33).



Independent of the agreement goal, i.e. independent of the element that moves to spec-TopP in the vP periphery, this argument will then be the closes argument to T and subsequently determine verbal agreement via T agreeing with this moved element.¹² This is shown in the structure in (34).

Comparing this analysis to the ones proposed by Rackowski (2002) and Sabbagh (2014) discussed above, the similarities and differences to our account become apparent. In general, we stick to the idea that the argument that determines verbal agreement is the highest element in T's c-command domain. However, in our account, the reason an element is moved to the position immediately below T is due to information structure, particularly a specific kind of topicality, Givenness. An element carrying the appropriate kind of topic feature moves into the specifier of this low information structural projection, which is at the same time the phase edge of the low

¹²We purposely do not discuss the nature of the feature(s) for which T agrees with the moved element. It is usually assumed that T agrees with the subject in ϕ -features. However, based on the data from (1) and native speaker intuition, it is actually the thematic role that determines the verbal morphology. This in turn makes it necessary to treat thematic roles as syntactic features (for approaches see Bošković & Takahashi 1998; Hornstein 1999; Manzini & Savoia 2002). Many problems are connected to such an approach, and a discussion would be far beyond the scope of the paper. In addition, this problem is not unique to our account and orthogonal to the claim we want to make in this paper.



vP phase.¹³ In the next section we will discuss consequences arising from those two properties of this position, its relation to information structure and its status as phase edge.

4. Discussion

In this section, we will discuss some predictions made by our analysis, stemming from the reliance on information-structural movement inside the vP on the one hand and movement into the phase edge of the vP on the other. Before doing so however, note that our analysis has no problem deriving the basic patterns discussed above. In addition, the frequent correlation between *ang*-marking and specificity follows from our account as well, simply from general considerations of information structure. Being given relates to being part of the CG, importantly for speaker and hearer. Once an element is introduced into the CG, future references to it are usually specific (for Tagalog, c.f. for example Sabbagh 2014). Items that can be assumed to always be part of the CG are proper names (possibly by accommodation) and pronouns, exactly those elements that seem to require *ang*-marking in nearly all contexts.

Turning to concrete predictions our account makes, as mentioned above, we expect interactions with other processes stemming from two properties of our account, its connection to information structure, and the position in which *ang*-marking takes place, the phase edge of the embedded vP. This becomes apparent with topicalization to the left periphery, achieved by fronting the topic and marking it with the particle *ay*, shown for agents in (35).

- (35) **Ang babae** ay k(um)ain ng talong.
 SUBJ woman TOP <PERF.ACTOR>eat GEN eggplant
 ‘As for the woman, she ate eggplant.’

An important difference exists between the *ay*-topicalization of vP internal material on the one hand and vP external material on the other. vP internal material, arguments and low adjuncts, can only be topicalized if they have been *ang*-marked before, i.e. *ay*-topicalization of arguments will always target the *ang*-marked argument (36a). No such restriction exists for vP external adjuncts. If such an adjunct is to be topicalized, a different vP internal element needs to be *ang*-marked (36b)-(36c).

- (36) a. *Ng talong ay k(um)ain ang babae.
 GEN eggplant TOP <PERF.ACTOR>eat ANG child
 Intended: ‘As for the eggplant, the woman ate it.’

¹³We will not discuss additional derivations, for example for locative arguments receiving *ang*-marking, as the derivations would only differ insignificantly from the ones discussed above.

- b. Sa umaga ay k(in)ain ng babae **ang talong**.
 OBL morning TOP ⟨PERF.THEME⟩eat GEN woman SUBJ eggplant
 ‘As for the morning, the woman ate eggplant.’
- c. Pag-dating ko sa Pilipinas ay pupunta **ako** sa Baguio.
 PAG-arrive GEN.1SG OBL Philippines TOP will.go SUBJ.1SG OBL Baguio
 ‘Upon arriving to the Philippines, I will go to Baguio.’

This restriction directly follows from the proposal discussed in the last section. The position in which *ang*-marking takes place, the TopP on top of the *v*P is also the phase edge of the *v*P. Thus, all elements that are to be moved out of the *v*P have to move through this projection. Consequently, only *v*P elements that have been *ang*-marked, i.e. moved to the phase edge of *v*P can be moved further up in the structure. No such restriction exists for higher adverbials. Since these adverbials are merged outside the *v*P they do not need to escape it. This in turn requires another element inside the *v*P to be *ang*-marked.

Sabbagh (2014) discusses an interesting interaction between *ay*-topicalization and the *ang*-marking of proper names/pronouns which, in our analysis, highlights the role different constraints play in Tagalog syntax. Remember that in general, proper names and pronouns require *ang*-marking as they are always part of the CG. At the same time, extraction from the *v*P and *ang*-marking require use of the same position, the edge of *v*P. Thus, it is expected that proper names and pronouns can remain without *ang* exactly in those contexts in which a different constituent is extracted from the *v*P due to *ay*-topicalization. The data in (37) exemplify that.

- (37) a. Wala-ng na-nood sa iba-ng mesa dahil lahat ay
 NON.EXIS-LNK PERF.ACTOR-watch OBL other-LNK table because all TOP
 na-nood **kay Rubilen**.
 PERF.ACTOR-watch OBL Rubilen
 ‘No one was watching the other table because everyone was watching Rubilen.’
- b. Ngunit si Jonathan na anak ni Hari-ng Saul ay nag-mahal
 but SUBJ Jonathan LNK son GEN king-LNK Saul TOP PERF.ACTOR-love
kay David bila-ng isa-ng kapatid.
 OBL David as-LNK one-LNK sibling
 ‘But Jonathan, the son of King Saul, loved David like a brother.’
 (Sabbagh 2014:40b-c)

The sentences in (38) showcase the impossibility of *ang* marking the constituent with proper names, given that the extracted elements (i.e. *lahat* ‘all’ in (38a), *si Jonathan na anak ni Haring Saul* ‘Jonathan the son of king Saul’ in (38b)).

- (38) a. *Wala-ng na-nood sa iba-ng mesa dahil lahat ay
 NON.EXIS-LNK PERF.ACTOR-watch OBL other-LNK table because all TOP
 nanood **si Rubilen**.
 PERF.ACTOR-watch SUBJ Rubilen
 Intended: ‘No one was watching the other table because everyone was watching Rubilen.’
- b. *Ngunit si Jonathan na anak ni Hari-ng Saul ay nag-mahal
 but SUBJ Jonathan LNK son GEN king-LNK Saul TOP PERF.ACTOR-love

si **David** bila-ng isa-ng kapatid.
 SUBJ David as-LNK one-LNK sibling
 Intended: ‘But Jonathan, the son of King Saul, loved David like a brother.’

Again, this comes as no surprise in our analysis and simply shows that *ang*-marking and extraction from *vP* use the same position. For (38), it could then be argued that oblique marking of the proper name or pronoun is a last resort mechanism, as they need case for the derivation to converge.

The question now arises what happens if something is extracted from the *vP* that is incompatible with *ang*-marking. In other words, what happens if an element that cannot be marked as given needs to move through the phased edge of *vP*? We use *wh*-questions in Tagalog to investigate this possibility. Argument *wh*-questions are formed by clefting the *wh*-element in the left periphery. Importantly, there are no *ang*-marked constituents in *wh*-questions, as shown by the impossibility of *ang*-marking the bolded constituents in (39c) and (39d).

- (39) a. Ano-**ng** k<in>ain ng babae?
 what-CLEFT <PERF.THEME>eat GEN woman
 ‘What did the woman eat?’
 b. Sino-**ng** k<um>ain ng talong?
 who-CLEFT <PERF.ACTOR>eat GEN eggplant
 ‘Who ate eggplant?’
 c. *Ano-ng k<um>ain **ang** babae?
 what-CLEFT <PERF.ACTOR>eat SUBJ woman
 Intended: ‘What did the woman eat?’
 d. *Sino-ng k<in>ain **ang** talong?
 who-CLEFT <PERF.THEME>eat SUBJ eggplant
 Intended: ‘Who ate eggplant?’

Similar to the case of pronouns and proper names discussed above, the syntax has to deal with conflicting requirements. On the one hand, the *wh*-element needs to be extracted from the *vP*, while, on the other hand, the *wh*-element is incompatible with being *ang*-marked, as *wh*-elements cannot be part of the CG. The examples in (39) show how this conflict is resolved: the *wh*-element moves through the phase edge of *vP*, which is made evident by the verbal morphology being determined by the *wh*-element. At the same time, it blocks *ang*-marking of other constituents, since it blocks the required position on its way to the left periphery. For this to be an argument supporting our proposal, it is necessary that the cleft marker in (39), which is homophonous to *ang* when not following a consonant is indeed just a cleft marker. We discuss this immediately below.

Clefting in general shows the same behavior as clefting in *wh*-questions (40): The clefted element is extracted from the *vP* through the phase edge into the left periphery, it is responsible for the verbal morphology, and it is followed by the cleft marker *ang*. In contrast to clefted *wh*-elements however, the clefted constituent is compatible with *ang*-marking and can therefore be optionally marked with *ang*. This second occurrence of *ang*, in addition to the phonological reduction that is only possible for the cleft marker but not the Givenness marker (39), we take as evidence that the cleft marker and the *ang* under discussion in this paper are not the same element and are simply homophonous (contra Rackowski & Richards 2005). It is important to note that *ang*-marking the clefted constituent is the only possible marking, and even if it is not

marked, *ang*-marking of another constituent is impossible (40e).

- (40) a. **Ang**/*ng babae ang k⟨um⟩ain ng talong.
 SUBJ/GEN woman CLEFT ⟨PERF.ACTOR⟩eat GEN eggplant
 ‘It is the woman who ate eggplant.’
 b. **Ang**/*ng talong ang k⟨in⟩ain ng babae.
 SUBJ/GEN eggplant CLEFT ⟨PERF.THEME⟩eat GEN woman
 ‘It is eggplant that the woman ate.’
 c. **Ang**/*ng/*sa mangkok ang k⟨in⟩ain-an ng babae.
 SUBJ/GEN/OBL bowl CLEFT ⟨PERF⟩eat-LOC GEN woman
 ‘It is in the bowl that the woman ate.’
 d. **Ang**/*ng/*sa kutsara ang p⟨in⟩ang-kain ng babae.
 SUBJ/GEN/OBL spoon CLEFT INSTR⟨PERF⟩eat GEN woman
 ‘It is with the spoon that the woman ate.’
 e. ***Talong** ang b⟨um⟩ili ang babae.
 eggplant CLEFT ⟨PERF.ACTOR⟩ SUBJ woman
 Int.: ‘It is eggplant that the woman bought.’

This restriction again follows directly from our proposal. The clefted constituent needs to move out of the *v*P through the phase edge, the position in which *ang*-marking takes place. As the clefted constituent is compatible with being given (in contrast to *wh*-elements), *ang* can surface, since focalization can be independent of Givenness, as discussed above. Independent of the occurrence of the Givenness marker, however, the clefted constituent will always block *ang*-marking of another constituent, since extraction always proceeds through the phase edge of *v*P and therefore prohibits *ang*-marking of other constituents.

We expect the optional occurrence of *ang*-marking to have an effect on the interpretation. This is indeed the case and *ang*-marking in combination with clefting leads to a contrastive topic or contrastive focus interpretation, suggesting that a contrastive interpretation requires Givenness to a certain extent. Thus, the example in (41) is only possible in a context in which, for example, a grocery list is in the common knowledge of both speaker and hearer and one element from the list is contrasted with others.

- (41) **Ang talong** ang b⟨in⟩ili ng babae.
 SUBJ eggplant CLEFT ⟨PERF.THEME⟩eat GEN woman
 ‘It is (the) eggplant that the woman bought.’

The last point we want to briefly mention in this discussion is the interaction of *ang*-marking and negative quantifiers like *no one/nobody*. It is sometimes argued that negative quantifiers and NPIs make bad topics, as one could argue that the empty set cannot be part of the CG (Giannakidou 1998). Be that as it may, interestingly, the negative existential in Tagalog, *wala*, is incompatible with *ang*-marking, even though it can determine the verbal morphology (42).

- (42) a. Hindi s⟨in⟩abi ni Maria na (*ang) wala-ng
 not ⟨PERF.THEME⟩say GEN Maria COMPL SUBJ NON.EXIS-LNK
 k⟨um⟩ain ng isda sa bahay.
 ⟨PERF.ACTOR⟩eat GEN fish OBL house
 ‘Maria didn’t say that anybody ate fish at home.’

- b. (***Ang**) **wala-ng** k(um)ain ng isda sa bahay.
 SUBJ NON.EXIS-LNK ⟨PERF.ACTOR⟩ GEN fish OBL house
 ‘Nobody ate fish at home.’

In sum, the points raised in this section provide further arguments supporting the analysis of *ang*-marking as being determined by the information-structural property of Givenness.

5. Conclusion

In this paper, we have argued that subject marking in Tagalog, i.e. *ang*-marking, is actually determined by information structure, more specifically by Givenness. The *v*P hosts an information structural projection for Givenness in its left periphery, and this projection is at the same time the phase edge of the *v*P. A given *v*P-internal constituent is singled out and moves to this projection. Due to this movement into the highest projection in the *v*P, this constituent becomes the closest agreement goal to probing T and consequently determines verbal morphology and receives *ang*-marking. We have shown that this approach makes the right predictions when it comes to additional operations that move elements into the left periphery of the clause. Thus, topicalization and clefting can only target the element that has first moved into the *v*P phase edge. This element is frequently the one marked with *ang*, but even if its meaning is incompatible with being given, like it is the case for *wh*-elements, it will still always be the element that determines verbal morphology. On a larger scale, we think Tagalog provides evidence for a clearly syntactic effect of information structural features, which has often been disputed in the literature (cf. among many others Chomsky 1995; López 2009; Fanselow & Lenertová 2011). Of course, many open questions remain, most importantly questions about *ang*-marking in sentences where either everything or nothing is given. While we plan to address this and other questions in future research, we expect the argument structure of the verb to play an important role in these contexts (Latrouite 2011).

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Abbreviations

Numbers not followed by SG or PL represent noun classes.

| | | | |
|---------|-----------------------------|----------|---------------------|
| 1, 2, 3 | first, second, third person | NON.EXIS | non existential |
| ACTOR | actor-subject | OBL | oblique |
| BENEF | beneficiary-subject | PAG | pag morpheme |
| CLEFT | cleft marker | PERF | perfective aspect |
| COMPL | complementizer | PL | plural |
| CONT | contemplative aspect | SG | singular |
| EXIS | existential | SUBJ | subject |
| FOC | focus | THEME | theme-subject |
| GEN | genitive | TOP | topicalizing marker |
| LNK | linker | | |

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References

- Aissen, J. (2003). Differential object marking: Iconicity vs. economy. *Natural Language & Linguistic Theory* 21:3, pp. 435–483.
- Aldridge, E. (2004). *Ergativity and word order in Austronesian languages*. Ph.D. thesis, Cornell University.
- Baumann, S. & A. Riester (2012). Referential and lexical givenness: Semantic, prosodic and cognitive aspects. Elordieta, G. & P. Prieto (eds.), *Prosody and meaning*, De Gruyter Mouton, Berlin, pp. 119–163.
- Baumann, S. & A. Riester (2013). Coreference, lexical givenness and prosody in German. *Lingua* 136, pp. 16–37.
- Bax, A. & M. Diercks (2012). Information structure constraints on object marking in Manyika. *Southern African Linguistics and Applied Language Studies* 30:2, pp. 185–202.
- Bell, S. (1978). Two differences in definiteness in Cebuano and Tagalog. *Oceanic Linguistics* 17, pp. 1–9.
- Belletti, A. (2001). Inversion as focalization. Hulk, A. & J. Y. Pollock (eds.), *Subject inversion in Romance and the theory of Universal Grammar*, University Press Oxford, Oxford, pp. 60–90.
- Belletti, A. (2004). Aspects of the low IP area. Rizzi, L. (ed.), *The Structure of CP and IP*, Oxford University Press, Oxford, vol. 2 of *The Cartography of Syntactic Structures*, pp. 16–51.
- Bloomfield, L. (1917). Tagalog texts with grammatical analysis. *University of Illinois studies in language and literature* 3, pp. 2–4.
- Bošković, Ž. & D. Takahashi (1998). Scrambling and last resort. *Linguistic Inquiry* 29:3, pp. 347–366.
- Cena, R. M. (1977). Patient primacy in Tagalog. Paper presented at the LSA Annual Meeting, Chicago.
- Chomsky, N. (1995). *The Minimalist Program*. MIT Press, Cambridge, MA.
- Chomsky, N. (2001). Derivation by phase. Kenstowicz, M. (ed.), *Ken Hale: A life in language*, MIT Press, Cambridge, MA, pp. 1–52.
- Chomsky, N. (2008). On phases. Freidin, R., C. P. Otero & M. L. Zubizarreta (eds.), *Foundational issues in linguistic theory: Essays in honor of Jean-Roger Vergnaud*, MIT Press, Cambridge, MA, pp. 133–166.
- Cinque, G. (1999). *Adverbs and Functional Heads*. OUP, Oxford.
- Dalrymple, M. & I. Nikolaeva (2011). *Objects and information structure*. Cambridge University Press, Cambridge.
- De Guzman, V. P. (1988). Ergative analysis for Philippine languages: An analysis. McGinn, R. (ed.), *Studies in Austronesian Linguistics*, Ohio University Center for International Studies, Ohio, pp. 323–345.
- Diesing, M. (1992). *Indefinites*. MIT Press, Cambridge, MA.
- Fanselow, G. & D. Lenertová (2011). Left peripheral focus: Mismatches between syntax and information structure. *Natural Language & Linguistic Theory* 29, pp. 169–209.
- Fiedler, I., K. Hartmann, B. Reineke, A. Schwarz & M. Zimmermann (2010). Subject focus in West African Languages. Zimmermann, M. & C. Féry (eds.), *Information Structure. Theoretical, Typological and Experimental Perspectives*, Oxford University Press, Oxford, pp. 234–257.
- Foley, W. (1998). Symmetrical voice systems and precategoriality in Philippine languages. Paper presented at the Third Lexical Functional Grammar Conference.

- Foley, W. & R. Van Valin (1984). *Functional Syntax and Universal Grammar*. Cambridge University Press, Cambridge.
- Frascarelli, M. & R. Hinterhölzl (2007). Types of topics in German and Italian. Schwabe, K. & S. Winkler (eds.), *On Information Structure, Meaning and Form*, Benjamins, Berlin, pp. 87–116.
- Gerdts, D. (1988). Antipassives and causatives in Ilokano: Evidence for an ergative analysis. McGinn, R. (ed.), *Studies in Austronesian linguistics*, Ohio University Center for International Studies, Ohio, pp. 295–321.
- Giannakidou, A. (1998). *Polarity sensitivity as (non) veridical dependency*. John Benjamins Publishing, Berlin.
- Guilfoyle, E., H. Hung & L. Travis (1992). Spec of IP and Spec of VP: Two subjects in Austronesian languages. *Natural Language & Linguistic Theory* 10, pp. 375–414.
- Gundel, J. K., N. Hedberg & R. Zacharski (1993). Cognitive status and the form of referring expressions in discourse. *Language* 69, pp. 274–307.
- von Heusinger, K. (2002). Specificity and definiteness in sentence and discourse structure. *Journal of Semantics* 19, pp. 245–274.
- Himmelman, N. (1991). The Philippine challenge to universal grammar. *Arbeitspapier, Institut für Sprachwissenschaft* 15, pp. 1–59.
- Hornstein, N. (1999). Movement and control. *Linguistic Inquiry* 30:1, pp. 69–96.
- Issah, S. A. (2018). *On the structure of A-bar constructions in Dagbani: Perspectives of wh-questions and fragment answers*. Ph.D. thesis, Goethe-University Frankfurt.
- Joswig, A. (1996). Die grammatischen Rollen des Objekts im Swahili. *Institut für Sprachwissenschaft, Universität zu Köln Arbeitspapiere* 26, pp. 1–67.
- Kaufman, D. (2009). Austronesian nominalism and its consequences: A Tagalog case study. *Theoretical Linguistics* 35, pp. 1–49.
- Kiss, K. É. (1998). Identificational focus versus information focus. *Language* 74:2, pp. 245–273.
- Kroeger, P. (1993). *Phrase structure and grammatical relations in Tagalog*. CSLI, Stanford.
- Latrouite, A. (2011). *Voice and case in Tagalog: the coding of prominence and orientation*. Ph.D. thesis, Heinrich Heine University Düsseldorf.
- López, L. (2009). *A derivational syntax for information structure*. OUP, Oxford.
- MacLachlan, A. & M. Nakamura (1994). Case checking and specificity in Tagalog. *The Linguistic Review* 14, pp. 307–333.
- Manzini, M. R. & L. M. Savoia (2002). Parameters of subject inflection in Italian dialects. Svenonius, P. (ed.), *Subjects, Expletives, and the EPP*, Oxford University Press, Oxford, pp. 157–200.
- Merchant, J. (2006). Polyvalent case, geometric hierarchies, and split ergativity. *Proceedings from the Annual Meeting of the Chicago Linguistic Society*, Chicago Linguistic Society, vol. 42, pp. 57–76.
- Miyagawa, S. (2010). *Why Agree? Why Move: Unifying Agreement-Based and Discourse Configurational Languages*. MIT Press, Cambridge, MA.
- Miyagawa, S. (2017). *Agreement beyond phi*. MIT Press.
- Mursell, J. (2018). Object marking in Swahili is topic agreement. *Jezikoslovlje* 19:3, pp. 427–455.
- Nakamura, M. (1996). *Economy of chain formation*. Ph.D. thesis, McGill University.
- Naylor, P. B. (1995). Subject, topic and Tagalog syntax. Bennett, T. B., David C. & B. G. Hewitt (eds.), *Subject, Voice and Ergativity*, SOAS, London.
- Payne, T. E. (1982). Role and reference related subject properties and ergativity in Yup'ik Eskimo and Tagalog. *Studies in Languages* 6.1, pp. 75–106.
- Rackowski, A. (2002). *The structure of Tagalog: Specificity, voice, and the distribution of arguments*. Ph.D. thesis, Massachusetts Institute of Technology.
- Rackowski, A. & N. Richards (2005). Phase edge and extraction: A Tagalog case study. *Linguistic Inquiry* 36:4, pp. 565–599.
- Reid, L. & H. Liao (2004). A brief syntactic typology of Philippine languages. *Language and Linguistics* 5.2, pp. 433–490.
- Richards, M. D. (2007). On Feature Inheritance: An argument from the Phase Impenetrability Condition. *Linguistic Inquiry* 38:3, pp. 563–572.
- Richards, N. (2000). Another look at Tagalog subjects. Paul, L. T., Ileana; Vivianne Phillips (ed.), *Formal issues in Austronesian linguistics*, Studies in Natural Language and Linguistic Theory, pp. 105–115.
- Rizzi, L. (1997). The fine structure of the left periphery. Haegeman, L. (ed.), *Elements of Grammar*, Kluwer, Dordrecht, pp. 281–337.
- Sabbagh, J. (2014). Word order and prosodic-structure constraints in Tagalog. *Syntax* 17:1, pp. 40–89.

- Sabbagh, J. (2016). Specificity and objecthood in Tagalog. *Journal of Linguistics* 52:3, pp. 639–688.
- Schachter, P. (1976). The subject in Philippine languages: topic, actor, actor-topic, or none of the above. Li, C. (ed.), *Subject and topic*, Academic Press, New York, pp. 493–518.
- Schachter, P. (1996). The subject in Tagalog: still none of the above. *UCLA Occasional Papers in Linguistics*, 15, UCLA, Los Angeles.
- Schachter, P. & F. Otanes (1972). *Tagalog Reference Grammar*. University of California Press, Berkeley.
- Schwarzschild, R. (1999). Givenness, AvoidF and other constraints on the placement of accent. *Natural Language Semantics* 7, pp. 141–177.
- Seidl, A. & A. Dimitriadis (1997). The discourse function of object marking in Swahili. Singer, K., R. Eggert & G. Anderson (eds.), *CLS 33: Papers from the Main Session, April 17–19, 1997*, pp. 373–389.
- Selkirk, E. (2008). Contrastive focus, givenness and the unmarked status of “discourse-new”. *Acta Linguistica Hungarica* 55:3–4, pp. 331–346.
- Shanon, B. (1976). On the two kinds of presuppositions in natural language. *Foundations of Language* :14, pp. 247–49.
- Shibatani, M. (1988). Voice in Philippine languages. Shibatani, M. (ed.), *Passive and voice*, John Benjamins, Amsterdam, pp. 85–142.
- Stalnaker, R. (2002). Common ground. *Linguistics and Philosophy* 25, pp. 701–721.
- Zeller, J. (2014). Three types of object marking in Bantu. *Linguistische Berichte* 239, pp. 347–367.
- Zeller, J. (2015). Argument prominence and agreement: Explaining an unexpected object asymmetry in Zulu. *Lingua* 156, pp. 17–39.

On the scope interpretation of a null disjunctive phrase in Japanese

Shuki Otani

This article investigates what interpretations are available when a disjunctive phrase is phonetically null in a negative sentence. Sakamoto (2015) shows that a null disjunctive element always takes wide scope with respect to negation, but Funakoshi (2013) presents that a null disjunctive element takes narrow scope under negation. In this paper, I observe that only when there is a null disjunctive element and a contrastive focus in a negative sentence, the disjunctive element can take wide and narrow scope with respect to negation. From the observation, I argue that a contrastive focus is closely related to the interpretations of null disjunctive elements. In order to obtain the interpretations, following Maeda (2017) and Aelbrecht (2010), I propose that a contrastive focus makes the [E]-feature active via Agree relation, and then disjunctive phrases are deleted.

1. Introduction

Null arguments in Japanese have been extensively discussed in the literature. The traditional analysis of the null arguments was to suppose that they are uniformly an empty pronoun *pro* (see Kuroda 1965, among many others). However, Otani & Whitman (1991) claim that it is not always so that null arguments are corresponded to *pro*. Consider the examples in (1).

- (1) a. Taroo-wa zibun-no kuruma-o arat-ta
Taroo-TOP self-GEN car-ACC wash-PST
lit. 'Taroo washed self's car.'
- b. Ziroo-wa Δ arawa-nakat-ta
Ziroo-TOP wash-NEG-PST
lit. 'Ziroo did not wash Δ .'
- c. Ziroo-wa sore-o arawa-nakat-ta
Ziroo-TOP it-ACC wash-NEG-PST
'Ziroo did not wash it.'

If the null argument (= Δ) refers to the meaning (*zibun-no kuruma-o* ‘self’s car’) in (1b), the sentence can have two types of interpretation: ‘Ziroo did not wash Taroo’s car’ and ‘Ziroo did not wash Ziroo’s car.’ The former interpretation is called the strict reading, and the latter interpretation is called the sloppy reading. If the null argument is equated to *pro*, the argument in (1b) would also be analyzed in the same way. The sentence in (1b) should have the same interpretation as the interpretation in (1c). The sentence represents the strict reading, but does not have the sloppy reading. This meaning is inconsistent with the interpretation in (1b), because the sentence in (1b) includes not only the strict reading but also the sloppy reading. Since the *pro* only refers to the element which the speaker brings up on the discourse, the *pro* analysis cannot account for the sloppy reading of the sentence in (1b).

In the literature, two major proposals of null Japanese arguments have been entertained: Verb-stranding VP-Ellipsis (VVPE) (Otani & Whitman 1991; Funakoshi 2013, 2016) and Argument Ellipsis (AE) (Oku 1998; Saito 2007). In the former, null arguments are derived from overt V-to-T movement followed by VP-ellipsis.¹ In the latter, arguments are directly deleted, and null arguments are created. As both of approaches are related to ellipsis, they correctly predict the availability of the sloppy reading in (1b) as in (2).²

- (2) a. VVPE: [_{TP} Ziroo [_{NegP} [_{VP} self’s car t_V] t_{NEG}] V(wash)+NEG+T]
 b. AE: [_{TP} Ziroo [_{NegP} [_{VP} [_{NP} self’s car] V(wash)] NEG] T]

As the noun phrase including a self-anaphor is in the elliptical sites, the structures in (2a) and (2b) can yield the sloppy reading. In the literature, the two major approaches of null Japanese arguments have been extended to the case of null disjunctions. In the next subsection, I mainly review Sakamoto’s (2015, 2016) analysis, who claims that null disjunctive elements are derived from AE, and Funakoshi’s (2013) analysis, who argues that they are created by the application of *pro* + VVPE.

1.1. The scope of a null disjunctive element

Goro & Akiba (2004) and Goro (2007) show that the scope interpretation on disjunctions is different between Japanese and English.

- (3) a. John didn’t speak French or Spanish (Or > Neg / Neg > Or)
 b. John-wa furansugo ka supeingo-o hanasa-na-kat-ta
 John-TOP French or Spanish-ACC speak-NEG-PST
 ‘John didn’t speak French or Spanish.’ (Or > Neg / *Neg > Or)
 (Goro 2007:3)

The sentence in (3a) shows that a disjunctive element *French or Spanish* in English has both wide and narrow scope readings regarding negation, that is, the sentence in (3a) is ambiguous.³ Conversely, the sentence in (3b) has a Japanese disjunctive element *furansugo ka supeingo* ‘French or Spanish’ which has only wide scope over negation.

¹For the analysis of VP-ellipsis in English, see Hankamer and Sag (1976) among others.

²See Oku (1998), Sakamoto (2015), Funakoshi (2016) among many others for the availability of the sloppy reading via ellipsis.

³In this paper, I call the phrase including disjunction (or) a disjunctive element.

On the basis of the unambiguity of the sentences (1a) that Goro discovered, Sakamoto (2015, 2016) shows an example of the wide scope of the null disjunctive element with respect to negation:

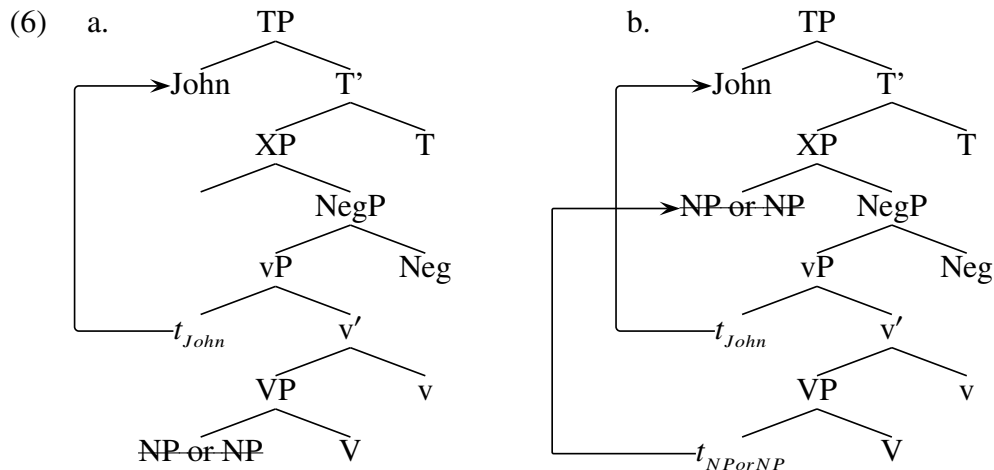
- (4) a. John-wa [*supeingo ka furansugo-o*] hanas-ana-i
 John-TOP Spanish or French-ACC speak-NEG-PRS
 ‘John does not speak Spanish or French.’
 b. Bill-mo Δ hanas-ana-i
 Bill-also speak-NEG-PRS
 lit. ‘Bill also does not speak Δ .’ (Or > Neg / *Neg > Or) (Sakamoto 2016:8)

In (4a), only the wide scope reading of the null disjunctive element is available: ‘John does not speak Spanish OR John does not speak French.’ This interpretation implies that the disjunctive element takes the obligatory wide scope over negation. In (4b), assume that the null disjunctive element *supeingo ka furansugo-o* ‘Spanish or French’ is in the null object position (= Δ) in the sentence. The sentence in (4b) has the wide scope interpretation of the null disjunctive element, and it means that Bill also does not speak Spanish OR Bill also does not speak French. Note that the sentence does not have the narrow scope reading (Bill also does not speak Spanish AND Bill also does not speak French). This suggests that the null disjunctive element *supeingo ka furansugo-o* ‘Spanish or French’ must take wide scope over negation.⁴ In (4b), Sakamoto (2015) claims that the null disjunctive element in the sentence is derived from not VVPE but the combination with Scrambling and AE (see Sakamoto 2015). However, Funakoshi (2013) presents counterexamples to the examples in (3b) and (4) as in (5b):

- (5) a. Mary-wa [*supeingo ka furansugo-o*] hanas-u ga,
 Mary-TOP Spanish or French-ACC speak-PRS but
 ‘Mary speaks Spanish or French, but’
 b. John-wa Δ hanas-ana-i
 John-TOP speak-NEG-PRS
 lit. ‘John doesn’t speak Δ .’ (*Or > Neg / Neg > Or) (Funakoshi 2013:13)

Contrary to (3b) and (4), the example in (5b) suggests that the null disjunctive element in the remnant clause always takes a narrow scope under negation. Funakoshi (2013) argues that the sentence in (5b) cannot be derived from AE. If AE were applied to the sentence in (5b) there would be no reason to prohibit AE from deleting the moved disjunctive element, that is, we predict that the sentence in (5b) will not only have the interpretation (Neg > Or) but also the interpretation (Or > Neg), contrary to the fact. Consider the derivation, as shown in (6).

⁴In (4b), the disjunction has the same scope reading as in (4a). When a second sentence has the same scope interpretation as a first sentence, I call the same scope ‘the scope parallelism’ in this paper.



AE admits that the disjunctive element is deleted before or after moving the disjunction as in (6a) and (6b) respectively. However, the derivation in (6b) needs to be blocked. If the element moved over the negation and was then deleted as in (6b), the sentence in (5b) also would have the meaning (Or > Neg). Hence, Funakoshi (2013) concludes that the null argument in (5b) is derived from not AE but a null pronoun *pro* (Kuroda 1965, among many others).⁵⁶ If the null argument is derived from the *pro*, he argues, the *pro* analysis can capture the obligatory narrow scope reading as in (7b). The *pro* is a null equivalent of the overt pronoun *sorera* ‘them’ in (7c).

⁵More precisely, Funakoshi (2013) claims that the null disjunctive element is derived from not only *pro* but also VVPE. If a disjunctive element is a PPI, this element must move out of the negation, and cannot be inside vP (or VP), that is, this constituent cannot be applied to VVPE. That is why the disjunctive element cannot be deleted by VVPE, and the null element cannot take the wide scope reading in (5b).

⁶A reviewer suggests that (5b) does not have a wide scope reading, because *ga* ‘but’ cannot connect the same propositions. This applies to English.

- (1) Hanako ate sushi or soba, **BUT** Miki did not eat sushi or soba (*Or > Neg / Neg > Or)

When the first sentence includes the exclusive reading (Hanako ate either sushi or soba, she did not eat both), the second sentence must not hold the exclusive reading, that is, we can get only the interpretation: Miki did not eat them. If this explanation is plausible, Funakoshi (2013) cannot conclude that the null disjunctive element is not derived from AE. In (5a), only the exclusive reading is available, and in (5), *ga* ‘but’ connects two propositions. In this situation, there is a possibility to account for the reading in (5b). It is that AE is still available, but we cannot obtain the wide scope reading due to the constraint on *ga* ‘but’. However, it seems that the same rule as in English does not hold in Japanese. Consider the sentences below.

- (2) a. Mary-wa [supeingo ka furansugo-o] hanas-u ga
 Mary-TOP Spanish or French-ACC speak-PRS but
 ‘Mary speaks Spanish or French, but’
 b. John-wa [supeingo ka furansugo-o] hanas-ana-i
 John-TOP Spanish or French-ACC speak-NEG-PRS
 ‘John doesn’t speak Spanish or French.’ (Or > Neg / *Neg > Or) (Funakoshi 2013:14)

In (2a), only the exclusive reading is accessible, that is, Mary speaks either Spanish or French, and she does not speak both. In (2), *ga* ‘but’ combines two sentences. If the reviewer’s argument were on the right track, the second sentence would not have the exclusive reading, contrary to the fact. Rather, (2b) has only the exclusive reading (Or > Neg).

- (7) a. Mary-wa [supeingo ka furansugo-o] hanas-u ga
 Mary-TOP Spanish or French-ACC speak-PRS but
 ‘Mary speaks Spanish or French, but’
 b. John-wa *pro* hanas-ana-i
 John-TOP speak-NEG-PRS
 lit. ‘John doesn’t speak.’ (*Or > Neg / Neg > Or)
 c. John-wa sorera-o hanas-ana-i
 John-TOP them-ACC speak-NEG-PRS
 ‘John doesn’t speak them.’

The sentence in (7b), parallel to (7c), takes the obligatory narrow scope under negation, that is, ‘John does not speak them.’ Hence, Funakoshi (2013) claims that a null disjunctive element is associated with *pro*, and this phrase has an obligatory narrow scope reading when it is null.

However, Funakoshi’s (2013) analysis faces a problem. As Sakamoto (2016) indicates, the *pro* approach cannot explain the data in (8).

- (8) a. John scolded either Mary or Nancy
 b. Bill scolded her, too
 c. John scolded either Mary or Nancy, and Bill did [_{VP}e], too (Sakamoto 2016:6)

The object pronoun *her* in (8b) can refer to the person whom John scolded, and cannot indicate the person whom John did not scold. We obtain the following interpretation alone: if John scolded Mary, Bill also scolded Mary. Conversely, the sentence in (8c) can be interpreted as obtaining the disjunctive reading, namely, we can understand that Bill scolded Mary or Nancy. If the null disjunctive element in (8c) is derived from *pro*, we cannot predict that the sentence yields the disjunctive reading.

Keeping the discussion in mind, consider the following example in (9).

- (9) a. Taroo-wa [ringo ka banana-o] tabe-na-i
 Taroo-TOP apple or banana-ACC eat-NEG-PRS
 ‘Taroo does not eat apples or bananas.’
 b. Ziroo-mo Δ tabe-na-i
 Ziroo-also eat-NEG-PRS
 lit. ‘Ziroo also does not eat Δ.’ (Or > Neg / *Neg > Or)
 c. Ziroo-mo sore-o tabe-na-i
 Ziroo-also it-ACC eat-NEG-PRS
 ‘Ziroo also does not eat it.’

Note that the sentence in (9b) only has the disjunctive reading: ‘Ziroo also does not eat apples OR Ziroo also does not eat bananas.’ Under Funakoshi’s analysis, the sentence in (9b) should have the same interpretation as the sentence in (9c), because he claims that the null disjunctive element must be derived from *pro*. However, the sentence in (9c) cannot be interpreted as having the disjunctive reading, namely, the sentence means that if Taroo does not eat apples, Bill also does not eat the apples which Taroo does not eat. As the *pro* analysis cannot expect the disjunctive reading in (9b), Sakamoto (2016) claims that the reading is consistent with ellipsis rather than with *pro*.

In this section, we have seen that Japanese has two conflicting data of the null disjunctive element in (4) and (5). We have to explain what the interpretations are derived from. In Section 2, I review the unified explanation of null disjunctive elements in Maeda (2017). Her analysis can account for the data in (4b) and (5b), but I present new examples that are problematic for her analysis. In Section 3, I show that the interpretation of null disjunctive elements is related to a contrastive focus. Based on the discussion, I propose a generalization of the interpretation of null disjunctive elements. In Section 4, to explain the problematic examples for Maeda, I claim that the null disjunctive elements are derived from [E]-feature-driven ellipsis (Aelbrecht 2010) and *Morphological Merger* (henceforce ‘MM’) (Shibata 2015). Section 5 is the conclusion of this paper.

2. A possible analysis on the incompatible data in Maeda (2017)

Maeda (2017) attempts to give an explanation to the conflicting data in (4) and (5). Let us compare (4) and (5), repeated here as (10) and (11) respectively.

- (10) a. John-wa [supeingo ka furansugo-o] hanas-ana-i
 John-TOP Spanish or French-ACC speak-NEG-PRS
 ‘John does not speak Spanish or French.’
 b. Bill-mo Δ hanas-ana-i
 Bill-also speak-NEG-PRS
 lit. ‘Bill also does not speak Δ .’ (Or > Neg / *Neg > Or) (Sakamoto 2016:8)
- (11) a. Mary-wa [supeingo ka furansugo-o] hanas-u ga,
 Mary-TOP Spanish or French-ACC speak-PRS but
 ‘Mary speaks Spanish or French, but’
 b. John-wa Δ hanas-ana-i
 John-TOP speak-NEG-PRS
 lit. ‘John doesn’t speak Δ .’ (*Or > Neg / Neg > Or) (Funakoshi 2013:13)

(10b) has only wide scope interpretation of disjunction. However, (11b) has only narrow scope interpretation of disjunction. To explain the interpretations of these data, Maeda (2017) proposes that the three mechanisms can explain the interpretation of the null disjunctive elements: MM (Shibata 2015), the derivational PF-deletion analysis (Takahashi 2017) and the Scope Economy and Parallelism (Fox 2000). First, I will introduce Shibata’s (2015) analysis.

2.1. Shibata (2015)

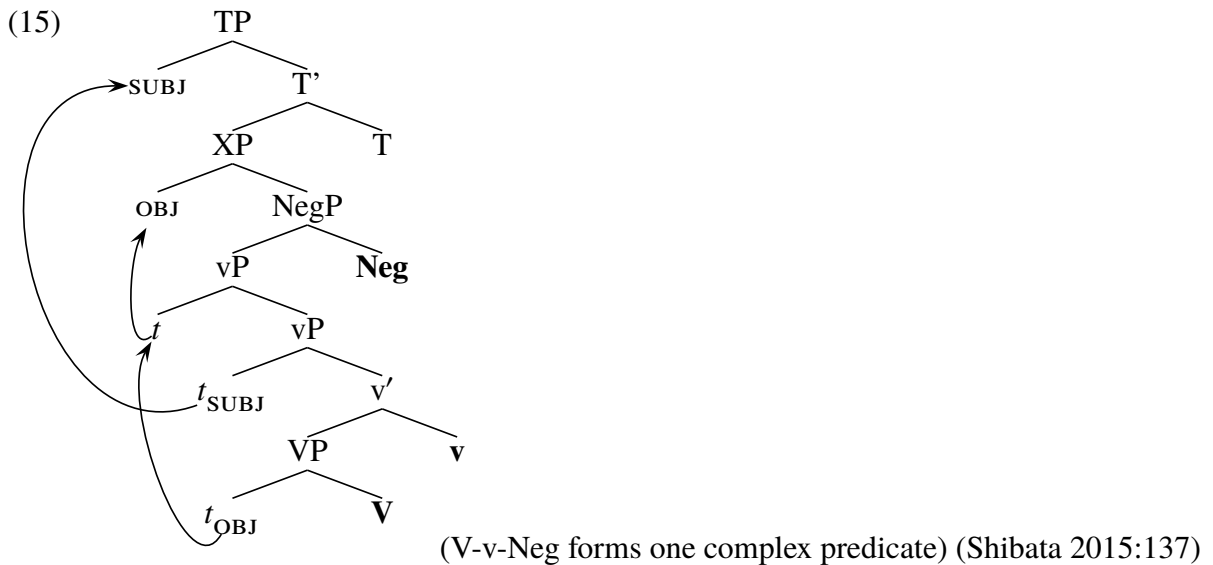
Shibata (2015) attempts to explain why Japanese disjunctions takes an obligatory wide scope over the negation. The relevant data are shown in (12):

- (12) Taroo-wa [ringo ka banana-o] tabe-nakat-ta
 Taroo-TOP apple or banana-ACC eat-NEG-PST
 ‘Taroo did not eat apples or bananas.’ (Or > Neg / *Neg > Or)

This sentence has the obligatory wide scope interpretation. Shibata (2015) claims that MM (Halle 1990, Halle & Marantz 1993) derives a Japanese complex predicate (V-v-neg) from a predicative head. Moreover, he proposes that MM must obey structural adjacency. We show the definition of MM and structural adjacency in (13) and (14) respectively.

- (13) *Complex head formation through MM*
 Head X and Y form one complex head through morphological merger if and only if X and Y are structurally adjacent. (Shibata 2015:146)
- (14) *Structural Adjacency*
 X and Y are structurally adjacent if and only if there is no overt Z, which is asymmetrically c-commanded by X and asymmetrically c-commands Y. (Shibata 2015:164)

He argues that structural adjacency should be satisfied before Vocabulary Insertion (VI), which is the operation of the insertion of the phonetic information. He assumes that VI happens between syntax and PF. As seen from the head in vP, **overt** left-side elements (e.g., subject and adjunct) interfere with structural adjacency. Hence, the **overt** elements in vP must undergo syntactic movement out of vP in Japanese as shown in (15).



Additionally, Shibata (2015) adopts Trace Conversion (Fox 2003), which consists of two syntactic operations.

- (16) Trace Conversion
- Variable Insertion: $(\text{Det}) \text{ Pred} \rightarrow (\text{Det}) [\text{Pred } \lambda y (y = x)]$
 - Determiner Replacement: $(\text{Det}) \text{ Pred} \rightarrow \text{the } [\text{Pred } \lambda y (y = x)]$
- (Shibata 2015:5)

In (16a), variable insertion inserts a variable into the lower copy, and determiner replacement replaces a determiner with a definite description in (16b). Note that the Determiner Replacement acts on determiners, and DP-external operators are not sensitive to Trace Conversion. Following Chierchia et al. (2012), Shibata (2015) claims that a DP-external silent exhaustive operator adjoins to the disjunction, and then the disjunction becomes interpreted disjunctively.

Chierchia et al. (2012) assume that the scalar items including disjunction are interpreted with the operator, and this operator acyclically attaches to disjunctive phrases. Moreover, it is assumed that the operator can adhere to the disjunction before movement. Given that the operator sticks to these phrases before moving out of negation, and then this phrase moves over negation, we can get the LF-representation roughly schematized in (17b) (example (12) is repeated below as (17a)):

- (17) a. Taroo-wa [ringo ka banana-o] tabe-na-katta
 Taroo-TOP apple or banana-ACC eat-NEG-PST
 ‘Taroo did not eat apples or bananas.’ (Or > Neg / *Neg > Or)
- b. [_{TP} Taroo [_{XP} O_{ALT}(apples or bananas) [_{NegP} [_{VP} O_{ALT}(apples or bananas) V] NEG]] T]

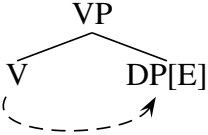
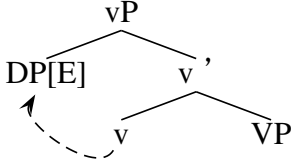
This derivation is no problem for syntax, but the LF-representation is illegitimate for semantics, because the two same operators are in different positions. This derivation is not desirable, so Shibata (2015) claims that the operator acyclically adjoins to the disjunction after movement, as in (18).

- (18) [_{TP} Taroo [_{XP} O_{ALT}(apples or bananas) [_{NegP} [_{VP}(apples or bananas) V] NEG]] T]

This derivation is no problem for the syntax, and the LF-representation is also desirable for the semantics. In addition, the silent operator acyclically adheres to the disjunctions after movement, so it is not affected by Trace Conversion. That is why the disjunctions with the silent operator are interpreted as the wide scope reading.

2.2. Takahashi (2017)

Maeda (2017) attempts to explain why a null disjunctive element has obligatory narrow scope under negation as in (11b). Here, she adopts the derivational PF deletion analysis of AE (Takahashi 2017), which is related with the [E]-feature (Merchant 2001, Aelbrecht 2010). The [E]-feature is an elliptical feature, and if the [E]-feature sticks to an element in the course of syntactic derivation, the element is deleted at PF. Following Takahashi (2017), she assumes that, when an element merges with its theta-role assigner (a licenser), the assigner can give the [E]-feature to it. For example, when the object is merged with V, V can assign the [E]-feature to the object, and the [E]-feature can be allocated to the subject by v as shown in (19).

- (19) a.  (Object argument ellipsis)
- b.  (Subject argument ellipsis)

Additionally, Maeda also adopts Shibata's (2015) proposal, where the overt elements must go out of the negation because of structural adjacency. Shibata (2015) assumes that when a vP-internal

constituent goes out of vP, its copy (e.g., trace) does not interfere with MM. Since the subject or object is [E]-marked at the overt syntax, the assignment of the [E]-feature happens before VI. Given that neither traces nor the deleted constituents have phonetic content, she assumes that these elements can be in vP. Once an element with the [E]-feature is deleted by AE, it becomes a non-overt element, so this element does not need to move. Hence, a null disjunctive element obligatory takes the narrow scope under negation, and we can attain the appropriate interpretation as in (11).

According to Maeda (2017), the effect by [E]-marking only allows disjunctive elements to stay in-situ, but [E]-marking does not forbid them from going out of the negation, that is, it is optional to move or not. However, the sentences in (10) and (11) have the obligatory wide and narrow scope interpretation respectively. If the [E]-marked constituents had the optionality of movement, we would incorrectly expect that even (10) would have narrow scope interpretation. In order to explain the interpretations in (10) and (11) correctly, Maeda proposes that the obligatory both scope reading on disjunction must follow the constraints at the syntax and semantics interface, that is, Scope Economy and Parallelism (Fox 2000).

2.3. Fox (2000)

Fox (2000) proposes that an economy principle restricts the syntactic derivation: if an element is applied to the movement operation, the movement must yield a new interpretation at the interface. Under this principle, covert movement such as Quantifier Raising (henceforth ‘QR’) must yield a new interpretation for semantics, because this movement does not contribute to the phonetic side. Fox (2000) states the definition of Scope Economy.

- (20) *Scope Economy*
Covert optional operations (i.e., Quantifier Raising and Quantifier Lowering) cannot be scopally vacuous (i.e., they must reverse the relative scope of two noncommutative quantificational expressions). (Fox 2000:75)

According to the Scope Economy, if the covert movement does not change scope relations, the sentence is viewed as *scopally uninformative*, and the sentence is not allowed by Scope Economy. To keep the principle, the covert movement should produce a new interpretation.

In addition to Scope Economy, Fox (2000) proposes the Parallelism condition. This condition states that, when the ellipsis is applied to a constituent in a sentence, the antecedent and elliptical sentence have the same syntactic representation at LF.⁷ In other words, this principle indicates that the antecedent and deleted sentences need to have the parallel scope under ellipsis. The definition of Parallelism condition is below in (21).

- (21) *Parallelism*
In an ellipsis/phonological reduction construction the scopal relationship among the elements in β A must be identical to the scopal relationship among the parallel elements in β E. (Fox 2000:32)

Under Scope Economy and Parallelism, we can make a prediction. Suppose that there are two sentences, and we call the sentences A and B respectively. We predict that if the sentence

⁷To apply the ellipsis operation to an argument in a sentence, it is necessary to have the antecedent sentence. See Hankamer & Sag (1976).

A is scopally informative, that is, the Scope Economy is satisfied, the Parallelism admits an inverse scope in the sentence B. On the contrary, when the sentence A is scopally uninformative, namely, the covert movement does not yield any new interpretation, sentence B cannot have an inverse scope reading because of the Parallelism principle. Using VP-ellipsis data in English, Fox (2000) shows that the above prediction is plausible in English. Based on Fox's (2000) prediction, Takahashi (2008) tries to examine whether the prediction is also applied to Japanese, especially AE. Here, consider AE in Japanese for example as in (22) and (23).

- (22) a. Taitei-no sensei-o zyosi-no dareka-ga sonkeisiteiru
 most-GEN teacher-ACC girl-GEN someone-NOM respect
 'Most teachers, some girl respects.'
 b. Dansi-no dareka-mo Δ sonkeisiteiru
 boy-GEN someone-ALSO respect
 'Some boy respects, too.' (Takahashi 2008:312)
- (23) a. Taitei-no sensei-o zyosi-no dareka-ga sonkeisiteiru
 most-GEN teacher-ACC girl-GEN someone-NOM respect
 'Most teachers, some girl respects.'
 b. Taroo-mo Δ sonkeisiteiru
 Taroo-also respect
 'Taroo respects, too.' (Takahashi 2008:314)

Even though Japanese is said to lack covert movement such as QR (Yatsushiro 2001), by applying scrambling to a sentence, we can get not only the wide scope reading of the subject (*zyosi-no dareka-ga* 'some girl') over that of the object (*taitei-no sensei-o* 'most teachers') but also the wide scope reading of the object over that of the subject as in (22a). The former reading means that there is a girl who respects most teachers (the wide scope reading of the subject), and the latter reading is that most teachers have a female admirer (the wide scope reading of the object). According to Takahashi (2008), the interpretation in (22b) has the parallel scope in (22a). For example, as the sentence in (22a) has a wider scope reading of the subject than that of object, the following sentence in (22b) also has the same scope reading. Note that, even though the clause in (22b) has both scope interpretations, it cannot be interpreted as the opposite scope reading to the antecedent clause, that is, when the antecedent is interpreted as having the wide scope reading of the subject, the following sentence cannot be interpreted as the wide scope reading of the object.

Conversely, when we replace the subject quantifier (*Dansi-no dareka-mo* 'some boy') in (22b) with the proper noun *Taroo* in (23b), the behavior of scope interpretation differs. The sentence in (23a) itself is potentially ambiguous. When the sentence in (23b) follows the sentence in (23a), however, we only get a surface scope reading: the sentence in (23a) suddenly becomes unambiguous. That is because QR cannot operate on the second sentence in (23b) due to the Scope Economy, so the sentence has the obligatory wide scope reading of the subject. Moreover, due to the parallelism principle, the antecedent clause displays the parallel wide scope reading of the subject. That is why when at least each of them is scopally uninformative, the same surface-scope effect is shown as in (23).

In agreement with Takahashi (2008), Maeda (2017) claims that the same constraints are applied to the null disjunctive elements such as in (10) and (11). Even though disjunctions in an

object position takes wide scope over negation such as in (17a), the movement of disjunctions does not change the word order. As the movement does not contribute to the phonetic side, the movement needs to yield a new interpretation for semantics. Moreover, AE not only obeys the Scope Economy but also the Parallelism principle. Bearing this in mind, let us consider the following the schema.

- (24) a. antecedent [[A or B] V-NEG] (= 10)
 ellipsis [[Δ] V-NEG] (Or > Neg / *Neg > Or)
- b. antecedent [[A or B] V] (= 11b)
 ellipsis [[Δ] V-NEG] (*Or > Neg / Neg > Or)
- (Maeda 2017:22)

In (24a), the disjunctive elements take a wide scope over negation. Following Shibata (2015), the elements must move out of NegP because of the structural adjacency, and then the acyclic DP-external operator attaches to the elements. As this operator prohibits the elements from taking the narrow scope under negation, the clause has the obligatory wide scope reading of the null disjunctive element with respect to negation. Moreover, the following clause in (24a) is not restricted by the Scope Economy. As the elliptical clause should obey the Parallelism, the clause is interpreted as having the parallel wide scope reading. Conversely, the antecedent clause in (24b) is scopally uninformative, so it is only interpreted as the surface scope reading. Simultaneously, the elided clause shows the same scope as the antecedent clause due to the Parallelism. Hence, we predict that the sentence in (11) displays the obligatory narrow scope reading, and the prediction is borne out. That is why Maeda's (2017) analysis is sufficient to explain the data with a null disjunctive element such as (10) and (11).

However, Maeda's analysis makes an incorrect prediction: the antecedent and the elided sentence with a null disjunctive element must have the same scope interpretation due to Parallelism. As shown below, her explanation is not always applied to the clause with null disjunctive elements:

- (25) a. Taroo-wa Mami-ni tewatashi-de [tegami ka kozutumi-o] age-ta
 Taroo-TOP Mami-DAT hand-by letter or package-ACC give-PST
 'Taroo gave Mami either a letter or package by hand.'
- b. (Demo,) Ziroo-wa Saki-ni tewatashi-de Δ age-na-katta
 (However,) Ziroo-TOP Saki-DAT hand-by give-NEG-PST
 '(On the other hand / However,) Ziroo did not give Saki Δ by hand.'
- (Or > Neg / Neg > Or)

The sentence in (25a) is scopally uninformative, and the disjunctive element (*tegami ka kozutumi* 'letter or package') cannot covertly move out of negation. In the example in (25), her analysis predicts that the sentence in (25b) is only interpreted as having the narrow scope reading, because the the null disjunctive elements must take the narrow scope under negation and then the second clause in (25b) must have the same scope interpretation as in (25a) due to Parallelism, contrary to the facts. As even her analysis incorrectly explains the data with a disjunctive element such as (25), we will seek a new account for the examples in (25) in the next section.

3. Analysis of null disjunctive elements

The interpretation in (25) is (Or > Neg / Neg > Or), and (11) is (*Or > Neg / Neg > Or). One obvious difference between (25) and (11) is that only (25) has a contrastive focus. Consider the minimal pairs as in (26) and (27):

- (26) a. Taroo-wa **MAMI-NI** [tegami ka kozutumi-o] age-ta
 Taroo-TOP **Mami**-DAT letter or package-ACC give-PST
 ‘Taroo gave Mami either a letter or package.’
 b. (Demo,) Ziroo-wa **SAKI-NI** Δ age-nakat-ta
 (However,) Ziroo-TOP **Saki**-DAT give-NEG-PST
 ‘(However,) Ziroo did not give Saki Δ .’ (Or > Neg / Neg > Or)
- (27) a. Taroo-wa **Mami-ni** [tegami ka kozutumi]-o age-ta
 Taroo-TOP **Mami**-DAT letter or package-ACC give-PST
 ‘Taroo gave Mami either a letter or package.’
 b. (Demo,) Ziroo-wa **Mami-ni** Δ age-nakat-ta
 (However,) Ziroo-TOP **Mami**-DAT give-NEG-PST
 ‘(However,) Ziroo did not give Mami Δ .’ (*Or > Neg / Neg > Or)

The object in (26b) receives accusative case (*tegami ka kozutumi-o* ‘letter or package-ACC’), and this element is null. We can obtain an ambiguous interpretation thereby: ‘Ziroo did not give Saki a letter OR Ziroo did not give Mami a package’ (the null disjunctive reading) and ‘Ziroo did not give Mami a letter AND Ziroo did not give Saki a package’ (the null conjunctive reading). On the other hand, in (27), the accusative disjunctive element in the second sentence is also null, but this sentence does not have an overt contrastive object. The sentence only may be interpreted under the null conjunctive reading: ‘Ziroo did not give Mami a letter AND Ziroo did not give Mami a package.’

A contrastive focus makes the null disjunctive reading in a negative sentence obtainable. Hence, we reach the following generalization on the interaction between null disjunctive elements and negation shown in (28):

- (28) A null disjunctive element in the negative sentence can have a **scope ambiguity** only if an overt contrastive argument and the null disjunctive element appear in the sentence.

We must account for the interpretation of a null disjunctive element in a negative sentence:

- (29) a. A null disjunctive element can take both scopes with respect to negation when the null disjunctive element and contrastive focus appear in a negative sentence.
 b. A null disjunctive element in a negative sentence without a contrastive element takes obligatory narrow scope under negation.

Following Maeda (2017), we adopt Shibata’s (2015) analysis. Moreover, in accordance with Aelbrecht (2010), I propose that contrastive focus makes the [E]-feature active through agreement. In the next subsection, I review Aelbrecht (2010).

3.1. Making the [E]-Feature active through agreement (Aelbrecht 2010)

Aelbrecht (2010) attempts to present the mechanism of ellipsis. Consider an example in the case of VP-ellipsis in English.

- (30) a. * I hadn't been thinking about it, but I recall Morgan having been ~~{thinking about it}~~
 b. I hadn't been thinking about it, but I recall Morgan having been thinking about it
 c. I hadn't been thinking about that. - Well, you **should** have been ~~{thinking about that}~~!

(Aelbrecht 2010:92)

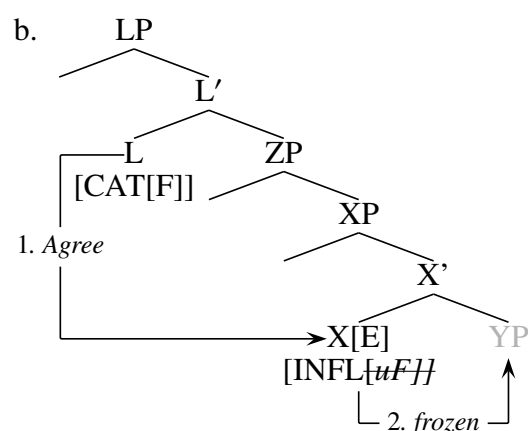
The sentence in (30a) is ungrammatical when the phrase *thinking about it* is deleted. However, it is not the case that the sentence has a natural ungrammaticality, as shown in (30b). Without deleting the phrase, the sentence is perfect. This means that ellipsis causes the sentence to be ungrammatical. Once the modal *should* is introduced to the clause, even if the phrase *thinking about it* is deleted as in (30c), the sentence remains acceptable. Thus, the finite modal *should* licenses VP-ellipsis but not ellipsis of the nonfinite auxiliary *been*. Even though some elements intervene between the licenser and the ellipsis site, the sentence does not become ungrammatical. Therefore, Aelbrecht (2010) proposed that the ellipsis site need not be adjacent to the licenser, and that the ellipsis is related to the agreement between an [E]-feature and the ellipsis licensing head as in (31).

- (31) a. Ellipsis is licensed through an Agree relation between an [E]-feature and the ellipsis licensing head.
 b. Ellipsis occurs in the course of the derivation, as soon as the licensing head is merged. At this point, the ellipsis site becomes inaccessible for any further syntactic operations, and vocabulary insertion at PF is blocked.

(Aelbrecht 2010:87)

I will confirm how the mechanism operates with regard to ellipsis through agreement. The tree diagram is as follows (the gray part means the part in question will be phonologically empty).

- (32) a. [E] CAT [E / X]
 INFL [*uF*]
 SEL [X]



In (32a), following Merchant (2001, 2004), Aelbrecht (2010) assumes that the category feature decides the category of a lexical entry. The inflectional feature is an uninterpretable feature, and this feature must be checked by the category feature of another head. If the feature of the other

head checks the uninterpretable feature of the [E]-feature via Agree, the [E]-feature becomes active. As a result, the complement of the head with [E] is frozen for any syntactic operation due to the effect of the [E]-feature. The selectional feature specifies what categories the [E]-feature sticks to. As shown in (32a), the category of [E] is X. This means that the category of the [E]-feature is X and the feature is introduced into the lexicon. Next, the inflectional feature is [*uF*], which must be checked by the category feature [F]. As the selectional feature is X, the [E] sticks to the head of X.

Shifting the discussion from (32a) to (32b), the [E]-feature attaches to the head X. When the L, which has category features [F], is merged, the Agree relation is already satisfied, because the L c-commands the X that has the [E]-feature. Thus, the uninterpretable feature [*uF*] of the [E]-feature is checked by the category feature of the L via Agree. After the Agree, the complement of [E] (YP) is deleted by the effect of the [E]-feature and the YP is not pronounced.

In another example that we have examined, the licenser (contrastive elements) and the ellipsis site are not always in local relation. For instance, consider the following data in (33).

- (33) a. Taroo-wa **MAMI-NI** tewatashi-de [tegami ka kozutumi-o] age-ta
 Taroo-TOP **Mami**-DAT hand-by letter or package-ACC give-PST
 ‘Taroo gave Mami either a letter or package by hand.’
 b. (Demo,) Ziroo-wa **SAKI-NI** tewatashi-de Δ age-nakat-ta
 (However,) Ziroo-TOP **Saki**-DAT hand-by give-NEG-PST
 ‘(However,) Ziroo did not give Saki Δ by hand.’ (Or > Neg / Neg > Or)
- (34) a. Taroo-wa **Mami-ni** tewatashi-de [tegami ka kozutumi-o] age-ta
 Taroo-TOP **Mami**-DAT hand-by letter or package-ACC give-PST
 ‘Taroo gave Mami either a letter or package by hand.’
 b. (Demo,) Ziroo-wa **Mami-ni** tewatashi-de Δ age-nakat-ta
 (However) Ziroo-TOP **Mami**-DAT hand-by give-NEG-PST
 ‘(However,) Ziroo did not give Mami Δ by hand.’ (*Or > Neg / Neg > Or)

In (33b), we assume that this ellipsis of licenser is of a contrastive element (*Saki*). In the sentence, the manner adverb (*tewatashi-de* ‘by hand’) intervenes between the licenser (*Saki*) and the ellipsis site (*tegami ka kozutumi-o* ‘letter or package-ACC’). The sentence has an ambiguous interpretation (the null disjunctive reading and the null conjunctive reading). Note that the sentence in (33b) follows the generalization. If contrastive focus does not occur in the sentence, as in (33b), the interpretation will not lose the ambiguous interpretation. In fact, the sentence in (34b), which does not contain contrastive focus, does not allow ambiguous interpretations. Here, I propose that the null disjunctive element in a negative sentence with a contrastive focus is derived from PF-deletion with the [E]-feature, which requires agreement with contrastive focus and the [E]-feature.⁸ In the next section, I analyze null disjunctive elements using MM (Shibata 2015) and the [E]-feature (Aelbrecht 2010).

⁸In this paper, I call this ellipsis ‘Agree-driven ellipsis.’

3.2. Analysis of the null disjunctive interpretation

I attempt to account for the null disjunctive reading, and illustrate the following mechanism of Agree-driven ellipsis.⁹

- (35) a. The [E]-feature has uninterpretable feature [*u contrastive*]. Following and slightly modifying Aelbrecht (2010), the uninterpretable feature must be checked by the contrastive element with the category feature [*contrastive*] through Agree. Agree makes the [E]-feature active; the complement of [E] is then frozen for any syntactic operation.¹⁰
- b. The [E]-feature is an optional feature; thus, the feature can attach to the head before or after movement.
- c. Following Maeda (2017), the elided elements by the [E]-feature can be in-situ; that is, the element is invisible to structural adjacency.
- d. If a null disjunctive element is in a negative sentence without a contrastive focus, I assume that the null disjunctive element in the sentence is derived from LF-copy (Saito 2017) or *pro* (Funakoshi 2013).¹¹

We examine how a null disjunctive element is derived from Agree-driven ellipsis. We first observe the examples of a null accusative disjunction. We repeat the example in (33) as (36).

(36) A Null Accusative Disjunction

- a. Taroo-wa **MAMI-NI** [tegami ka kozutumi-o] age-ta
 Taroo-TOP **Mami-DAT** letter or package-ACC give-PST
 ‘Taroo gave Mami either a letter or package.’
- b. (Demo,) Ziroo-wa **SAKI-NI** Δ age-nakat-ta
 (However,) Ziroo-TOP **Saki-DAT** give-NEG-PST
 ‘(However,) Ziroo did not give Saki Δ.’

(Or > Neg / Neg > Or)

In (36b), the null disjunctive and null conjunctive readings are available (Ziroo did not give Saki a letter OR Ziroo did not give Saki a package / Ziroo did not give Saki a letter AND Ziroo did not give Saki a package, respectively). Here, since the contrastive element appears in the sentence, we suppose that the null disjunctive element derives from Agree-driven ellipsis. We presume the [E]-feature is an optional feature, so the feature can hold to the head of D before or after movement for MM. Consider first the case that the feature is introduced into the syntactic structure after movement. We illustrate the diagram in (37).¹²

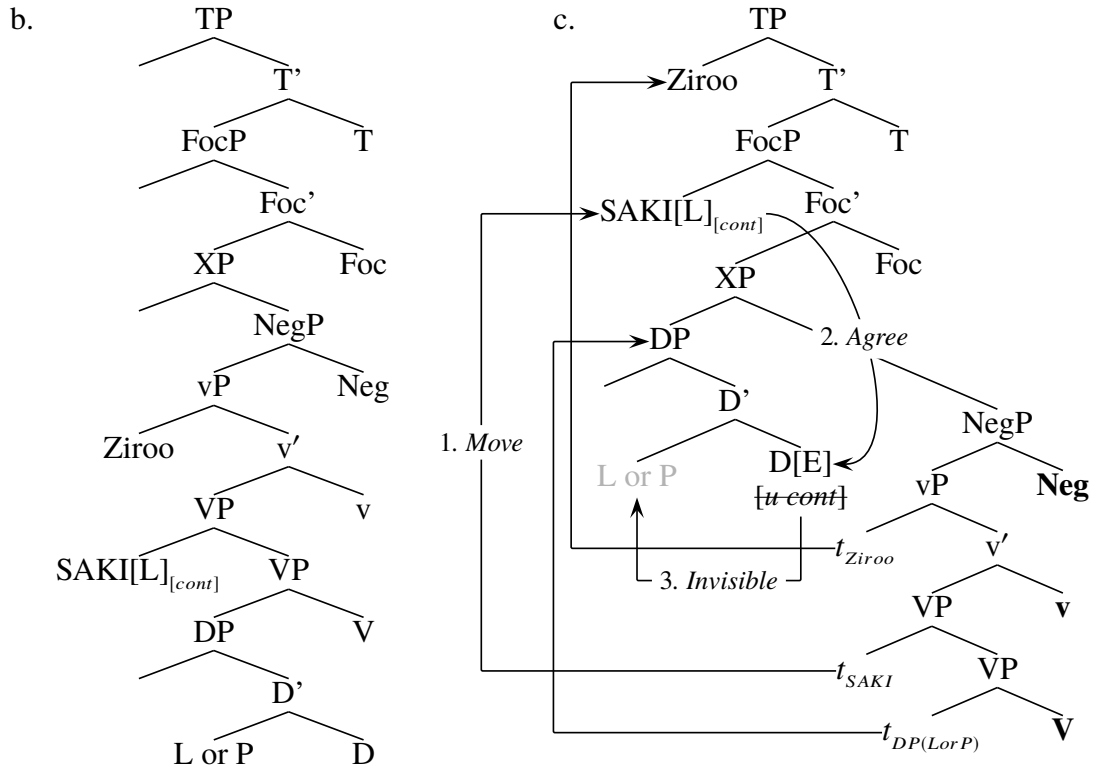
⁹ I assume that the silent operator is merged with disjunctions in the above NegP before Agree. If the Agree operation preceded the merger of the silent operator, the frozen disjunctions would block any further syntactic operation. If this assumption is appropriate, we correctly predict that the elements will not take the narrow scope under negation.

¹⁰ The [E]-feature sticks to the category of head; thus, the selectional feature is, for instance, [D].

¹¹ In this study, I have decided not to follow an analysis of null disjunctive element in relation to non-contrastive elements, because both approaches can explain the interpretation of null disjunctive element in a negative sentence without a contrastive focus. In addition to this, adapting either LF-copy or *pro* is not the main focus of this paper.

¹² I will skip V' level in the diagram, because V' level is not important in this discussion.

- (37) a. [E] CAT [E / D]
INFL [*u contrastive*]
SEL [D]

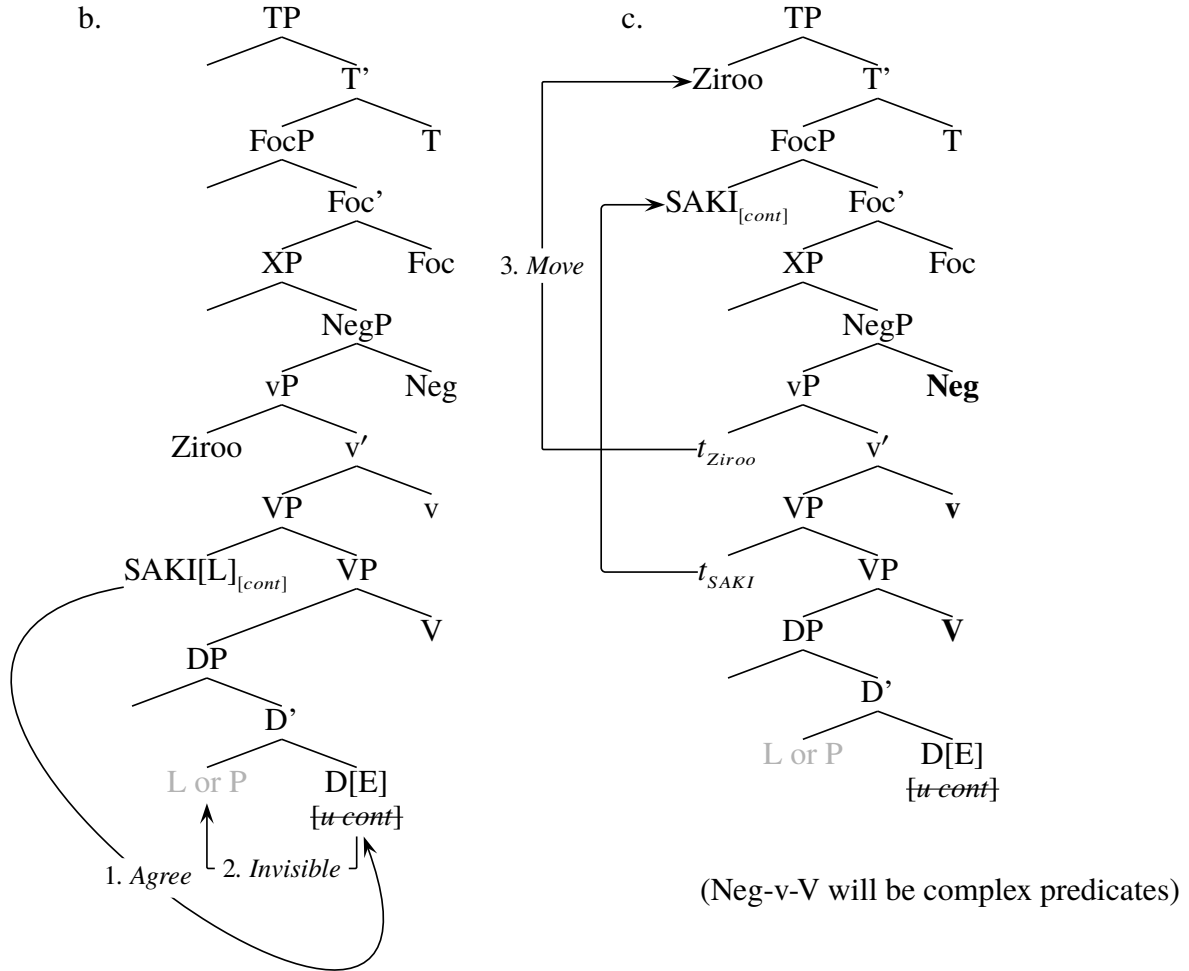


(Neg-v-V will be complex predicates)

As presented in (37a), we assume that the property of the [E]-feature is that the category feature is [D], the inflection is [*u contrastive*], and the selection is [D]. We suppose that the base-generation of the sentence in (36b) is as in the schema in (37b). Assume that the [E]-feature does not appear in the structure at that time. All the elements in vP except the head must obey structural adjacency, and the elements must rise above NegP in (37c) (1. *Move*). After this movement, the [E]-feature holds to the D-head. At this moment, because the Agree relation between the category feature [*contrastive*] of licenser (SAKI) and the uninterpretable feature [*u contrastive*] of [E] is fulfilled, the uninterpretable feature must be checked by the category feature via Agree (2. *Agree*). As the [E]-feature becomes active, the [E]-feature makes the disjunctive element (L or P) frozen for any further syntactic operation and covert (3. *Invisible*). As shown in (37c), the disjunctive element is above NegP; that is, the element should take wide scope with respect to negation. Therefore, the wide scope reading of the null disjunctive element over negation (= the null disjunctive reading) is accessible to sentence (36b).

Further, consider the [E]-feature to be on the D-head before movement. The mechanism is as follows in (38).

- (38) a. [E] CAT [E / D]
INFL [*u contrastive*]
SEL [D]



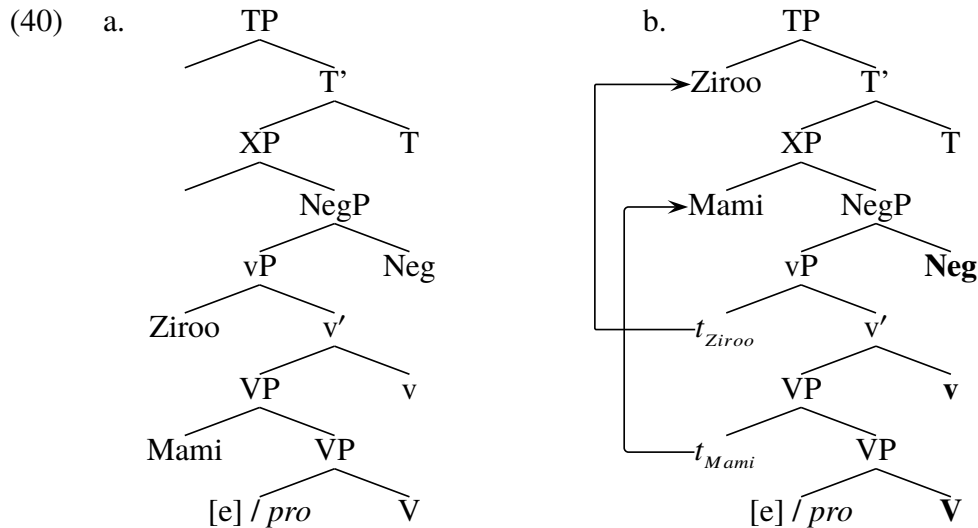
The property of [E] is the same as in (37a); I assume that the [E]-feature is introduced into the syntactic structure and sticks to the D-head as shown in (38b). As the Agree relation between the category feature of the licenser (*Saki*) and the uninterpretable feature of the [E]-feature is satisfied at this time, the uninterpretable feature is checked by the category feature of the licenser (1. *Agree*). Since the [E]-feature becomes active, the [E] makes the disjunctive element (L or P) invisible and covert (2. *Invisible*). As the disjunctive element is not overt, the element does not obey structural adjacency and can stay in-situ. The position of the element is inside the scope of negation, so the element takes narrow scope under negation in sentence (36b). On the other hand, the other elements in vP (e.g., subject, contrastive genitive object) are overt, so these elements, except for the head, must rise above NegP (3. *Move*). If the derivation in (38b) and (38c) is plausible, we expect that the sentence takes the narrow scope reading of the null disjunctive element with respect to negation, and this expectation is consistent with the interpretation of (36b). That is why, assuming the null disjunctive element is derived from Agree-driven ellipsis, we accurately expect the sentence in (36b) to reflect an ambiguous interpretation.

We also consider the case that a null disjunctive element is in a negative sentence that does not include contrastive focus. We repeat the example in (27) as (39).

- (39) a. Taroo-wa **Mami-ni** [tegami ka kozutumi-o] age-ta
 Taroo-TOP **Mami-DAT** letter or package-ACC give-PST
 ‘Taroo gave Mami either a letter or package.’
- b. (Demo,) Ziroo-wa **Mami-ni** Δ age-nakat-ta
 (However) Ziroo-TOP **Mami-DAT** give-NEG-PST
 ‘(However,) Ziroo did not give Saki Δ.’

(*Or > Neg / Neg > Or)

In (39b), the sentence is interpreted as having the null conjunctive reading alone: ‘Ziroo did not give Mami a letter AND Ziroo did not give Mami a package.’ As mentioned in (35d), we assume that the null argument in the object position (= Δ) is not derived from Agree-driven ellipsis, because the uninterpretable feature of [E]-feature must be checked by only the category feature of contrastive elements. Thus, following Saito (2017) or Funakoshi (2013), we adopt the LF-copy or *pro* analysis. This schema is presented as follows:



(Neg-v-V will be complex predicates)

The LF-copy and *pro* analyses presume that the syntactic structure in base-generation has elements ([e] / *pro*) that do not have phonetic content, as in (40a). Because the non-phonetic elements do not obey structural adjacency, the elements can remain in-situ. However, the other elements in vP (*Ziroo* and *Mami*) are overt, so the element in vP must move out of negation as in (40b). Under the LF-copy analysis, the disjunctive element (*tegami ka kozutumi-o* ‘letter or package-ACC’) in sentence (39a) is copied onto the empty slot (= [e]) in (40b). As the position of the slot is below NegP, the null disjunctive element takes narrow scope under negation. Hence, the sentence in (39b) has the null conjunctive reading alone. Under the *pro* analysis, it is assumed that a null pronoun is in the complement of V in (40b). Following Funakoshi (2013), the null pronoun is interpreted as *sorera-o* ‘them’. As a result, the interpretation of the null pronoun is compatible with the null conjunctive reading in the sentence (39b).

4. Conclusion

In this paper, I have examined interpretations of null disjunctive elements in a negative environment. In previous studies, there was much debate on the analysis of interpretations of the null disjunctive elements (Funakoshi 2013; Sakamoto 2015). However, Following Shibata (2015), Takahashi (2017) and Fox (2000), Maeda (2017) attempted to give a possible account to the interpretations. Of course, Maeda's analysis could explain most cases of null disjunctive elements, but Maeda's analysis would make an incorrect prediction when a contrastive focus and a null disjunctive element are in a sentence. I observed that the null disjunctive element could take wide and narrow scope with respect to negation in the situation. Under Maeda's analysis, we wrongly predicted that the null disjunctive element would take only narrow scope with respect to negation in the situation, contrary to fact. In order to explain the interpretations, following Maeda (2017) and Aelbrecht (2010), I argued that the null disjunctive elements were derived from the Agree-driven ellipsis. Under this type of ellipsis, I assumed the [E]-feature could attach to the head of D before or after movement for MM. If the [E]-feature stuck to D-head after movement for MM, the null disjunctive element would take wide scope over negation. On the other hand, If the [E]-feature stuck to D-head before movement for MM, the null disjunctive element would take narrow scope with respect to negation. Since the null disjunctive element was derived from the two ways, the element would have ambiguous interpretations when the element was in a negative sentence with a contrastive focus.

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Abbreviations

| | |
|------|------------|
| ACC | accusative |
| DAT | dative |
| GEN | genitive |
| NEG | negation |
| NOM | nominative |
| OBJ | object |
| PST | past |
| PRS | present |
| TOP | topic |
| SUBJ | subject |

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References

- Aelbrecht, L. (2010). *The syntactic licensing of ellipsis*. John Benjamins, Amsterdam.
- Chierchia, G., D. Fox & B. Spector (2012). The grammatical view of scalar implicatures and the relationship between semantics and pragmatics. Maienborn, C., K. von Stechow & P. Portner (eds.), *Semantics: An international handbook of natural language meaning*, Mouton De Gruyter, Boston, MA, vol. 2, pp. 2297–2332.
- Fox, D. (2000). *Economy and scope interpretation*. MIT Press, Cambridge, MA.
- Funakoshi, K. (2013). Disjunction and object drop in Japanese. Huber, S. (ed.), *Tampa papers in linguistics 4*, Gainesville: University of Florida, Department of Linguistics, pp. 11–20.
- Funakoshi, K. (2016). Verb-stranding verb phrase ellipsis in Japanese. *Journal of East Asian Linguistics* 25, pp. 113–142.
- Goro, T. (2007). Language-specific constraints on scope interpretation in first language acquisition. [Ph.D. thesis]. University of Maryland, College Park.
- Goro, T. & S. Akiba (2004). The acquisition of disjunction and positive polarity in Japanese. Chand, V., A. Kelleher, A. J. Rodríguez & B. Schmeiser (eds.), *WCCFL 23: Proceedings of the 23rd West Coast Conference on Formal Linguistics*, Cascadia Press, Somerville, MA, pp. 251–264.
- Halle, M. (1990). An approach to morphology. University of Massachusetts, GLSA, Amherst, pp. 150–184.
- Halle, M. & A. Marantz (1993). Distributed morphology and the pieces of inflection. Hale, K. & S. J. Keyser (eds.), *The view from Building 20: Essays in linguistics in honor of Sylvain Bromberger*, MIT Press, Cambridge, MA, pp. 111–176.
- Hankamer, J. & I. Sag (1976). Deep and surface anaphora. *Linguistic Inquiry* 7:3, pp. 391–428.
- Kuroda, S.-Y. (1965). Generative grammatical studies in the Japanese language. [Ph.D. thesis]. MIT, Cambridge.
- Maeda, M. (2017). Argument ellipsis and scope economy. [Ms]. <https://ling.auf.net/lingbuzz/003813>.
- Merchant, J. (2001). *The syntax of silence: Sluicing, islands, and the theory of ellipsis*. Oxford University Press., Oxford.
- Merchant, J. (2004). Fragments and ellipsis. *Linguistics and Philosophy* 27 pp. 661–738.
- Oku, S. (1998). A Theory of selection and reconstruction in the minimalist perspective. [Ph.D. thesis]. University of Connecticut, Storrs.
- Otani, K. & J. Whitman (1991). V-raising and VP-ellipsis. *Linguistic Inquiry* 22:345–358.
- Saito, M. (2007). Notes on East Asian argument ellipsis. *Language Research* 43, pp. 203–227.
- Sakamoto, Y. (2015). Disjunction as a new diagnostic for (argument) ellipsis. Draft for the Proceedings of NELS 45 (May 2015).
- Sakamoto, Y. (2016). Scope and disjunction feed an even more argument for argument ellipsis in Japanese. Kenstowicz, M., L. Theodore & M. Ryo (eds.), *Japanese/Korean Linguistics*, poster papers, Stanford: CSLI Publications, vol. 23.
- Shibata, Y. (2015). Exploring syntax from interfaces. [Ph.D. thesis]. University of Connecticut, Storrs.
- Takahashi, D. (2008). Quantificational null objects and argument ellipsis. *Linguistic Inquiry* 39, pp. 307–326.
- Takahashi, D. (2017). Null subjects/objects in Japanese and Linguistic Theory. Paper presented at Linguistic Colloquium of Keio University.
- Yatsushiro, K. (2001). The distribution of *mo* and *ka* and its implications. Cuervo, M. C., D. Harbour, K. Hiraiwa & S. Ishihara (eds.), *Formal Approaches to Japanese Linguistics 3*, MIT Working Papers in Linguistics, Cambridge, MA, vol. MIT Working Papers in Linguistics 41, pp. 181–198.

Arguments for the matching analysis of Hungarian lexically headed relatives

Bálint Tóth

The aim of the present article is to provide both theoretical and empirical evidence to the effect that Hungarian lexically headed relative clauses can only be adequately analyzed by a so called Matching derivation, where the lexical nominal head does not originate inside the embedded clause, in contrast to Raising analyses. To support the above hypothesis, I will examine several reconstruction and case-related phenomena, along with an experiment aimed to support the unavailability of scopal reconstruction into relative clauses in Hungarian with empirical data from native speakers. The results of the experiment will be shown to support the above working hypothesis.

1. Introduction

The primary goal of this paper is to show that Hungarian lexically headed relative clauses can only be properly analyzed by a so-called Matching model (Citko 2001; Sauerland 2003; Salzmann 2006, 2017; Pankau 2016). This claim will be supported by reconstruction data (Binding Conditions A and C, pronominal variable binding, scopal reconstruction) and data related to the morphological case of the head noun and the relative pronoun. I will also report the results of an experiment aiming to empirically show that reconstruction for scope is never available in Hungarian inside relative clauses.

In section 2, I briefly introduce the fundamental differences between Raising and Matching analyses, along with their respective advantages and shortcomings. Section 3 will introduce the empirical facts every analysis of Hungarian relativization must aim to explain, and will show that a proper subset of these facts cannot be explained in a Raising model. Section 4 will detail an experiment performed in order to attain empirical evidence of the non-availability of reconstruction into lexically headed relative clauses in Hungarian. Section 5 will summarize the central claims of the paper, and discusses the implications of the claims for the theory of syntax in a wider sense.

2. Theoretical background

It has long been a controversial question in the study of relativization structures whether the lexical head of a relative clause (the boy in (1)) originates from inside the embedded CP, or merges with the structure via External Merge. More specifically, the question is whether the syntactic element marked with *i1* in (1) gets to positions *i2* and *i3* by movement, or moves to *i2*, only being coindexed with the element in *i3*, not being related to this position by a movement dependency.

- (1) [DP a [NP *fiú*_{i3}, [CP *aki*_{i2} [TP *szeret-i* Mari-t ___{i1}]]]]
 the boy who love-3SG.DEF OBJ Mary-ACC
 ‘the boy who loves Mary’

The first approach (the so-called Raising analysis) assumes only a single movement chain to be involved in the derivation of the structure, and attributes to it a structure similar to the following (i.e. Kayne 1994, Bhatt 2002):¹

- (2) a [CP [DP [*könyv*]_j [D' *amelyik-et* ___i]]] [C [TOPP *János kedvel-i* ___i]]]
 the book which-ACC John like-3SG.DEF OBJ
 ‘the book that John likes’

The second approach, on the other hand, assumes two chains to be present: a movement chain (*i1-i2*), and a chain formed by coindexation and deletion under identity/recoverability (*i3-i1/i2*), as illustrated in (3) below.

- (3) a [NP [NP *könyv*]_i [CP [amelyik-(et) *könyv-et*]_i [C [TOPP *János kedvel-i* ___i]]]
 the book which-(PL) book-ACC John like-3SG.DEF OBJ
 ‘the book that John likes’

Both Raising and Matching analyses have been implemented in numerous ways in the literature, and both have their advantages, as well as their shortcomings. Without going into unnecessary detail, I only mention that standard, Kaynean Raising analyses encounter serious

¹ An anonymous reviewer asks whether the type of overt extraction in (2) from a specifier is generally possible in Hungarian, as it leads to ungrammaticality in English interrogative sentences, for which the reviewer provides the following example (i).

(i) * *book_i [which *t_i*]_j did Tom buy [*t_j*]?*

The only case I can think of in Hungarian where such an extraction *prima facie* appears to be grammatical is the so-called possessor extraction construction in which a dative-marked possessor is topicalized or focussed separately from the possessum with both possessor > possessum and possessum > possessor orders being grammatical (ii).

(ii) A *labdá-j* PÉTER-NEK *vesz-ett* el
 the ball-POSS.3SG Peter-DAT got_lost-PAST.3SG PRT
 ‘As for the ball, it was Peter’s that got lost.’

However, it is sometimes argued (É. Kiss 2000) that dative possessors in Hungarian are argumental in nature, and occupy a complement position from which extraction appears to be possible. Therefore, the two structures are not analogous, and Hungarian also seems to disallow the type of overt extraction one would have to assume for the Raising analysis. I would like to thank the reviewer for pointing this out: Indeed, it is not particularly parsimonious to assume a type of movement that is not available anywhere else in the language, to explain a single construction type.

problems explaining extraposition and case phenomena (but see Bianchi 2000). Matching analyses, in contrast, have difficulties explaining obligatory case attraction and obligatory syntactic reconstruction.

In the literature, reconstruction data is routinely used in arguing for or against either approach. It is usually examined whether any structure can be found in which the external nominal head (i3 in (1)) is either optionally or obligatorily interpreted at the most deeply embedded trace position. If reconstruction is allowed, we have evidence that the lexical head has some kind of representation inside the embedded CP (=i1), otherwise there would be no way to interpret it inside that position.

For a Raising analysis, this would mean (assuming the generally accepted Copy Theory of Movement (Chomsky 1995)), that there is a movement dependency between the embedded CP-internal trace and the surface position of the external nominal constituent. It is important to note that even though there is no explicit Raising analysis for Hungarian relative clauses (that I know of), I believe it is extremely important to explicitly argue that the universalist stance that has been increasingly popular in the literature regarding Raising derivations (de Vries 2005; Sportiche 2017) is empirically untenable. This is what Hungarian data will help us do in the remainder of the paper. In the next section, we will examine a number of syntactic phenomena, and will see whether we have a (meta)theoretical, as well as empirical reason to prefer one model over the other.

3. The empirical facts

In this section, we survey the empirical facts based on which we can attempt to take a stance on whether Hungarian lexically headed relatives are derived by movement of a relative clause (RC) internal constituent, or External Merge. First, I am going to examine basic reconstruction facts, followed by non-obligatory case attraction/matching and ‘double-headed’ relative constructions.

3.1 Reconstruction data

3.1.1 Reconstruction for Condition A

The well-known Binding Condition A (Chomsky 1986) states that an anaphor must obligatorily be bound within its local domain, or else the sentence will be ungrammatical. This means that an anaphor embedded in the lexical head of a relative clause can only be bound by an RC-internal referential expression if the head can be reconstructed inside the embedded CP, more specifically, to the trace position marked by index *i* (4).

- (4) * Péter látta [egymás könyv-e-i-t]_i, ami-t a lány-ok_i elolvas-t-ak __i
 Peter saw each_other book-POSS-PL-ACC which-ACC the girl-PL read-PAST-3SG
 *‘Peter saw each other_i’s books that the girls_i saw.’

The utter ungrammaticality of (4) indicates that in Hungarian, reconstruction is not possible for anaphor binding inside relative clauses. It is very important to note that non-argument (A’) movement in Hungarian can generally be reconstructed. Topicalized (5a) or focus-moved (5b) DPs are perfectly fine under a reconstructed reading:

- (5) a. [Egymás könyv-e-i-t]_i elolvas-t-ák a lány-ok _____i.
 each_other book-POSS-PL-ACC read-PAST-3SG the girl-PL
 ‘The girls read each other’s books.’
 b. [EGYMÁS KÖNYV-E-I-T]_i olvas-t-ák el a lány-ok _____i.
 each other book-POSS-PL-ACC read-PAST-3SG PART the girl-PL
 ‘It was each other’s books that the girls have read.’

We can therefore conclude that the unavailability of reconstruction for anaphor binding in (4) is not a property of A’-movement in Hungarian in general, but a special property of relative clauses.

3.1.2 Reconstruction for pronominal variable binding

Pronominal variable binding data can also help us determine whether reconstruction has taken place. If reconstruction is available, we predict that a pronoun embedded inside the lexical head of the RC can be scoped over, and distributed over by a structurally lower (in the embedded CP) quantifier which c-commands the trace (index *j*) inside the embedded clause. Let us see whether this is indeed the case:

- (6) *_{[CP Lát--tad} _{pro} [_{DP az-t} a kép-et róla]_i]_j, [_{CP ami-ről}
 see-PAST-2SG.DEFOBJ _{pro} that-ACC the picture-ACC PRN.SUB which-SUB
 [mindenki_i az-t mond-t-a, hogy kedvel-i ____]_j]]]?
 everyone that-ACC say-PAST-3SG.DEFOBJ that like-3SG.DEFOBJ
 *‘Have you seen that picture of him_i that everyone_i said he_i likes?’

The unavailability of a bound reading for the pronoun *róla* ‘about him’ (for every *p* individual I saw a picture of *p*, *q*, such that *p* said she/he likes *q*) indicates that the full DP *azt a képet róla* ‘that picture of him/her’ cannot be reconstructed inside the embedded CP, otherwise the bound reading would be available.

3.1.3 Reconstruction for Condition C

Condition C of the Binding Theory states that a referential expression cannot be c-commanded by a coreferential nominal, either inside its local domain, or outside it (Chomsky 1986). These examples are relevant for us, since if the lexical head of the relative clause can be reconstructed inside the CP, we expect a referential expression embedded inside the nominal head to violate Binding Condition C, if the embedded CP contains a coreferential pronominal c-commanding the trace of the nominal head. Data however, show that BCC is not violated, as the Hungarian examples are grammatical (7).

- (7) [_{CP Lát-t-ad} [_{DP az-t} a Péter-rel_i készít-ett interjú-t]_j,
 see-PAST-2SG.DEFOBJ that-ACC the Peter-INST make-PASTPRT interview-ACC
 [_{CP ami-t} _{pro}_i ki-tett a Facebook-ra ____]_j]]]?
 which-ACC pro out-put.PAST.3SG the Facebook-SUB
 ‘Have you seen that interview with Peter that he put on Facebook?’

It is often argued (Lebeaux 1991, 2009), that in these cases, the adjunct-like constituents connected to the nominal head (*Péterrel készített* ‘done with Peter’) cannot be reconstructed, because they enter the structure via Late Merge, after the DP has already undergone movement, and therefore they have no trace in the assumed launch site of the movement ($__j$). In Hungarian, however, we see that referential expressions embedded in ‘picture’ type NPs do violate Binding Condition C if their trace is c-commanded by a coreferential pronominal. At the very least, these structures are degraded compared to the non-coreferential reading:

- (8) a. ??[_{CP} [_{DP} Melyik Péter-rel_i készít-ett interjú-ból]_j] [_{PREDP} gondol-od,
 which Peter-INST make-PASTPRT interview-ELA think-2SG.DEFOBJ
 [_{CP} hogy ki kellene pro_i tenni-e egy részlet-et $__j$ FB-re]]]?
 that out should pro put.INF-3SG one part-ACC FB-SUB
 ‘Which Interview with Peter do you think he should post a part of on
 Facebook?’
- b. [_{CP} [_{DP} Melyik Péter-rel_i készít-ett interjú-ból]]_j [_{PREDP} gondol-od,
 which Peter-INST make-PASTPRT interview-ELA think-2SG.OEFOBJ
 [_{CP} hogy ki kellene pro_j tenn-ünk egy részlet-et $__j$ FB-re]]]]?
 that out should pro put.INF-3SG one part-ACC FB-SUB
 ‘Which Interview with Peter do you think we should post a part of on
 Facebook?’

This contrast clearly shows that the participial expression *Péterrel készített* ‘made with Peter’ cannot enter the structure via Late Merge, since it has a trace inside the embedded CP. In the relativization case (7), the coreferential reading is allowed, which shows that no reconstruction is taking place. These facts, when taken together, point to the conclusion that the impossibility of reconstruction in the latter case stems from some structural property of relative clauses. We observe the same pattern we saw with Condition A data above: reconstruction is possible for other A’-movement types, but not for relativization.

3.1.4 Scopal reconstruction

The relative scope of numeral indefinites and universal quantifiers again, displays the same obligatory non-reconstruction. The English example in (9a) is ambiguous with respect to the relative scope of the two quantifiers, while in (9b), the inverse wide scope reading is unavailable for the universal (for every doctor *p*, I called those two patients that *p* examined)

- (9) a. I called the two patients that every doctor examined. $2 > \forall \checkmark / \forall > 2 \checkmark$ (Salzmann 2006:22)
- b. [_{CP} Felhív-t-am [_{DP} a két beteg-et_i,
 call-PAST-1SG the two patient-ACC
 [_{CP} akik-et minden orvos megvizsgál-t $__i$]]] $2 > \forall \checkmark / * \forall > 2$
 who-ACC every doctor examine-PAST.3SG
 ‘I called the two patients that every doctor examined.’

Since the numeral expression *a két beteget* ‘the two patients’ takes wider surface scope than the universal, there are two logically possible ways in which the universal quantifier could

attain an inverse wide scope reading. Either the universal moves covertly to a position above the numeral (long quantifier raising), or the numeral reconstructs into the embedded CP, to a position lower than the surface position of the universal. The first option is barred for independent reasons: It is a well-known fact (Szabolcsi 2010) that the distributive scope of universal quantifiers is strictly clause-bounded. Therefore, the fact that the inverse wide scope reading is unavailable in (9b) indicates that the second option has also failed: no reconstruction can have taken place.

One might argue that in the above example, the lexical head of the relative clause is definite (*a két beteget* ‘the two patients’) and therefore easily triggers a widest existential scope reading by default, due to the associated existential presupposition. We can, however, easily disarm this argument if we examine what happens if the lexical head is an indefinite, and therefore does not have an associated existential presupposition:

- (10) Az asszisztens keres két beteg-et, aki-k-et minden orvos megvizsgál-hat.
 The assistant seek.3SG two patient-ACC who-ACC every doctor examine-DE.3SG
 ‘The assistant is looking for two patients that every doctor can examine.’

Since intensional verbs like *seek* do not attach an existential presupposition to their non-specific internal argument under their *de dicto* reading (Cooper 1983; Zimmermann 2001), we can safely assume that the numeral in (10) does not take widest existential scope (with respect to the intensional verb). Nonetheless, we still observe obligatory non-reconstruction: we cannot construe the patients and doctors as covariant. An anonymous reviewer mentions that if Hungarian quantifiers are not obligatorily reconstructed into their base position in non-relative contexts, then it is perhaps not surprising that they cannot reconstruct in relative clauses either. Since the topic of the relative scope of Hungarian quantifiers is extremely extensive, I will not attempt to do justice to the entire array of empirical facts, and instead mention only a few relevant examples in passing that may help illuminate my point further. First, contrastive topics (or more generally, counting quantifiers in the terminology of Szabolcsi 2010) in Hungarian obligatorily take inverse narrow scope which indicates that it is not an across-the-board characteristic of Hungarian quantifiers that they are never reconstructed:

- (11) Legalább két fiú-t minden lány szeret.
 at least two boy-ACC every girl love.3SG
 ‘Every girl loves at least two boys.’

Second, while it is true that the relative scope of Hungarian preverbal quantifiers generally corresponds to their linear ordering, this does not invalidate the argument that most raising analyses would incorrectly predict that reconstruction will be available in relative contexts, contrary to fact. To summarize: the fact that we observe no scopal reconstruction into relative clauses is, in itself, not surprising, but it indicates a serious lack of explanatory power for any analysis that predicts reconstruction to be available in the selfsame cases.

3.1.5 Interim summary and a short excursion

In the last few subsections, I have examined how the lexical head of Hungarian relative clauses behaves in constructions where we would expect reconstruction (based on our

knowledge of A'-movement in Hungarian) if these constructions really are derived by Raising. We have found in each case, that the reconstructed reading is systematically unavailable.

In the introduction of the paper, I have briefly noted that the two competing analyses (Raising and Matching) are mostly argued for or against with reconstruction data. In a recent study, however, Sportiche (2017) claims that reconstruction data is not decisive in choosing between the two analyses, and sketches a model, strictly based on Raising, which can, in principle, account for obligatory non-reconstruction as well. In the remainder of this subsection, I briefly introduce what the gist of his account is, and argue that this model is incapable to derive the full gamut of empirical facts in Hungarian. The starting point of his analysis is the interface principle, dubbed Neglect, which is essentially based on a unique interpretation of the Principle of Full Interpretation (Chomsky 1995):

(12) **Neglect (Sportiche 2017):**

Ignore any representation of any interface, up to crash

(13) **Principle of Full Interpretation (Chomsky 1995):**

Interpret every syntactic object!

Sportiche claims that the Principle of Full Interpretation applies not to occurrences of syntactic objects, as commonly believed, but to syntactic objects themselves. This, in practice, means that the principle demands for every syntactic chain that an element of the chain be interpreted *somewhere* in the structure. Neglect augments this with the proviso that every other element can be ignored, if Full Interpretation or other syntactic constraints are not violated by doing so. This model predicts that in the case of a Raising derivation, the reconstructed reading will be available (since, by Neglect, any member of a chain may be interpreted), but remains optional. There exist, however, languages, and structures where the reconstructed reading is clearly unavailable, which Neglect, by itself, cannot derive. Sportiche therefore argues that the external lexical head originates inside CP in these cases as well, but moves into a position, from which it cannot reconstruct. He calls this approach High Promotion:

(14) [DP the [NP book]_i] [CP t_j {S [Op_k/which t_j]_k John likes t_k }]]]

He claims that since the CP-external position to which the NP *book* moves is inherently a scope position, no nominal phrase occupying it can take narrower scope. This explanation proves to be inadequate however, once we take a closer look at Hungarian data. In the next section, I will show that it can explain neither trivial case phenomena in Hungarian relative clauses, nor 'double headed' relatives in which the internal and the external head of the RC is spelled out simultaneously, while there can be either a partial or complete mismatch in their lexical exponents.

An anonymous also reviewer mentions that it is unclear why the Raising derivation is unable to derive the unavailability of reconstruction by itself, since it is, the reviewer claims, theoretically possible that the chain by which the relative clause is derived is derived by A-movement as opposed to A'-movement, which would preclude reconstruction to begin with. In Hungarian, this reasoning cannot be used to salvage the Raising derivation, as it can clearly

be shown that relative clauses contain an operator-variable (non-argument) dependency, which licenses parasitic gaps:

- (15) Elolvas-t-am a könyv-et, ami-t Péter megvett
 read-PAST-1SG the book-ACC which-ACC Peter bought
 anélkül hogy ismer-t volna __.
 without that know-PAST be.COND
 ‘I read the book that Peter bought without knowing (it).’

Since parasitic gaps are known to be licensed by an A'-operator, we can safely assume that non-reconstruction is not caused by the relevant chain being an A-chain. Furthermore, it is generally accepted in the literature that relativization and Wh-movement are both A'-movement, further evidenced by the fact that long relativization is perfectly possible in Hungarian, which would not be the case if it involved A-movement:

- (16) Lát-t-am a fiú-t, aki-t Mari mond-ott, hogy Feri meghív-ott __i.
 see-PAST-1SG the boy-ACC that Mari say-PAST.3SG that Feri invite-PAST.3SG
 ‘I saw the boy who Mary said that Feri invited.’

The possibility of long relativization, along with the operator-variable semantics should show that no A-movement is involved in deriving the relevant chain.

3.2 Case phenomena

It is a crucial assumption of Sportiche's model that the internal nominal head, located in the embedded spec-CP (either phonetically null or realized as a relative pronoun) is a movement-derived copy of the external nominal head. This analysis makes a clear prediction about the morphological case of the nominal heads involved. Specifically, it predicts that the case of the relative pronoun and the external head must match, both bearing the case the embedded predicate assigns to the full DP. In a language like English, where lexical nominals do not overtly display case morphology and relative pronouns display it only to a very limited extent (who-whom), this is not very problematic. Let us see, however, how Hungarian relative clauses behave with respect to the aforementioned case phenomena:

- (17) a. Lát-t-am a fiú-t, aki szeret-i Mari-t.
 see-PAST-1SG the boy-ACC who love-3SG.DEF OBJ Mary-ACC
 ‘I have seen the boy who loves Mary.’
 b. A fiú, aki-t Mari szeret, eljött a buli-ra.
 the boy who-ACC Mary love-3SG come.PAST.3SG the party-SUB
 ‘The boy who Mary loves came to the party.’
 c. El-men-t-em az osztálytárs-am-hoz,
 away-go-PAST-1SG the classmate-POSS.1SG-ALL
 aki-nek Mari ajándék-ot vett.
 who-DAT Mary present-ACC buy.PAST.3SG
 ‘I went to my classmate to whom Mary bought a present.’
 d. El-jöttem a lány-tól, aki-vel Péter jár-t még tavaly.
 away-came the girl-ABL who-INST Peter go-PAST.3SG yet last.year

‘I came away from the girl Peter went out with last year.’

The series of examples in (17) illustrate that the morphological case of the relative pronoun and the lexical head are completely independent of each other. The relative pronoun bears the case corresponding to that of the respective argument inside the embedded CP, while the external lexical heads bears the case assigned to it by the matrix predicate. Under no circumstances is there any form of case attraction, excepting those accidental matches in which the embedded and the matrix predicate independently assign the same case to their internal argument (18).

- (18) Lát-t-am a fiú-t, aki-t Mari meglátogat-ott.
 see-PAST-1SG the boy-ACC who-ACC Mary visit-PAST.3SG
 ‘I saw the boy Mary visited.’

Since Sportiche (2017) does not discuss case phenomena at all, it is unclear how his model would treat the above data. The only potential explanation would be to claim that by moving outside the CP, the nominal head enters into some sort of local relationship with the matrix predicate, allowing it to overwrite the nominal’s case, but we do not have any independent evidence for such a mechanism. Following Occam’s razor, the simpler hypothesis is to be preferred: In Hungarian relatives, we see Matching, not Raising.

3.3 Double headed relative clauses

A further interesting fact about Hungarian relative clauses is that in certain cases both the lexical head of the RC and the ‘internal head’ in spec-CP can be pronounced at the same time. These examples are slightly marked without context, but with appropriate contextualization, they are perfectly acceptable:

- (19) Az-t a diák-ot, amelyik diák-ot megbuktat-t-am,
 that-ACC the student-ACC which student-ACC fail-PAST-1SG
 felvet-t-ék egyetem-re.
 admit-PAST-3PL university-SUB
 ‘The student that I failed was admitted to university.’

We can find attested, real world examples of the same general structure (20).

- (20) Évente több tízmilliárd-ot költ-enek el
 yearly more ten_billion-ACC spend-3PL away
 feleslegesen az adózó-k pénzé-ből kampányok-ra,
 unnecessarily the taxpayer-PL money-ELA campaign-PL-SUB
 amely pénz a saját vállalkozó-ik-hoz kerül.²
 which money the own contractor-POSS3.PL-ALL end.up.3SG

² From a political advertisement found on Facebook: <https://www.facebook.com/hirkronika/posts/2044842049175086>, last accessed on 2018.03.27, 16:46, unfortunately removed since.

‘They unnecessarily spend tens of billions of taxpayer money every year on campaigns, which money ends up with their own contractors.’

In (20), the relative clause the head of which is spelled out twice has undergone right dislocation, but it is identical to (19) in other respects. These structures are extremely interesting, as they are completely impossible to analyze in a Raising model, unless we posit some kind of *ad hoc* mechanism, unsupported by independent facts. Let us see why this is the case.

First and foremost, the traditional Raising analysis (Kayne 1994) assumes that the lexical head is located in spec-CP, and the external determiner subcategorizes for this CP, and takes it as its complement:

(21) [_{DP} Det [_{CP} [_{DP} N-head_i rel.prn/rel.det.[t_i]] [.....]]]

If we accept however, that the relative pronoun and its associated nominal material occupy spec-CP, we have to accept that the constituent *az a diák* ‘that student’ is completely outside the CP domain. For the Raising analysis, this would mean moving the relevant constituent to spec-CP, followed by subextraction of the material corresponding to the lexical head, and attaching it to CP, pronouncing both copies at PF.

(22) ?Az a [_{CP} diák, [_{CP} amelyik diák [_{PREDP} kiabál]]]...
 that the student which student shout.3SG
 ‘that student which shouts’

This derivation, however, runs afoul of general considerations of anti-locality. We may safely assume that moving an element from a specifier to an adjoined position is not allowed, since the two positions are in the same minimal domain (Chomsky 1995), making the movement vacuous. Especially, since the second step of the movement has no obvious trigger. Bianchi (2000) partially solves this problem in the split-CP framework of Rizzi (1999) by placing the relative pronoun in spec-TopP, and the lexical head in spec-ForceP. This analysis provides a position for all involved elements inside the embedded CP. Disregarding the fact that Bianchi’s analysis cannot be applied to Hungarian due to its incorrect predictions about high topics in embedded clauses (Tóth 2019), it still assumes that the external nominal head and the RC-internal material are copy-identical. This causes irremediable problems for the analysis when we consider examples where the internal and external heads are spelled out simultaneously, but their lexical exponents differ, either partially (23) or completely (24):

(23) Péter olyan büszke a lányá-ra, amilyen büszke a fiá-ra.
 Peter so proud the daughter-POSS3SG-SUB as proud the son-POSS3SG-SUB
 a szomszéd-ja volt a ballagás-on.
 the neighbor-POSS.3SG be.past.3SG the graduation-SUP
 ‘Peter is as proud of his daughter, as his neighbor was of his son at the graduation.’

(24) Péter olyan büszke a lány-ára, amilyen dühös a fiá-ra.
 Peter as proud the daughter-POSS as angry the son-POSS
 ‘Peter is as proud of his daughter as angry he is with his son.’

We could, in principle, try to salvage the Raising analysis, and claim that the involved PPs (*a lányára/a fiára* ‘of his daughter/of his son’) are adjuncts, and can be Late Merged (Lebeaux 2009). In this case, what moves in overt syntax is the bare adjective *büszke* ‘proud’, followed by Late Merge of the PP, so the integrity of the movement chain could be preserved. This, however, gives the analysis a death blow. It can easily be demonstrated that PP satellites of adjectives in Hungarian are argumental in nature, as referential expressions embedded in them cause a BCC violation in non-relative contexts:

- (25) *Melyik Péter-re_i büszke tanár-t lát-t-a (ő_i) a ballagás-án?
 which Peter-SUB proud teacher-ACC see-PAST-3SG (he) the graduation-SUP
 *‘Which teacher proud of Peter_i did he_i see at his graduation?’

Since arguments cannot be Late Merged, we have to accept that there is no way to derive the mismatch between the complex relative pronoun and the external head, unless we assume, in line with Matching analyses, that the relative pronoun moves to spec-CP from inside the embedded clause, followed by External Merge of the bona fide external head of the RC.³

4. Experimental investigation

This section will describe an experiment performed in order to determine whether reconstruction into a lexically headed relative clause is possible for scope. That is, we are going to examine whether in examples like (9b) above, repeated here as (26) for convenience, the inverse wide scope reading is available for the universal quantifier:

- (26) Felhív-t-am a két beteg-et, aki-t minden orvos megvizsgál.
 call-PAST-1SG the two patient-ACC who-ACC every doctor examine-3SG
 ‘I called the two patients that every doctor will examine.’

Since the inverse distributive scope of universal quantifiers is clause-bounded, the only possible way in which *minden* ‘every’ could scope over the numeral indefinite is by reconstruction of the latter into a position below the universal. In order to see whether this is possible, we performed the experiment described in the following subsections.

4.1 Design and materials

The main questions I wanted the experiment to answer can be summarized as follows:

- (I) Is scopal reconstruction into a relative clause more grammatical than an impossible (syntactically blocked) inverse scope reading in a non-relative finite embedded clause?
- (II) How does the acceptability of scopal reconstruction into a relative clause fare with respect to the acceptability of inverse scope in a local context, between two clausemate quantifiers?

³ I should mention that the Late Merge model would be unable to handle cases in which the heads of the internal and external material do not match, as in (26).

The experiment was designed to facilitate answering these specific questions. The experiment itself consisted of a grammaticality judgment task in which participants were presented with two sentences: The first was a context sentence, describing a situation in which a universal quantifier distributes over a numeral indefinite *két-két* ‘two each’. The structure of the context sentences was invariant across the entire experiment, they always describe the same distributive reading (27).

- (27) A kórház-ban minden főorvos-nak meg kell vizsgál-ni-a
 the hospital every senior_physician-DAT PRT need examine-INF-3SG
 két-két beteg-et a saját osztály-án.
 two-two patient-ACC the own department
 ‘Every senior physician has to examine two patients each in their own ward.’

The second one is a target sentence, emphasized with a bright orange color, in which the potential scopal reading of the quantifiers may, or may not correspond to the situation described in the context sentence. The goal of the participants was to rate the congruence of the context and the target sentence on a 7-point Likert scale, according to their own native intuition. It was explained to them that we were not interested in whether the two sentences have the exact same meaning (they never do, as one or the other may contain additional adverbs, adjectives, explanation, etc.) but in whether the target sentence can accurately describe the reality depicted by the context sentence.

The experimental design itself consisted of six experimental conditions, each containing four lexicalizations. The conditions and their attributes are summarized below, along with an example for each (28-33).

(28) **Condition 1A (non-local, inverse scope, relative)**

Maga a kórházigazgató jelöl-t-e ki a két beteg-et,
 self the hospital.head designate-PAST-3SG PRT the two patients-ACC
 aki-t minden főorvos-nak meg kell vizsgál-ni-a.
 who-ACC every senior_physician-DAT PRT need examine-INF-3SG
 ‘It was the head of the hospital himself who designated the two patients that every doctor must examine.’

(29) **Condition 1B (non-local, surface scope, relative)**

Maga a tábornok készít-ett fel minden katoná-t,
 self the colonel prepare-PAST.3SG up every soldier-ACC
 aki-nek végre kell hajta-ni-a a két küldetés-t.
 who-DAT PRT need drive-INF-3SG the two mission-ACC
 ‘It was the colonel himself who prepared every soldier who has to accomplish the two missions.’

(30) **Condition 2A (local, surface scope)**

Minden rendőr-nek az-t a két bűnöző-t kell őriz-ni-e,
 every policeman-DAT that-ACC the two criminals need guard-INF-3SG
 aki-t a rendőrkapitány rábíz-ott.
 who-ACC the police_chief entrust-PAST.3SG
 ‘Every policeman had to guard the two criminals the chief entrusted them with.’

(31) **Condition 2B (local, inverse scope)**

Az-t a két gyógyszer-t kell be-venni-e minden páciens-nek,
 that-ACC the two medicine-ACC need in-take-INF-3SG every patient-DAT
 amit a főnővér előír-t.
 that-ACC the head_nurse prescribe-PAST.3SG
 ‘Every patient had to take the two medicines that the head nurse prescribed.’

(32) **Condition 3A (non-local, surface scope, finite embedding)**

Maga a király utasít-ott minden várkapitány-t arra,
 self the king order-PAST.3SG every castle_captain-ACC that.SUB
 hogy el kell foglal-ni-a a két tábor-t.
 that away need occupy-INF-3SG the two camp-ACC
 ‘It was the king himself who ordered every castle captain to occupy the two camps.’

(33) **Condition 3B (non-local, impossible inverse scope, finite embedding)**

Maga az óvodavezető értesít-ett-e a két család-ot arról,
 self the kindergarten.head notify-PAST-3SG the two family-PL-ACC that.SUB
 hogy minden óvónő-nek meg kell látogat-ni-a őket.
 that every kindergarten_teacher PRT need visit-INF-3SG them.ACC
 ‘It was the head of the kindergarten herself who notified that two families that every kindergarten teacher will have to visit them.’

Condition 1A examines whether it is possible for the lexical head of the relative clause to reconstruct into the relative clause for scope, while 1B serves as its baseline, with the quantifiers having only surface scope, congruent with the context sentence. In 2A, the two quantifiers were clausemates and stood in the order corresponding to the situation described by the context. In contrast, 2B had the order of quantifiers reversed, facilitating an inverse scope reading. 3A involved surface scope reading of the two quantifiers over the boundary of a finite complement clause, while 3B involved an impossible inverse scope reading by virtue of the position into which the numeral could in principle reconstruct being filled by an overt pronoun, and long QR of the universal being barred due to the clause-boundedness of its distributive scope. The factors and their levels are summarized in the table below for easier reference:

| Factor | Note | Levels |
|------------|--------------------------------------|---------------------------|
| Response | grammaticality judgment score | 1-7 |
| Zresponse | z-transformed judgment score | N/A |
| Scope | intended scope reading | Surface, Inverse |
| Locality | locality of the quantifiers involved | Local, Non-local |
| ClauseType | Type of subordinate clause | Relative, Finite Embedded |
| TrialNum | Number of trial | 1-40 |
| TrialCode | Code of condition | 1A, 1B, 2A, 2B, 3A, 3B |
| Latency | Reaction time in ms | N/A |
| Subject | code of participant | N/A |

Table 1: Factors and their levels

The experiment itself was scripted in Inquisit 5, and hosted online. Potential participants could either fill out the questionnaire at home, by following a link distributed over social media, and downloading a browser plugin, or fill it out in person, at the Research Institute for Linguistics of the Hungarian Academy of Sciences, in which case they were compensated with a voucher. Instructions provided for online and offline responders were identical. Overall, 32 participants took part in the experiment. During their personal participation, subjects participated in two other experiments as well, one of them also involving scopal interactions. To minimize the possibility of practice and boredom effects, half of the participants completed each experiment first, followed by a short, completely unrelated experiment finishing with the third experiment. This being said, we observed a statistically significant learning effect, whereby the reaction time of responders tended to become smaller, the more stimuli they judged. (Overall model: $F(1, 718) = 39.180, p < 0.001, \beta(\text{TrialNumber}) = -279.241, \text{CI}[-366.827, -191.656], p < 0.001$. Subjects also varied significantly in their baseline reaction time: $z = 18.561, p < 0.001$.) I also examined whether speakers tended to accommodate structures of questionable grammaticality, by running Generalized Linear Mixed Effect Models for each condition to see whether the judgment scores increased for repeated measures within the same condition. Apart from condition 1A ($F(1, 113) = 4.493, p < 0.036, \beta = 0.035, t = 2.12$), there was no effect of TrialNumber on ratings, either by condition, or over the entire set of conditions. For purposes of the statistical models presented in the next subsection, only two participants were excluded from analysis. One was excluded for having a native language different from Hungarian, and one for being generally uncooperative during the experiment.

4.2 Results

Summarizing the median raw scores and z-transformed scores by condition shows that participants systematically refused inverse scope readings across relative clause boundaries (Figure 1 and Figure 2: 1A Mean = 2.24, Median = 2).

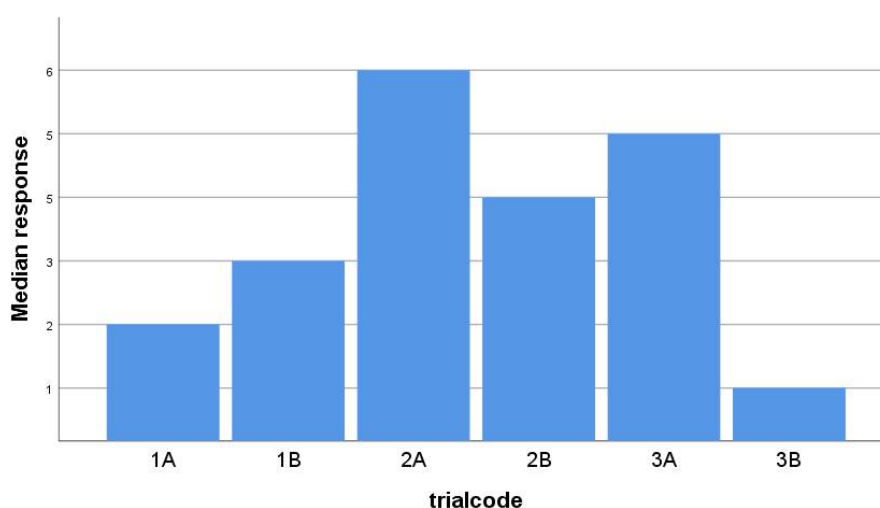


Figure 1: median of responses by condition (trialcode)

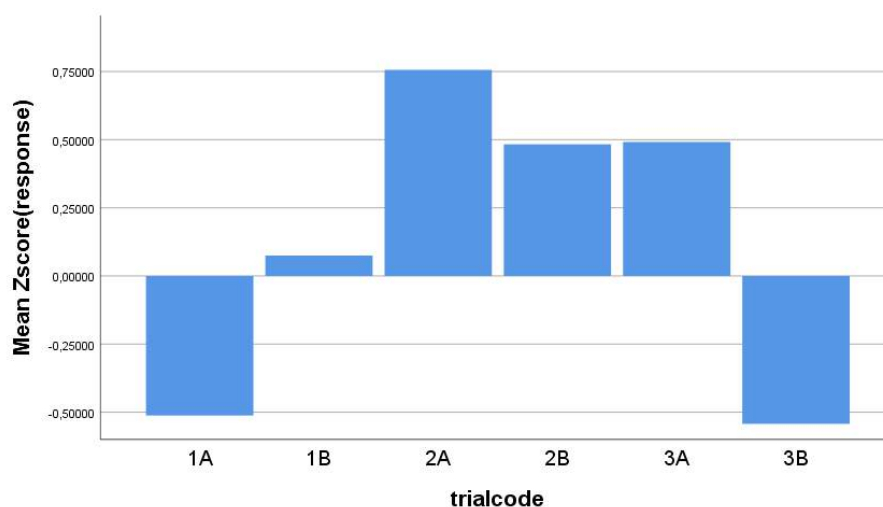


Figure 2: Z-score of responses by condition (trialcode)

However, the acceptability of the surface scope baseline category for relative clauses (1B) received much lower ratings than expected (Mean = 3.59, Median = 3). The reason for this is that the responders generally had difficulty attributing a dependent reading to definite expressions (which some of them even communicated verbally during, or following the experiment). Unfortunately, it was necessary to include definite expressions, as the most often cited examples for reconstructed scope readings in the literature (for example 9b) include similar structures, and we wanted to design the experiment in such a way that it will eventually be comparable with English data. This being said, the z-score mean of 1B is still positive (0.0746). The Trialcode factor had a significant influence on ratings in the 1A-1B subset of the data ($F(1,233) = 32.253$, $p < 0.001$).⁴ 1A received significantly worse ratings than 1B ($\beta = -1.412$, $CI(-1.902, -0.922)$).⁵ There was also a significant variability of the intercepts between participants ($\text{Var}(\text{Intercept}) = 0.873$, $Z = 2.3$, $p = 0.021$). Summarizing, speakers found scope reconstruction into a relative clause significantly worse than surface scope across a relative clause boundary, a result that is hardly surprising.

The case of the local condition pair (2A-2B) is much more clear-cut. As visible on the graphs above, speakers were generally very accepting of local surface scope, even though the dependent nominal was again a definite (Mean = 4.98, Median = 6), and they readily accepted inverse scope readings in the local context as well (Mean = 4.40, Median = 4.50). This finding is especially important, as it shows that inverse scope is, in principle, available even for naive native speakers with no prior training in linguistics, and that the rejection of the inverse scope reading in 1A is not a result of speakers being generally unable to process inverse scope. The two conditions (2A-2B) nonetheless differ significantly in acceptability ($F[1, 233] = 6.197$, $p = 0.013$), but the difference is much smaller than in the case of the 1A-1B pair, even though the acceptability of 1B was lower than expected, for independent reasons. Once again, the

⁴ The F -scores and p -values reported here are based on the Wald-statistic. The SPSS GENLINMIXED procedure I employed uses penalized quasi-likelihood estimation for cumulative link logit models, and does not return a -2 Log Likelihood (-2LL) value generally used for traditional Likelihood Ratio tests of parameter significance in other software packages. The two are, however, asymptotically equivalent (Firth 1993).

⁵ Since the model was fitted on the 1A-1B subset of the data, and used a single predictor, the p -value of the difference between 1A and 1B equals the p -value for the fixed effect of the Trialcode factor).

variability of the intercept was significant across participants ($\text{Var}(\text{Intercept}) = 2.726$, $Z = 2.96$, $p = 0.003$).

The pair of conditions containing the impossible inverse scope reading (3A-3B) display behavior similar to that of the 1A-1B pair. Again, speakers were accepting of the surface scope order, according to expectations (Mean = 4.38, Median = 5), while they systematically refused the inverse reading when presented with a construction in which inverse scope is syntactically blocked (Mean = 2.09, Median = 1). As expected, the two conditions differed significantly in their acceptability ($F[1,233] = 75.241$, $\beta = 2.339$, $\text{CI}[1.808, 2.870]$, $p < 0.001$). The variability of the intercepts between participants was marginally significant ($\text{Var}(\text{Intercept}) = 0.513$, $z = 1.983$, $p = 0.047$). The descriptive statistics pertaining to each condition are briefly summarized below for easier reference (Table 2).

| Condition | Mean | Median | SD |
|-------------------------|------|--------|-------|
| 1A: non-local, inverse? | 2.24 | 2 | 1.66 |
| 1B: non-local, surface | 3.59 | 3 | 2.163 |
| 2A: local, surface | 4.98 | 6 | 2.039 |
| 2B: local, inverse | 4.40 | 4.50 | 2.140 |
| 3A: non-local, surface | 4.38 | 5 | 1.988 |
| 3B: non-local, -inverse | 2.09 | 1 | 1.730 |

Table 2: Summary of descriptive statistics of the conditions and factor levels

The first statistical model I fit to the data aimed to determine whether there is a significant pairwise difference between the three inverse scope conditions, more specifically, whether scopal reconstruction into a relative clause is more acceptable than non-local inverse scope in a sentence where inverse scope is syntactically blocked. I used the local inverse scope condition as a baseline to which the other categories can be compared. This model was fit on the 1A-2B-3B subset of the entire data, and contained Trialcode as a fixed effect, along with a random intercept by subject and a random slope by Trialcode. The corrected model was highly significant ($F[2,352] = 25.744$, $p < 0.001$). Pairwise comparisons show that condition 1A (reconstruction into a relative clause) did not significantly differ from 3B, the impossible scope condition ($\beta = -0.366$, $t = 0.847$, $p = 0.397$ $\text{CI}[-0.483, 1.215]$). 2B (inverse scope within a single clause), however, differed significantly from 1A ($\beta = 2.528$, $t = 5.834$, $p < 0.001$, $\text{CI}[1.676, 3.380]$). Intercepts did not differ significantly between speakers, but the slopes did ($\text{Var}(\text{slope}) = 1.746$, $z = 3.315$, $p < 0.001$, $\text{CI}[0.967, 3.154]$). What this shows is that speakers refused reconstruction into a relative clause just as much as a syntactically impossible inverse scope order, but accepted inverse scope orders readily in local contexts. This appears to argue against a derivation where the lexical head of the relative clause reaches its surface position by movement from the embedded clause, since in this case, we would expect condition 1A to be on par with 2B in terms of acceptability, or at least to significantly differ from 3B, the syntactically blocked order.

The second model aimed to determine how locality and scope interact with each other in determining acceptability. This model was fit on the 1A-1B-2A-2B subset of the data, which was fully cross-factorial with respect to the Scope and Locality factors. As fixed effects, we used Locality, Scope, the interaction of Locality*Scope and TrialNumber, the latter being included in order to help determine whether any accommodation had occurred, that is, whether responders tended to give higher ratings to stimuli as the experiment progressed. I also specified a random intercept by subject, and random slopes for Scope, Locality and

Scope*Locality. The model itself is highly significant ($F(4, 470) = 18.088, p < 0.001$), with both Locality and Scope, as well as their interaction being significant ($F(1, 470) = 7.432, p = 0.007$).⁶ The interaction plot shows that while in the local condition, the difference between the surface and inverse scope readings is fairly small, in the non-local condition the difference becomes much larger, to the point where the error bars no longer overlap (Figure 4).

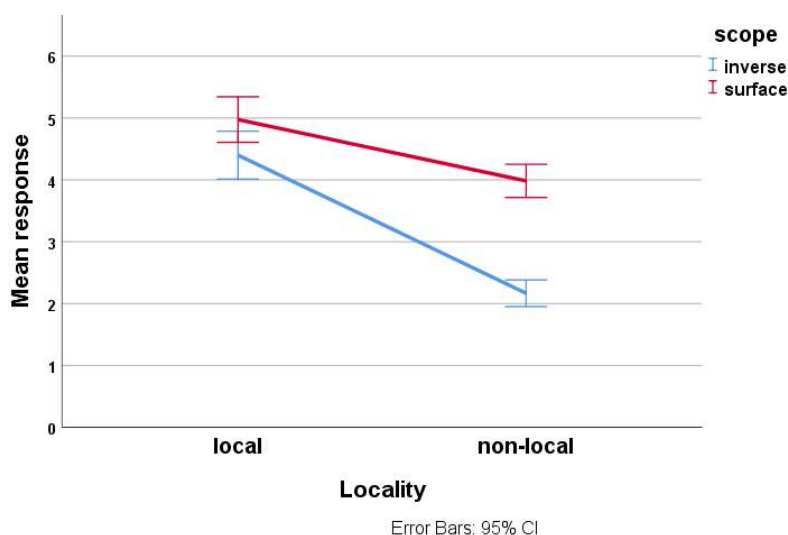


Figure 4: Interaction plot for scope and locality, measured in mean response

The fact that in the non-local condition the surface scope reading is also found less acceptable is partly due to the fact that, as stated above, responders found it difficult to attribute a dependent reading to definite nominals without a demonstrative pronoun, and can potentially also be caused by the fact that scope dependencies are more difficult to process across clause boundaries. The effect of TrialNumber was not significant ($p = 0.121$).⁷ Neither the intercept ($p = 0.617$) nor the effect of the random interaction term ($p = 0.341$) varied significantly across speakers, the latter indicating that the effect of the interaction is stable across the sample. Summarizing, this shows that scope in itself is not a significant predictor of grammaticality, inverse scope in and of itself does not necessarily result in a lower rating. The effect of Scope depends on whether the two scope-taking nominals are located in the same clause, or distributed across a matrix and an embedded clause. Participants accepted local inverse scope readily, while they systematically refused it in the non-local, relative clause cases. This once again seems to lend credence to a theory in which the lexical head of the relative is modeled as not originating in the embedded clause, to where it could potentially reconstruct.

The third model aimed to determine how scope and the type of dependent clause (relative or finite complement clause) interact in predicting grammaticality. Based on the results of the first model (no overall difference between inverse scope in relatives and impossible scope orders across finite complement clause boundaries), I expected that there would be no

⁶ In the presence of a significant interaction, no estimates or p -values will be given for individual main effects.

⁷ If the model is run on z-transformed scores instead of the raw data, using a linear mixed model, TrialNumber becomes a significant predictor of ratings ($p = 0.037$), but the effect itself is extremely negligible ($\beta = 0.008$).

interaction between the two factors. The model was fit on the 1A-1B-3A-3B subset of the data, which was fully cross-factorial with respect to the Scope and ClauseType factors. I used Scope, ClauseType, Scope*ClauseType and TrialNumber as predictors, with a random intercept specified by subject, and random slopes specified by the Scope*ClauseType interaction.⁸ The final model was highly significant ($F(4, 470) = 15.907, p < 0.001$), along with the main effects. Scope, ClauseType and their interaction was also marginally significant ($F(1, 470) = 4.198, p = 0.041$). The significance of the interaction is quite unexpected, if we assume that the syntactically blocked inverse scope reading in condition 3B and scope reconstruction into a relative clause are similarly ungrammatical. However, if we take a look at the interaction graph, we can immediately see that the interaction actually works in the expected direction:

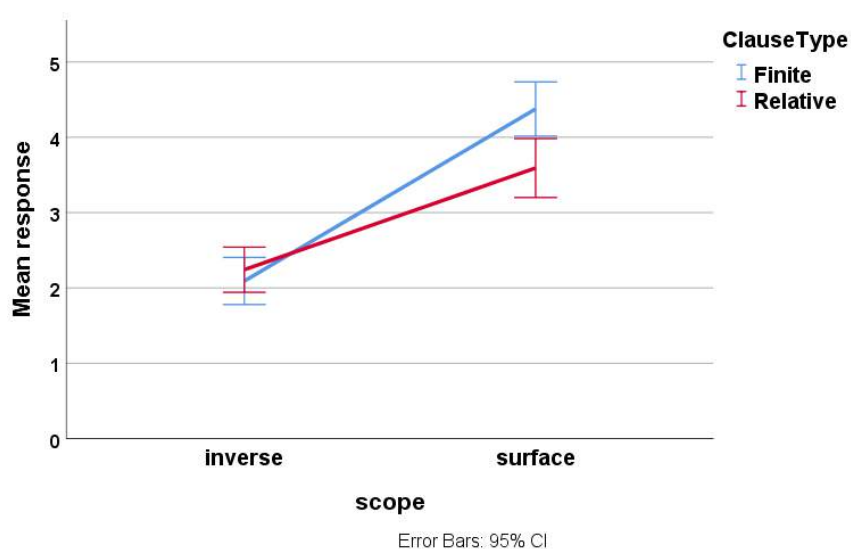


Figure 5: Interaction plot for clause type and scope, measured in mean response

We can clearly see that inverse scope in relative clauses and (syntactically blocked) inverse scope in finite complement clauses has the exact same rating, with the error bars showing an almost complete overlap. The interaction is caused by the fact that the surface scope reading in condition 1B was rather lower than expected, again, due to the fact that speakers were unable to attribute a dependent reading to definite nominals. The same issue did not arise in conditions 2A and 2B, since dependent readings were found to be acceptable for clausemate quantifiers.⁹ There was a statistically significant variation in the interaction term across speakers ($\text{Var}(\text{scope} * \text{clausetype}) = 1.392, z = 3.778, p < 0.001$). It is also important to note that despite the issues present with the surface scope condition 1B, the interaction itself is only marginally significant at $p = 0.041$). What the third model shows us, in sum, is that there is no statistically significant difference between inverse scope across a relative clause

⁸ Specifying additional random slope terms (for the main effects of Scope and ClauseType) caused the model not to converge, therefore I reduced the random effect structure up to convergence.

⁹ It seems that the number of phasal nodes separating the two quantifiers has an effect on how easily speakers process a dependent reading for definite nominals. Dependent readings were most acceptable for clausemates, worse for quantifiers separated by a finite clause boundary and least acceptable for quantifiers separated by a finite clause boundary and a complex NP.

boundary, and a syntactically impossible inverse scope reading across the boundary of a finite complement clause. Needless to say, this is quite unexpected, if lexical heads of relative clauses reach their surface position by movement, and (according to at least some analyses) are not even separated by their launch site by a CP boundary (Bianchi 2000).

4.3 Summary and discussion

The experiment outlined in the preceding subsections allows us to draw some striking conclusions about the structural properties of Hungarian lexically headed relative clauses. The most important of these being that scopal reconstruction into a relative clause is judged to be just as ungrammatical by native speakers as a syntactically blocked, impossible inverse scope reading across a finite clause boundary. What this means is that we do not have any compelling evidence to assume that the lexical head of a relative clause originates inside the embedded clause, and reaches its surface position by movement, in contrast with Raising analyses of relativization. We also see quite clearly that the perceived ungrammaticality of inverse scope in the relative clause cases is not due to naive speakers being unable to process inverse readings, as the contrast between conditions 2A and 2B clearly shows that in a local context, they find both to be very much accessible and rate them accordingly. One limitation of the study is that speakers find it generally difficult to attribute a dependent reading to definite nominals without appropriate contextualization. We have seen that the degree to which they accept the dependent reading depends on the number of phasal nodes separating the dependent definite nominal and the quantifier distributing over it. The methodological decision to include definite nominals in the stimuli resulted in some baseline conditions receiving comparatively lower ratings than expected¹⁰ but as we have seen above, the differences between these baselines and their respective critical conditions are still stable, and are in the expected direction. Currently, an analogous experiment is being planned for native speakers of English, in order to compare scopal reconstruction possibilities between the two languages in the context of relativization. This would allow us to draw more firm conclusions about whether Raising and Matching analyses can be conceived of as a parametric setting, with some languages deriving lexically headed relatives by Raising (English is one language generally referred to as a raising language), while others (such as Hungarian) only allow Matching derivations. Whatever the case may be, it appears that Raising alone is not sufficient to derive the full battery of empirical facts in every language, Hungarian being a case in point.

5. Conclusion

The present study aimed at taking a fresh look at Hungarian lexically headed relative clauses, more specifically, at their reconstruction possibilities, in order to see whether the universalist

¹⁰ In an early, pilot version of the present experiment, we used comparatively longer, 4-5 sentence contexts to prime the desired scope reading. In this case, all stimuli which contained dependent definite expression received high ratings (Mean = 5.40). However, the relatively long contexts proved to be distracting to participants, due to the added, non-relevant lexical content, and this design also inflated the completion time of the experiment to unacceptable levels, to the extent where more than half of the participants opted out, or became uncooperative halfway through.

thesis of Sportiche (2017) regarding the unavailability of Matching derivations across all languages can be upheld, based on empirical data. I have found that Hungarian provides ample empirical evidence that support a Matching account (reconstructions for Binding Conditions A, C and pronominal variable binding) with some of the data reported above (double-headed relatives and case non-attraction) being practically impossible to derive convincingly in a Raising setting. I also provided experimental data providing evidence for the obligatory scopal anti-reconstruction of the lexical head, further strengthening the conclusion that a Matching account is more appropriate for analyzing Hungarian lexically headed relatives.

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Abbreviations

| | | | |
|---------|----------------------------------|---------|-------------------|
| 3SG | Third Person Singular | PL | Plural |
| 1SG | First Person Singular | SUB | Sublative Case |
| ACC | Accusative Case | INST | Instrumental Case |
| DEFOBJ | Definite Object Agreement | PASTPRT | Past Participle |
| DAT | Dative Case | DE | Deontic Modality |
| POSS3SG | Third Person Singular Possessive | COND | Conditional |
| PAST | Past Tense | ALL | Allative Case |
| POSS | Possessive | INF | Infinitive |
| ABL | Ablative Case | PREDP | Predicate Phrase |

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References

- Abels, K. (2003). *Successive Cyclicity, Anti-locality, and Adposition Stranding*. PhD thesis, University of Connecticut.
- Bhatt, R. (2002). The Raising Analysis of Relative Clauses: Evidence from Adjectival Modification. *Natural Language Semantics* 10:1, pp. 43-90.
- Bianchi, V. (2000). The raising analysis of relative clauses: A reply to Borsley. *Linguistic Inquiry* 11:1, pp. 123-140.
- Chomsky, N. (1986). *Knowledge of Language: Its Nature, Origin, and Use*. The MIT press. Cambridge, MA.
- Chomsky, N. (1995). *The Minimalist Program*. The MIT Press, Cambridge, MA.
- Citko, Barbara. (2001). Deletion under Identity in Relative Clauses. *Proceedings of NELS 31*, pp. 131-145.
- Cooper, R. (1983). *Quantification and Syntactic Theory*. Reidel, Dordrecht.
- de Vries, Mark (2002). *The Syntax of Relativization*. [PhD thesis]. LOT, Utrecht.

- É. Kiss, Katalin (2000). The Hungarian Noun Phrase is like the English Noun Phrase. Alberti, Gábor, István Kenesei (eds.), *Approaches to Hungarian 7*. JATE Press, Szeged, pp. 121-149.
- Firth, D (1993). Recent Developments in Quasi-likelihood Methods. *Bulletin of International Statistical Institute* 55, pp. 341–358.
- Kayne, R. (1994). *The Antisymmetry of Syntax*. MIT Press, Cambridge, MA
- Lebeaux, David. (1991). Relative clauses, licensing and the nature of the derivation. Susan Rothstein (ed.) *Syntax and Semantics 25: Perspectives on phrase structure*. Academic Press, New York, pp. 209-239.
- Lebeaux, D. (2009). *Where does Binding Theory Apply?*. MIT Press, Cambridge, MA.
- Pankau, A. (2016). The Matching Analysis of Relative Clauses: Evidence from Upper Sorbian. Yohei Oseki, Masha Esipova, Stephanie Harves, Ann Arbor (eds.), *Proceedings of the 24th meeting of FASL*. Michigan Slavic Publications, Michigan, pp. 260-281.
- Rizzi, Luigi. (1997). The Fine Structure of the Left Periphery. Liliane Haegeman (ed.), *Elements of Grammar: A Handbook of Generative Syntax*. Kluwer, Dordrecht, pp. 281–337.
- Salzmann, M. (2006). Resumptive Pronouns and Matching Effects in Zurich German Relative Clauses as Distributed Deletion. Noureddine Elouazizi, Frank Landsbergen, Maika Poss, Martin Salzmann (eds.), *Leiden Papers in Linguistics 3.1*. LUCL, Leiden, pp. 17-50.
- Salzmann, M. (2017). *Reconstruction and Resumption in Indirect A'-dependencies. On the Syntax of Prolepsis and Relativization in (Swiss) German and beyond*. De Gruyter Mouton, Berlin.
- Sauerland, U. (2003). Unpronounced Heads in Relative Clauses. Kerstin Schwabe, Susanne Winkler (eds.), *The interfaces: Deriving and Interpreting Omitted Structures*. John Benjamins. Amsterdam, pp. 205-226.
- Sportiche, D. (2017). *Relative Clauses*. [Ms]. UCLA. <https://ling.auf.net/lingbuzz/003444>
- Szabolcsi, A. (2010). *Quantification*. CUP, Cambridge.
- Tóth, B. (2019). *A Feature-Inheritance Account of Hungarian Pre-C Topics*. [in prep].
- Zimmerman, T. E. (2001). Unspecificity and Intensionality. C. Féry, W. Sternefeld (eds.), *Audiatu Vox Sapientiae*. Akademie Verlag, Berlin, pp. 415-534.

Deriving the variation and constraints of the present perfect

Ruoying Zhao

I argue that the inferences and constraints of the English present perfect can be derived as a result of the competition with an alternative with stronger presuppositions, the simple past. I show that the English simple past, unlike the present perfect, presupposes uniqueness and anaphoricity of the topic time. By Maximize Presupposition, the present perfect is restricted to contexts in which the presuppositions of the simple past are not met. I also show that the crosslinguistic variation of the present perfect results from the availability of alternatives, by presenting data in several Romance and Germanic languages.

1. Introduction

The present perfect is famous for its various properties, inferences and constraints. The most notable constraint is the Present Perfect Puzzle (Klein 1992), which is the incompatibility of the present perfect with a past temporal adverbial (1). The present perfect is also associated with current relevance readings, such as the so-called ‘hot news’ reading (2)-(3), experiential (4), and resultative readings (5) (Portner 2011; Grønn & Von Stechow to appear). Less noted constraints of the present perfect include the absence of anaphoric uses, both when the antecedent is explicit (6) and in a sequence in narration (7), and its unavailability in sentences where the reference time is uniquely inferrable (8) (using the present perfect suggests a repeatability reading).

- (1) John arrived/#has arrived yesterday.
- (2) I’ve found it!
- (3) The President has been assassinated!
- (4) I’ve been to Paris.
- (5) The Chamber of Secrets has been opened.
- (6) What did Mary do last summer?
She visited/#has visited Paris.

- (7) (*Talking about a past time in the context: Mary was crossing the road.*)
 She was/#has been careless. A car rushed/#has rushed by and missed/#has missed her narrowly.
- (8) (*Pointing at a church.*)
 Who built/#has built this church?

Moreover, many of these phenomena are English-specific. The present perfect behaves differently in certain other languages such as (colloquial) French and (standard) Italian: it allows Present Perfect Puzzle sentences (9a) and has anaphoric (9b) and uniqueness readings (9c). Current relevance readings are not necessary (9d).

- (9) a. Jean est arrivé hier.
 Jean AUX arrived yesterday
 ‘Jean arrived yesterday.’ (Colloquial French)
- b. Maria ha visitato Parigi. Le è piaciuto.
 Maria has visited Paris she-DAT AUX pleased
 ‘Maria has visited Paris. She liked it.’ (Italian)
- c. (*Pointing at a church.*)
 Chi ha costruito questa chiesa?
 Who has built this church
 ‘Who built this church?’ (Italian)
- d. I romani hanno conquistato la Gallia.
 The Romans have conquered the Gaul
 ‘The Romans conquered Gaul.’ (Italian)

Such crosslinguistic variation is puzzling: either we must propose a different temporal semantics for the present perfect in these languages, or maintain the same analysis of the present perfect in languages that have it, and argue that in English, these inferences and constraints are due to something else.

In this paper, I will take the second approach. In particular, I argue the simple past in English has more presuppositions than the present perfect, namely the anaphoric presupposition and uniqueness presupposition. When these presuppositions are satisfied, the simple past must be preferred by the principle of Maximize Presupposition (Heim 1991; Sauerland 2002, 2003, 2008; Percus 2006; Singh 2011). The present perfect is then felicitous only when the presuppositions of the simple past are not entailed by the context, with the various inferences of the present perfect as antipresuppositions.

This analysis correctly captures the (anti-)presupposition projection patterns of the present perfect and the simple past in various environments, such as donkey anaphora, disjunction (bathroom anaphora), and quantified sentences. It also makes better crosslinguistic predictions than previous analyses, with the variation of the present perfect resulting from the absence of competition.

This paper is organized as follows: In Section 2, I will examine the usage of the English present perfect and its contrasts with the simple past, while summarizing previous analyses. In Section 3, I will present a formal analysis of the present perfect and the simple past in English. In Section 4, I will discuss the crosslinguistic variation. Section 5 concludes the paper.

2. Data

2.1. Discourse properties

As early as Partee (1973), the literature on tense has noted the similarity between pronouns and tense. The simple past is similar to pronouns in many respects, in particular, its anaphoric use. If the topic time of the sentence is anaphoric to an antecedent, the simple past is used. However, this is not the case for the present perfect, which resists anaphoric uses. This is illustrated by the following examples.

- (10) (Context: John tells Mary that he had a trip to Italy last month. Mary asks if he visited Rome during the trip.)
Did you visit Rome?/#Have you visited Rome?

In (10), the simple past refers to the salient time of the trip, while the present perfect cannot.

On the other hand, when there is no salient topic time in the context, the present perfect can be used, but the simple past is infelicitous.

- (11) (Context: Mary wants to ask about John's experience out of the blue).
#Did you visit/Have you visited Rome?

The present perfect introduces a new discourse referent that feeds subsequent anaphoric uptake by the simple past. It can start a sequence of narration. This is illustrated below: once the present perfect introduces a new topic time, the simple past is used to continue the narration.

- (12) John has painted a portrait for Bill. He painted it with oil.

These properties are reminiscent of the contrast between definite and indefinite DPs: in (13), when there is a salient spider in the context, the indefinite is infelicitous; in (14), the indefinite must be used in the absence of a salient antecedent; in (15), the indefinite *some food* and *a cat* feed subsequent anaphoric definites *the cat/it* and *the food*.

- (13) (Context: Everyone is scared because there is a giant spider in the house.)
a. We must be careful. The giant spider may be in this room.
b. #A giant spider may be in this room.
- (14) (Context: John saw a giant spider, but Mary doesn't know anything about it.)
John: I just saw #the/a giant spider in the kitchen!
- (15) I put some food in the garden and a cat appeared. The cat/It loved the food.

The following examples show that the discourse new property of the present perfect seems to be a result of failing to use the more appropriate simple past. It is in fact compatible with the anaphoric reading. While the most salient reading in (16b) is that Mary went to Rome at a different time from John's visit, the continuation in (c) shows that it is not *required* to be so. Again, this is parallel to the observations in the nominal domain (17), where the discourse new property of indefinite DPs are analyzed as antipresuppositions (Heim 1991, 2011; Singh 2011).

- (16) John has visited Rome with some friends. Mary
a. went too.
b. has too.

- c. John has visited Rome. Mary has too....In fact, she went with him.
- (17) There were four chairs. John sat down on a chair. Then Mary
 - a. knocked the chair over.
 - b. knocked a chair over. (Maratsos 1976; Heim 2011)
 - c. John sat down on a chair. Then Mary knocked a chair over...In fact, she knocked over the one he was sitting on.

Partee (1973) argues that the simple past in English has deictic uses, that (18) is used when the speaker directly refers to a contextually salient past time, namely the time before the speaker left the kitchen.

- (18) I didn't turn off the stove.

The only difference between deictic uses and anaphoric uses seems to be whether the antecedent is linguistically or contextually provided (Heim & Kratzer 1998). I will make this assumption in this paper as well.

The following example further illustrates the same point. The simple past in (19) refers to the salient past time, the time when Mary was at the gym.

- (19) (*Context: Mary and Sue are planning to go to the gym, but Sue has to cancel last minute. Mary goes alone and comes back after an hour.*)
Sue: So, how was/#has your workout been?

Note that previous analyses that characterize the present perfect as inherently resultative or having 'current relevance' cannot explain these examples, where it is clear that the result (of not turning off the stove) holds (18) and the event (of exercising) is relevant (19), yet the present perfect is infelicitous. Portner (2003), for instance, argues that 'current relevance' follows from a presupposition of the perfect that it needs to provide an answer to an existing discourse topic at the time of the utterance. However, Portner does not make it clear how the discourse topic is determined, and many of the examples discussed in the paper have rather vague interpretations. Consider:

- (20) a. I have been diagnosed with cancer.
- b. I was diagnosed with cancer. (Portner 2003)

Portner treats these two sentences differently, arguing that (a) requires 'the event of diagnosis itself be relevant to the speaker's intended discourse topic', and (b) not only allows that possibility but is also 'compatible with the speaker's just wanting to tell the story of his or her treatment and cure' (Portner 2003). However, it is not clear why the event of diagnosis does not qualify as a discourse topic when the speaker is telling the story of his treatment and cure. Moreover, when the topic time is salient, the present perfect is prohibited. This is not predicted by Portner, since under his analysis, the present perfect is the form with the extra 'discourse topic' presupposition, and as long as this presupposition is satisfied, the present perfect should be chosen over the simple past (by Maximize Presupposition), regardless of the saliency of the past time.¹

¹To avoid this problem, Portner (2003) combines this presupposition of the perfect with an Extended Now semantics of the present tense, but the Extended Now/present-tense-based analyses have difficulties with the crosslin-

It seems that the two sentences are better distinguished by the saliency of the topic time: in (a), the topic time is new, while in (b), it is a salient past time in the context. I argue that they illustrate the same phenomenon as previously mentioned examples in this section, namely the prohibition of deictic/anaphoric uses of the present perfect when there is a salient past topic time.

The Present Perfect Puzzle, then, can be reduced to the case where the antecedent is the time denoted by the past temporal adverbial. The presuppositions of the simple past are satisfied, and Maximize Presupposition rules out the present perfect.

2.2. *The Present Perfect Puzzle and interaction with adverbials*

2.2.1. *The distribution of the Present Perfect Puzzle*

As noted above, the Present Perfect Puzzle is used by Klein (1992) to describe the observation that in English, the present perfect cannot occur with a past temporal adverbial.

(21) John arrived/#has arrived yesterday.

Klein's (1992) account has two parts. First, the topic time of a present perfect sentence is the speech time, and second, the adverbial modifies the event time, and finally, for some reason (he posits a principle called the P-Definiteness Constraint), languages like English prohibit the modification of the event time when the topic time is known.

Klein's account faces some difficulties. The first one is a technical difficulty. Under the current consensus in the literature on tense and aspect, temporal adverbials are predicates of time intervals that modify AspP, both being predicates of time (Kratzer 1998), and by Predicate Modification return another predicate of time. In this system, the actual run time of the event $\tau(e)$ is not directly accessible to the adverbial, which instead modifies the interval t that $\tau(e)$ is related to, namely the topic time. The second problem is that the P-Definiteness Constraint seems arbitrary. To account for languages without the Present Perfect Puzzle, one has to argue that these languages allow modifying both the event time $\tau(e)$ and the topic time t . Apart from the technological details of how to achieve that, there is no obvious motivation behind why we would have such a difference in languages.²

The most influential accounts of the Present Perfect Puzzle are the Extended Now theories (McCoard 1978; Dowty 1979; Iatridou et al. 2003; Grønn & Von Stechow 2016) and the present-tense-based theories (Giorgi & Pianesi 1997; Pancheva & Von Stechow 2004). The Extended Now theories argue that the present perfect introduces an interval containing the speech time, called the Extended Now. The present-tense-based theories argue that the semantics of the present perfect can be strengthened to an Extended Now semantics, depending on what kind of present tense the language has. Ultimately, both types of theories try to derive the Present Perfect Puzzle as a semantic contradiction resulting from the modification of an interval containing the present (namely, the Extended Now) with a past temporal adverbial (which requires the time to be fully in the past).

guistic variation as well as implicit past topic times (see Section 2.2.1).

²Changing the semantic type of temporal adverbials may have other consequences such as the syntactic hierarchy resulting from this, since the semantic scopes of adverbials are also reflected in their syntactic ordering (Haider 2002; Ernst 2004; Frey 2003).

These accounts also face two problems. The first one is the crosslinguistic variation, which I summarized in the introduction. For languages without the Present Perfect Puzzle, we have to either give up the Extended Now semantics (which is arbitrary and there is no explanation why it should be so), or argue that languages with and without the Present Perfect Puzzle have different present tenses (which is not borne out, see Rothstein 2008, Portner 2011). The second problem is that in English, we observe Present Perfect Puzzle effects even without overt temporal adverbials. This is noted by Portner (2011), illustrated by the following examples: they are subject to Present Perfect Puzzle like constraints despite the fact that there are no overt temporal adverbials modifying the topic time.

- (22) a. #I have enjoyed yesterday's party.
 b. Mary #has arrived on yesterday's flight.

If the Present Perfect Puzzle arises as a contradiction due to temporal modification, it is not clear why these examples are bad, because there is no overt adverbial modifying the topic time. Instead, the topic times in these sentences are implied by or inferrable from an argument or a non-temporal adverbial.

I argue that such sentences are also instances of the topic time being anaphoric to a familiar past time, just like those in the previous subsection. To see this, note that simply having a past denoting expression in one of the arguments of the verb is not sufficient, the lexical semantics of the verb also matters: the present perfect is fine in (23) below, but not in the examples above. The difference is that even though the arguments contain *last year* and *yesterday*, the topic time does not have to be those times: I can see the film at any time, and Mary can see the person known as *yesterday's visitor* at any time. The present perfect can be used as long as the topic time is discourse new (presumably, not *last year* or *yesterday*). In contrast, in (22) above, this is not the case. I can only enjoy a party *when I'm at the party*, and Mary can only arrive on yesterday's flight if she arrives *with the flight*, that is, the topic time must coincide with the time implied by the argument.

- (23) a. I have seen last year's best rated film.
 b. Mary has seen yesterday's visitor. (Portner 2011)

Hence, sentences like (22) are just like Present Perfect Puzzle sentences in that the topic time is always available, being provided in the sentences themselves (inferrable from the arguments and the semantics of the verb, and non-temporal adverbials).

2.2.2. Present adverbials

It has been noted that the Present Perfect Puzzle seems to disappear when the temporal adverbial denotes a 'present' time, i.e. a time that is not over yet.

- (24) John has visited Paris this month.
 (25) Mary has played football today.

Closer examination shows that there are two cases to consider here. The first case is when the topic time is the entire interval *today* or *this month*, which overlaps with the speech time. The second case is when the topic time is actually a past time that is more specific than the adverbial.

In the first case, since the adverbial denotes a time interval that overlaps with the speech time, the simple past cannot be anaphoric to that time, because it requires $t \prec t_c$. I argue that the semantics of the present perfect, in contrast, allows $t \preceq t_c$ (see Section 3 for details). Recall that in Section 2.1, I argued that the present perfect is in fact *compatible* with the anaphoric reading (16). In this case, the present perfect is the only option for the anaphoric reading since a present adverbial cannot satisfy $t \prec t_c$ but can with $t \preceq t_c$. Moreover, when the topic time includes the speech time, the Universal Perfect reading (i.e. the event or state still holds) is available with an imperfective ($t \subseteq \tau(\theta)$) (Iatridou et al. 2003).

(26) John has been feeling sick this entire week. (still sick)

In the second case, the antecedent of the topic time is actually a more specific past time in the context (just not mentioned in the sentence), and all the properties and contrasts between the present perfect and the simple past should remain the same as in previous subsections. Consider:

(27) a. I took my medicines today.
b. I have taken my medicines today.

(28) a. Mary paid her rent this month.
b. Mary has paid her rent this month.

The (a) and (b) sentences contrast in the familiarity of the reference time. (27a) is uttered in contexts in which the speaker is supposed to take the medicines at a particular time every day, and now this time is in the past, and the speaker asserts that he or she did take the medicine at that expected time. It can be degraded if uttered out-of-the-blue in some situations, depending on how easy it is to accommodate this past time into the context. (27b), in contrast, suggests that in this context there is no such time that the speaker is expected to take the medicines.

Similarly, in (28), since rent is usually understood to be paid on a fixed day every month (for example, the 1st), (28a) can only be uttered *after* that date, and the assertion is that Mary indeed paid her rent *at the expected time*. In contrast, (28b) suggests that there is no such day in the context—either Mary can pay whenever, or the due date is not part of the speaker and the addressee's shared knowledge.

The familiarity requirement also correctly predicts that the simple past is infelicitous in the following context.

(29) (Context: Sue does not know about Mary's usual/planned vacation time, and she asks out of the blue...)
Mary, #did you have your vacations this year?

2.2.3. Since-adverbials

Another type of temporal adverbials that selects the present perfect over the simple past are *since*-adverbials.

(30) I have been/#was sick since 2017.

(31) I have been watching TV since this morning.

I argue that this is because an adverbial like *since-x* denotes a time interval $[x, t_c]$ that starts with

x and ends at the speech time. As a result, the simple past cannot be anaphoric to a time that overlaps with the speech time, and the present perfect is the only available option in English. When there is an underlying imperfective, the Universal Perfect reading is available, namely, the speaker is still sick/watching TV.³

Note that (30) is ambiguous between two meanings, depending on whether the underlying aspect is perfective or imperfective: when the aspect is perfective, (in English this does not show on stative verbs), the reading is that ‘in the interval between 2017 and now, there are instances in which I was sick’ ($\exists s[\text{sick}(s) \wedge \tau(s) \subset t]$ where $t = [2017, t_c]$); when the aspect is imperfective, the Universal Perfect reading arises (Iatridou et al. 2003), namely ‘the interval between 2017 and now is contained in a state of me being sick, i.e. I am still sick’ ($\exists s[\text{sick}(s) \wedge t \subseteq \tau(s)]$ where $t = [2017, t_c]$).

2.2.4. When-questions

A related phenomenon is the fact that *when*-questions are incompatible with the present perfect.

(32) When did Mary leave/#has Mary left?

Hamblin (1973) first analyzed *wh*-questions as denoting sets of possible answers. Simply put, *wh*-words denote sets of alternatives. In the case of *when*-questions, *when* denotes a set of times, and the resulting *when*-question such as the one above will be a set of propositions $\{\text{Mary left yesterday; Mary left on Wednesday; Mary left last week; etc.}\}$.⁴ Moreover, it is generally agreed that *wh*-questions seem to have an existential presupposition (with some distinctions between clefted and non-clefted questions). For example, Karttunen & Peters (1976) pointed out that the following discourse is infelicitous:

(33) I’m not sure whether Mary likes any student. # Which students does she like?

Abusch (2010) also argues that ordinary *wh*-questions have a soft (i.e. cancellable) presupposition that there is a positive answer. Under her analysis, a question like *Who does Mary like?* presupposes that the speaker assumes Mary indeed likes someone. Similarly, *When did Mary leave?* will presuppose that the speaker assumes that Mary has left *at some past time*.

Regardless of the theoretical debate in question semantics, these properties of *wh*-questions suggest it is expected that *when*-questions do not allow the present perfect to occur with a past adverbial. Either we can argue that they are simply hidden Present Perfect Puzzle sentences (if we analyze *when*-questions along the lines of Hamblin 1973 or Karttunen 1977), or that a *when*-question is only felicitous when it is presupposed that there exists a particular past time when the event in question took place.

³In many Romance languages, for the Universal Perfect reading, *since*-sentences only allows the present tense, because the present perfect in those languages is obligatorily perfective.

⁴This idea was later modified by Karttunen (1977), who argues that *wh*-questions should denote true propositions, and later by Groenendijk & Stokhof (1982) who propose that questions are partitions of worlds. See Dayal (2016).

2.3. Repeatable and hot news readings

The difference in anaphoricity described above does not cover all the contrast between the present perfect and the simple past. There are instances where the simple past is allowed out of the blue when no antecedent time is available (either implicitly or explicitly). I argue that these are instances where the simple past is licensed not by familiarity, but by the existence and uniqueness of the topic time. Using the present perfect then gives rise to other inferences: either the eventuality is repeatable (the time is not unique), or the topic time is not assumed to exist yet (known as the ‘hot news’ reading).

Consider the following examples, which can be uttered out of the blue with no infelicity, even though the topic time is not anaphoric to any antecedent time.

- (34) Sheldon was raised in Texas.
- (35) Leonard went to Princeton.
- (36) Penny didn’t go to college.
- (37) Bill didn’t finish high school.

What they have in common is that the topic time is presupposed to exist and unique in each situation. The existence and uniqueness of the topic time in question is licensed not by the specific conversational context, but by general world knowledge (Hawkins 2015). In (34), when we speak about when someone was raised, it is presupposed that such a past time exists and is unique for that person. We do not have to know exactly when it is, but it suffices that we know its existence and uniqueness. In (35), if the speaker means Leonard going to Princeton for his degree, then it is clear that the time interval is at whatever age he was doing his degree, which is a past interval presupposed to exist and to be unique for Leonard. Note that if *go to Princeton* means *physically* going to the campus, then (35) is infelicitous out of the blue because this time is not uniquely inferable. Similarly, in (36), the speaker is referring to the time when Penny was at the age when people usually go to college. Uttering (36) indicates that the speaker assumes there is such a time in the past, and it is unique for Penny (in fact, for every person). Similarly, in (37), the topic time is when Bill was supposed to finish high school.

Such uses of the simple past are only felicitous when we know (or assume) that such a past time exists. The contrast between the following two sentences illustrates this point. The first sentence is used to announce the birth of a person, namely, the ‘hot news’ reading. The simple past is infelicitous in this case, since if the person is not known to have been born yet, the context cannot entail there exists a unique birth time. There is no previously mentioned antecedent either. The present perfect is the only option, because it can be discourse new. In contrast, the second sentence is uttered when we already know that Jesus exists (and has a unique birth time), and the simple past is felicitous, and in fact, is required.

- (38) (*Out of the blue:*)
 - a. The Messiah has been born/#was born!
 - b. Jesus was born in Bethlehem.

If the ‘hot news’ reading is not available, then the present perfect in such contexts gives rise to the inference that the event is repeatable: namely, there could be multiple times at which the person is born (39), and one such time was in New Zealand.

(39) ??I've been born in New Zealand.

Similarly, with created or obtained objects that already exist, the present perfect is infelicitous when the speaker talks about the creation time of that object, and the simple past must be used. Again, if the 'hot news' reading is not available, the present perfect gives rise to the repeatability reading: the printing machine can be invented many times, etc.

(40) (*Talking about the famous 15th century printing machine:*)
Gutenberg invented/#has invented the printing machine.⁵

(41) (*Looking at some groceries in the kitchen:*)
Who bought/#has bought these?

(42) (*Looking at a book:*)
Who wrote/#has written this book?

(43) (*Pointing at a church:*)
Who built/#has built this church?
Borromini built/#has built this church? (Kratzer 1998)

A way to test the uniqueness reading of the simple past is to put it under the scope of a quantifier. If the simple past is licensed by the existence and uniqueness of the topic time, it gets a covarying reading under quantifiers. If the simple past is anaphoric, there is no covarying reading.

Consider (44), the simple past in these sentences obviously cannot be anaphoric, which would result in the very odd reading *at that time, every boy was born in New Zealand*, etc. The sentences presuppose that every boy has a unique birth time, every book a unique time when it was written, and every professor a unique time when she got her PhD. This is the same presupposition projection pattern as observed in sentences of the form *Every A B* in general, that every element of *A* satisfies the presupposition of *B*. A 'general past' analysis cannot predict this.

- (44) a. Every boy was born in New Zealand.
b. Every book on this shelf was written by a Russian.
c. Every professor here got her PhD from the same university.

In contrast, the anaphoric simple past gives rise to a different pattern in these quantified sentences, there is no covarying reading, and it needs to be anaphoric to a salient past time in the context. (45) illustrates this. For example, in (45a), usually there is no reason to assume that for each boy, there is a unique past time such that this boy visits New Zealand, it needs to be anaphoric to a salient past time in the context, and the reading is every boy went to New Zealand during the same time, last year. Similarly for (b) and (c): everyone threw up during the same time interval after the ride, and every student went to the gym during yesterday.

- (45) a. (Last year,) every boy went to New Zealand.
b. (After the roller coaster ride,) everyone threw up.
c. (Yesterday,) every student went to the gym.

Recall that in opposition to the simple past, the present perfect gives rise to inferences such as

⁵Portner (2003) noted that if this sentence is used to announce the invention of the printing machine, the present perfect is fine. *Gutenberg has discovered the art of printing!*

the ‘hot news’ reading or the ‘repeatability’ inference. These inferences survive under quantifiers. (46) is uttered when the context does not entail that the enemies of the Corleone family are dead (and hence each of them has a unique death time). (47) on the other hand is odd, because our common knowledge is that Abraham Lincoln and John F. Kennedy are already dead, and both have a unique death time.

(46) All the enemies of the Corleone family have been killed!

(47) #Both Abraham Lincoln and John F. Kennedy have been assassinated.

Similarly, previous literature sometimes categorizes (48b) as an instance of the lifetime effect, but the existence of (48a) shows that the distinction is not in whether the subject is alive or not, but the status of the topic time.

- (48) a. Donald Trump has been assassinated!
b. Abraham Lincoln was assassinated.

3. Formalization

In this section, I will provide a formalization of the present perfect and the simple past. Motivated by the parallels between the present perfect/simple past and (in)definite DPs, and following the tradition in philosophy and semantics that definite descriptions are individuals denoting expressions of type *e*, as well as the pronominal theory of tense, I assume that the simple past is a time denoting expressions of type *i* (intervals) that saturates the temporal argument of the AspP it combines with. The present perfect, on the other hand, is an indefinite temporal expression.

This section is organized as follows: I will first discuss the role of Maximize Presupposition. Then the uniqueness and the anaphoric readings of the simple past are discussed separately. In both cases, the simple past is a presuppositionally stronger alternative to the present perfect, which is then restricted to contexts where the simple past is not available.

3.1. Maximize Presupposition

The observations from Section 2 show that the present perfect and the simple past can be distinguished by the presuppositions they carry. The present perfect has no presuppositions, while the English simple past presupposes a past antecedent in its anaphoric use, and presupposes the existence and uniqueness of the topic times in other instances. Given this asymmetry and the semantic similarities between the two (the present perfect allows the topic time to overlap with the speech time), I propose that if the topic time is in the past, the simple past is an alternative with stronger presuppositions than the present perfect. By the principle of Maximize Presupposition (Heim 1991; Sauerland 2002, 2003, 2008; Percus 2006; Schlenker 2012), the sentence with the simple past must be preferred whenever possible. The present perfect is then allowed only when the presuppositions of the simple past are not entailed by the context, or when the simple past is unavailable. Hence, the various inferences of the present perfect are *antipresuppositions* that arise due to the failure of using the simple past.

I adopt the version of Maximize Presupposition as in Percus (2006). I propose that the simple

past is a *lexical alternative* to the present perfect in the following sense. I assume that they both occupy the T head, following Pancheva & Von Stechow (2004).

(49) **Lexical Alternatives**

The lexical alternatives of a lexical item α are all the presuppositionally stronger items β of the same category.

The *alternative family* of an Logical Form (henceforth LF) are the alternatives generated by the lexical alternatives.

(50) **Alternative Family**

The alternative family of an LF ϕ is the set of LFs obtained by replacing a lexical item in ϕ by one of its lexical alternatives.

Maximize Presupposition and antipresuppositions are then defined as:

(51) **Maximize Presupposition**

If a sentence ψ is in the alternative family of sentence ϕ , and the context \mathcal{C} is such that

- a. the presuppositions of ϕ and ψ are satisfied in \mathcal{C}
 - b. ϕ and ψ are contextually equivalent in \mathcal{C}
- then ϕ should be preferred to ψ .

(52) **Antipresupposition**

If a sentence ψ is an alternative of a sentence ϕ as defined above, then using ϕ instead of ψ gives rise to the inference that the context \mathcal{C} does not satisfy the presupposition of ψ .

This approach based on lexical alternatives is needed in order to account for sentences with no global presuppositions, some examples include:

- (53) Either John has never submitted his paper, or he *did*/#has done so without telling us. (disjunction)
- (54) John visited/#has visited Paris last month. (Present Perfect Puzzle)
- (55) Everyone who has (ever) had a ride on this roller coaster threw up/#has thrown up. (donkey anaphora)

These sentences have no presuppositions globally: they can be uttered out of the blue, without presupposing anything. However, the present perfect is still ruled out.

3.2. *The unique simple past vs. the present perfect*

The uniqueness reading of the simple past discussed in Section 2.3 shows that the pronominal theory of tense is sometimes too strong. One problem is that there are clearly instances of the simple past being used without antecedents. Another problem is that the covarying reading in quantified sentences cannot be straightforwardly captured in a pronominal theory: *Every boy was born in New Zealand* would have the reading *At $g(i)$, every boy was born* (with g being the assignment function), which is not the usual reading of the sentence. A strictly anaphoric

analysis of the simple past along the lines of Heim (1982) for definite DPs also faces difficulties, since unlike classic donkey anaphora sentences, these sentences do not contain explicit indefinites.

This suggests that we must come up with a weaker semantics for the uniqueness reading of the simple past, and ideally it should be related to the stronger anaphoric reading.

The solution draws insights from the recent literature on definiteness DPs. In particular, languages can mark unique and anaphoric definites differently. The uniqueness reading is derived by a Fregean (Frege 1892; Strawson 1950) analysis where existence and uniqueness are presupposed within a situation (Schwarz 2009, 2013; Jenks 2015, 2018; Bombi 2018). Unique definites and anaphoric definites are related in that anaphoric definites have an additional index on top of the uniqueness semantics, and this index can be then dynamically bound and require an antecedent in the context.

To capture the existence and uniqueness reading of the English simple past, I adopt a similar approach, and propose that such instances of the simple past are distinguished from the anaphoric ones. In particular, the unique simple past has Fregean semantics, presupposing the existence and uniqueness of the topic time in a particular situation.⁶

Previous literature (Büring 2004; Elbourne 2005; Schwarz 2009) has explored the idea that determiners come with a covert situation pronoun, and the uniqueness of definites is evaluated within that situation. This situation is known as the resource situation. Since uniqueness often is evaluated with some kind of domain restriction, the resource situation is taken to be minimal. The notion of minimality can be captured by the idea of exemplification in the sense of Kratzer (2007), as defined in (56).

(56) **Exemplification**

A situation s exemplifies a proposition p if whenever there is a part of s in which p is not true, then s is a minimal situation in which p is true.

In other words, an exemplifying situation s for the proposition p is a situation that does not contain anything that does not contribute to the truth of p .

Taking into account the covarying readings in *Everyone was born in Paris*, I assume that tenses also come with a situation pronoun, located in T , and can be bound in such quantified sentences. In the literature on situations, topic times (Klein 1994) are sometimes regarded as equivalent to (Austinian) topic situations (Austin 1979; Perry & Barwise 1983; Kratzer 2007).⁷ Taking into account the observations in Section 2.3, however, I think it is necessary to separate the two in the ontology, so that the existence and uniqueness of the topic time can be evaluated.

With the assumptions regarding situations made in the previous subsection, I propose the following semantics for the English simple past licensed by uniqueness.

⁶Following Kratzer (1989), I assume that situations are parts of possible worlds, ordered with the ‘part of’ relation \leq , and worlds are maximal situations.

⁷This is motivated by the following example: if the speaker describes a particular past situation such as *There was a book on the table. It was in Russian*, the second sentence must be in the past tense, despite the fact that the book must be still in Russian at the speech time. Klein (1994) argues that this is because tense marks the topic time, which is in the past.

(57) **The simple past with a uniqueness presupposition⁸**

$\llbracket \text{Simple Past} \rrbracket = \lambda s_r : \exists! t[t \leq s_r \wedge t \prec t_c]. \iota t.[t \leq s_r \wedge t \prec t_c]$

where \leq denotes the ‘part-of’ relation, $t \leq s$ means the situation contains the time interval t ; \prec denotes the ‘precede’ relation on time intervals, and $t \prec t'$ iff there is no $t'' \subset t$ s.t. $t'' \succ t'$.

Since time intervals are divisive and dense, we need the t given by the simple past to be *maximal*. This allows us to identify the unique maximal time interval in a given situation: by our world knowledge, we can uniquely identify the maximal time interval of, for example, the building time of the Colosseum, and the birth time of John, etc., just like in the case of unique definites, we can uniquely identify the steering wheel when talking about a particular car. This does not require us to know exactly when it is, what matters is this time exists and is unique. When the situation pronoun is saturated, the T node then returns the unique maximal time interval which is in s_r .

The derivation of the LFs of the examples in Section 2.3 is shown below.

(58) (*Pointing at a church:*)

a. Borromini built this church.

b. $\llbracket_{TP}[_{TPAST} s_r] \llbracket_{AspP} \text{PERFECTIVE} [\text{Borromini build this church}] \rrbracket \rrbracket$

c. Defined iff in $\exists! t[t \leq s_r \wedge t \prec t_c]$

The unique maximal time in s_r (the building of the church) that is the building time.

When defined,

$\lambda s. \exists e[\text{Borromini-build-this-church}(e) \wedge \tau(e) \subset \iota t.[t \leq s_r \wedge t \prec t_c]]$ in s

(59) (*Talking about Penny’s education:*)

a. Penny didn’t go to college.

b. $\llbracket_{TP}[_{TPAST} s_r] \llbracket_{NegP} \text{not} \llbracket_{AspP} \text{PERFECTIVE} [\text{Penny go to college}] \rrbracket \rrbracket \rrbracket$

c. Defined iff in $\exists! t[t \leq s_r \wedge t \prec t_c]$

The unique time in s_r (the education history of Penny) that is the time when she was supposed to go to college.

When defined,

$\lambda s. \neg \exists e[\text{Penny-go-to-college}(e) \wedge \tau(e) \subset \iota t.[t \leq s_r \wedge t \prec t_c]]$ in s

(60) (*Talking about Mary’s birth:*)

a. Mary was born in Australia.

b. $\llbracket_{TP}[_{TPAST} s_r] \llbracket_{AspP} \text{PERFECTIVE} [\text{Mary be born in Australia}] \rrbracket \rrbracket$

c. Defined iff in $\exists! t[t \leq s_r \wedge t \prec t_c]$

The unique time in s_r (Mary’s birth) that is her birth time.

d. When defined,

$\lambda s. \exists e[\text{Mary-be-born}(e) \wedge \text{location}(e) = \text{Australia} \wedge \tau(e) \subset \iota t.[t \leq s_r \wedge t \prec t_c]]$ in s

The present perfect, on the other hand, is defined below. Following Pancheva & Von Stechow

⁸I will not generalize this analysis to the past tense morphology in general at this moment because we also have to consider the role of [PAST] in constructions like the past perfect and various embedded pasts in attitude contexts, which is beyond the scope of this paper.

(2004), I assume that the perfect operator moves to T and then type raised to combine with the situation pronoun. This results in a complex operator [PRESENT PERFECT]. Note that it allows t' to overlap with the speech time t_c .

(61) **The Present Perfect**

- a. $\llbracket \text{PERFECT} \rrbracket = \lambda t. \lambda s_r. \lambda p_{\langle i, st \rangle}. \lambda s. \exists t' [t' \leq s_r \wedge t' \preceq t \wedge p(t')(s)]$
- b. $\llbracket \text{PRESENT} \rrbracket = t_c$ or a time overlapping with t_c
- c. $\llbracket \text{PRESENT PERFECT} \rrbracket = \lambda s_r. \lambda p_{\langle i, st \rangle}. \lambda s. \exists t' [t' \leq s_r \wedge t' \preceq t_c \wedge p(t')(s)]$

Using the present perfect instead, would result in the following LFs:

(62) (*Pointing at a church:*)

- a. Borromini has built this church.
- b. $[_{TP}[_{T} \text{PRESENT PERFECT } s_r][_{\text{PerfP}}[_{\text{AspP}} \text{PERFECTIVE} [\text{Borromini build this church}]]]]$
No presuppositions.
- c. $\lambda s. \exists t' [t' \leq s_r \wedge t' \preceq t_c \wedge \exists e [\text{B.build-this-church}(e) \wedge \tau(e) \subset t']]$ in s

(63) (*Talking about Mary's birth:*)

- a. Mary has been born in Australia.
- b. $[_{TP}[_{T} \text{PRESENT PERFECT } s_r][_{\text{PerfP}}[_{\text{AspP}} \text{PERFECTIVE} [\text{Mary be born in Australia}]]]]$
- c. No presuppositions.
- d. $\lambda s. \exists t' [t' \leq s_r \wedge t' \preceq t_c \wedge \exists e [\text{Mary-be born}(e) \wedge \text{location}(e) = \text{Australia} \wedge \tau(e) \subset t']]$ in s

(64) (*Talking about Penny's education:*)

- a. Penny hasn't gone to college.
- b. $[_{TP}[_{T} \text{PRESENT PERFECT } s_r][_{\text{PerfP}}[_{\text{AspP}} \text{PERFECTIVE} [\text{Penny go to college}]]]]$
- c. No presuppositions.
- d. $\lambda s. \neg \exists t' [t' \leq s_r \wedge t' \preceq t_c \wedge \exists e [\text{Penny-go-to-college}(e) \wedge \tau(e) \subset t']]$ in s

The LFs with the present perfect are equivalent to the ones with the simple past, except that the existence and uniqueness of the interval t' is not presupposed. In these examples, antipresuppositions arise: either Borromini building the church is new information, or under some very strong context, Borromini could build the church repeatedly; Mary is not presupposed to already have a unique birth time; similarly, it is not presupposed that there is a unique past interval during which Penny was expected to go to college, otherwise the speaker would have used the simple past. Note that the scope of negation has to be high in these cases, because otherwise we would have a very weak reading, one in which there is a time such that Penny did not go to college at that time.⁹

Now consider the covarying case. Recall that the most salient reading of (65) below is that everyone (in the resource situation) can have different ages (i.e. born at different times, which is unique for each person). The simple past *was* is not anaphoric to any previously mentioned

⁹The absence of the wide scope reading distinguishes the present perfect from other indefinites. However, this may be due to the inherent existential reading when using the present perfect, in the sense that non-existential predicates like *meet* contrast with existential predicates like *have* in whether the wide scope reading of the indefinite is available. *John didn't meet a linguist* has a wide scope reading for the indefinite, and can be continued with *namely, Mary*, but *John doesn't have a car* cannot be continued with *namely, that one parked outside*. A detailed discussion of the scope of indefinites is beyond the scope of this paper.

or contextually salient time interval, rather, the time it denotes is unique for each person.

(65) Everyone was born in Paris.

The covarying case is derived via the binding of the situation variable by the universal quantifier. In order to derive the right reading with the covarying reading, we need a matching function M (assumed to be contextually salient) that maps each person in the restrictor of the quantifier to a situation related to that person's birth.

I adopt the following analysis of *every*.

(66) $\llbracket \text{every} \rrbracket = \lambda s_r. \lambda P_{\langle e, st \rangle}. \lambda Q_{\langle e, st \rangle}. \lambda s. \forall x \forall s_1 [[s_1 \leq s_r \wedge \text{EX}(P(x))(s_1)]] \rightarrow \exists s_2 [s_1 \leq s_2 \wedge s_2 \leq s \wedge M(s_2) = x \wedge Q(x)(s_2)]$
 where M is a matching function (Rothstein 1995) that guarantees that the situation s_2 is related to each x (i.e. different x 's will have different s_2 's);
 $\text{EX}(P(x))(s_1)$ stands for s_1 *exemplifies* that $P(x)$.

In order to bind the situation argument under *every*, I adopt the type-variant of the situation binder Σ in Büring (2004) and Schwarz (2009).

(67) $\llbracket \Sigma_n \text{XP} \rrbracket^g = \lambda x. \lambda s. [\llbracket \text{XP} \rrbracket^{g[s_n \rightarrow s]}(x)(s)]$

The LF under the intended reading and the derivation is shown below.

(68) a. $[[[\text{every } s_r] \text{one}] [\Sigma_5 \lambda 4 [\text{TP} [\text{TPAST } s_5] [t_4 \text{ be born in Paris}]]]]$
 b. Defined iff for each person x , we can identify a situation s_2 such that s_2 includes a unique maximal interval $t \prec t_c$ (namely, that person's birth time).
 c. $\lambda s. \forall x \forall s_1 [[s_1 \leq s_r \wedge \text{EX}(\text{person}(x))(s_1)]] \rightarrow \exists s_2 [s_1 \leq s_2 \leq s \wedge M(s_2) = x \wedge \exists e [x\text{-born}(e) \wedge \text{location}(e) = \text{Paris} \wedge \tau(e) \subset \iota[t \leq s_2 \wedge t \prec t_c]]]$ in s

The sentence with the present perfect, on the other hand, is deviant because failing to use the simple past gives rise to an antipresupposition that it is not the case that for every person, there is already a unique birth time.

(69) a. $[[[\text{every } s_r] \text{one}]_4 [\Sigma_5 \lambda 4 [\text{TP} [\text{PRESENT PERFECT } s_5] [t_4 \text{ be born in Paris}]]]]$
 b. $\lambda s. \forall x \forall s_1 [[s_1 \leq s_r \wedge \text{EX}(\text{person}(x))(s_1)]] \rightarrow \exists s_2 [s_1 \leq s_2 \leq s \wedge M(s_2) = x \wedge \exists t' [t' \leq s_2 \wedge t' \preceq t_c \wedge \exists e [x\text{-born}(e) \wedge \text{location}(e) = \text{Paris} \wedge \tau(e) \subset t']]]$ in s

As a result, the present perfect in this sentence is only felicitous under the 'hot news' reading, namely, it is not in the common ground that every (expected) boy has been born already, and the speaker announces that every boy has been born.

3.3. Anaphoric uses

Recent literature analyzes anaphoric definite descriptions as having an additional index argument (Schwarz 2009, 2013; Jenks 2015, 2018). This is motivated by the fact that languages may mark unique and anaphoric readings with different forms. The index distinguishes anaphoric and unique definites in that anaphoric definites presuppose also that the unique individual has to be identical to the salient individual represented by the index. This condition captures the

difference between unique and anaphoric definites under quantifiers (illustrated in Section 2.3), where the anaphoric definites do not have covarying reading but unique definites do, since only in the first case is the index condition met.

I posit the same condition for the anaphoric simple past in English. This analysis can be seen as an extended version of the pronominal theory of tense in the previous literature, where the value of tense is determined by the assignment function's interpretation of its index. One difference is that identity with the time denoted by the index y is presupposed. This presupposition explains the familiarity effects in Section 2.1.

$$(70) \quad \llbracket \text{Simple Past} \rrbracket = \lambda s_r. \lambda y : \exists! t [t \leq s_r \wedge t \prec t_c \wedge t = y]. \iota t. [t \leq s_r \wedge t \prec t_c \wedge t = y]$$

Under this analysis, the indexed simple past under a quantifier will obligatorily be anaphoric to a salient time already in the context, capturing the contrast between (44) and (45). One example is given below.

- (71) Every boy was born in New Zealand.
(Was has the covarying reading with each boy.)
- [[[every s_r]boy] [$\Sigma_5 \lambda 4 [_{TP} [_{T \text{ PAST}} s_5] [t_4$ be born in New Zealand]]]]
 - Defined iff for each boy x , we can identify a situation s_2 such that s_2 includes a unique maximal interval $t \prec t_c$ (namely, that boy's birth time)
 - $\lambda s. \forall x \forall s_1 [[s_1 \leq s_r \wedge \text{EX}(\text{boy}(x)(s_1))]] \rightarrow \exists s_2 [s_1 \leq s_2 \leq s \wedge M(s_2) = x \wedge \exists e [x\text{-born}(e) \wedge \text{location}(e) = \text{New Zealand} \wedge \tau(e) \subset \iota t [t \leq s_2 \wedge t \prec t_c]]]$ in s
- (72) (Last year₆...)Every boy went₆ to New Zealand.
(Was is anaphoric to a single time interval, no covarying reading.)
- [[[every s_r]boy] [$\lambda 5 [_{TP} [_{T \text{ PAST}} s_r] 6] [t_5$ go to New Zealand]]]]
 - Defined iff for each boy x , we can identify a unique t such that $t \prec t_c$ and $t = g(6)$.
 - $\lambda s. \forall x \forall s_1 [[s_1 \leq s_r \wedge \text{EX}(\text{boy}(x)(s_1))]] \rightarrow \exists s_2 [s_1 \leq s_2 \leq s \wedge M(s_2) = x \wedge \exists e [x\text{-go-to-New-Zealand}(e) \wedge \tau(e) \subset g(6)]]]$ in s

Note that for the anaphoric reading, it does not matter if we bind the situation variable in T or not, because the result is the same: the past time in each of the situations must be equal to $g(6)$.

The donkey anaphora reading of the simple past is derived by binding its index in the same way most dynamic theories do. While a uniqueness-based analysis of donkey anaphora is possible (Heim 1990; Elbourne 2005, 2013), recent literature provides independent reasons to disprefer this approach: in languages that mark unique and anaphoric definites differently, donkey anaphora always share form with the anaphoric one (for details, see Schwarz 2009, 2013; Jenks 2015, 2018).

There are various ways of implementing the dynamic binding of the index on the simple past: either we can adopt the File Change Semantics of Heim (1982) and argue that the present perfect and the simple past both introduce (time-denoting) variables, or we can appeal to the system of Groenendijk & Stokhof (1991) with dynamic conjunction. For the purpose of this paper, it doesn't matter which mechanism we adopt, as long as we allow that possibility for the simple past.¹⁰

¹⁰In File Change Semantics, indefinites are variables and do not have existential force, and they are either existentially closed or bound by a quantifier. This will require us to modify the lexical semantics of the (present) perfect into one that introduces a new discourse referent for times (that satisfy $t \preceq t_c$) and adopt some version

The other examples discussed in Section 2.1 and 2.2 are straightforward: the simple past denotes whatever time interval the assignment function assigns to the index it carries. In this respect, this proposal makes the same prediction as previous pronominal theories of tense, except for the additional presupposition, which is meant to capture the familiarity effects. The use of the present perfect then gives rise to the antipresupposition of discourse novelty.

4. Crosslinguistic variation

Analyzing the simple past as a presuppositionally stronger alternative to the present perfect provides an explanation to the crosslinguistic variation observed in this domain. The prediction is that, if the simple past is missing or is unavailable for some reason, the present perfect is able to have more felicitous uses, due to the absence of the competition between the two.

This is another parallel between the nominal and temporal domains. In many languages (e.g. Russian), DPs have both definite and indefinite readings. Heim (1991, 2011) argues that they are not ambiguous, but are semantically the same as English indefinites, and get more felicitous uses in the absence of a definite competitor.

Along these lines, I argue that the tenses that have the form of the present perfect in Germanic and Romance languages are also semantically the same as the present perfect in English, and the differences in uses are due to the absence of the alternative with stronger presuppositions (i.e. the simple past).

Colloquial French and standard (colloquial) Italian are such examples. In both languages, the simple past (*passé simple/il passato remoto*) is usually only used in writing and formal registers. Hence, the present perfect in French and Italian can cover the readings of both the English simple past and present perfect. This is confirmed by the data shown below. It can get the anaphoric readings (73), and can be used for the uniqueness readings ((74)-(76)). Moreover, in donkey anaphora sentences (77) and bathroom anaphora (78) sentences, the present perfect can be used across the board. The Present Perfect Puzzle is absent (79).

- (73) a. Maria ha visitato Parigi. Le è piaciuto.
 Maria has visited Paris she-DAT AUX pleased
 ‘Maria has visited Paris. She liked it.’
 b. Maria a visité Paris. Elle a aimé ça.
 Maria has visited Paris she has liked it
 ‘Maria has visited Paris. She liked it.’
- (74) a. Penny non è andata all’università.
 Penny NEG AUX gone (to.the)university
 ‘Penny didn’t go to college.’
 b. Penny n’a pas fréquenté l’université.
 Penny NEG-has NEG attend university.
 ‘Penny didn’t go to college.’

of the Novelty Condition (or derive it as an antipresupposition). The outcome does not differ from that of other dynamic approaches.

- (75) a. Tutti nel dipartimento sono nati a Parigi.
Everyone in-the department AUX born in Paris
'Everyone in the department was born in Paris'.
b. Tout le monde dans le département est né à Paris.
everyone in the department AUX born in Paris
'Everyone in the department was born in Paris'.
- (76) (*Pointing at a church:*)
a. Chi ha costruito questa chiesa?
Who has built this church
'Who built this church?'
b. Qui a construit cette église?
Who has built this church
'Who built this church?'
- (77) a. Tutti i ragazzi che hanno visitato Parigi sono andati al Louvre.
all the boys who have visited Paris AUX gone to-the Louvre
'Every boy who has visited Paris went to the Louvre.'
(Individual visits and different times.)¹¹
b. Tous les garçons qui ont visité Paris sont allés au Louvre.
all the boys who have visited Paris AUX gone to-the Louvre
'Every boy who has visited Paris went to the Louvre.'
(Individual visits and different times.)
- (78) a. O Gianni non è mai stato a Roma, o ci è andato senza di noi.
Or Gianni NEG AUX never been to Rome or there AUX gone without of us
'Either Gianni has never been to Rome, or he went without us.'
b. Soit Jean n'est jamais allé à Rome, soit il y est allé sans nous.
Either Jean NEG-AUX never gone to Rome or he there AUX gone without us.
'Either Jean has never been to Rome, or he went without us.'
- (79) a. Gianni è arrivato ieri.
Gianni AUX arrived yesterday
'Gianni arrived yesterday.'
b. Jean est arrivé hier.
Jean AUX arrived yesterday
'Jean arrived yesterday.'

In Austrian German, the simple past is excluded for all verbs, and the present perfect behaves exactly as in French and Italian.¹² Standard German is slightly more complicated, since the simple past is used for statives. However, for non-statives, the simple past is only used in writing (although there are some regional variations), and the same ambiguity as in French and Italian

¹¹French and Italian *all* allows the individual reading, despite the plural marking on the verbs, unlike the German *alle* 'all'.

¹²French and Italian present perfects are always perfective, but in German it can be both perfective and imperfective.

is observed with the present perfect. It has the anaphoric use and can appear in a sequence of narration (80). It can function as a donkey anaphora (81). It is used for the uniqueness reading of the English simple past (82)-(83). No Present Perfect Puzzle is observed (84).

- (80) Maria hat Berlin besucht. Ihr hat die Stadt gefallen.
 Maria has Berlin visited her-DAT has the city pleased
 'Maria has visited Berlin. She liked the city.'
- (81) Jeder Junge, der Paris besucht hat, ist in den Louvre gegangen.
 Every boy who Paris visited has AUX in the Louvre gone
 'Every boy who has visited Paris went to the Louvre.'
- (82) Penny ist nie zur Uni gegangen.
 Penny AUX never to.the university gone
 'Penny didn't go to college.'
- (83) (*Pointing at a church:*)
 Wer hat diese Kirche gebaut?
 Who has this church built
 'Who built this church?'
- (84) Gestern ist John angekommen.
 Yesterday AUX John arrived.
 'John arrived yesterday.'

One of the few instances where the simple past is allowed for non-statives in German is in anaphoric contexts when the antecedent is first introduced by the present perfect, but the present perfect is also available for the anaphoric use (85). German does not seem to allow situationally unique uses of the simple past. I think this indicates a change in progress: the simple past is becoming obsolete in colloquial German and the present perfect is getting more and more uses. It also suggests that German simple past (for non-statives) can only be anaphoric.

- (85) Er hat den Bus gekriegt und kam pünktlich bei Karl an/ ist pünktlich bei Karl
 He has the bus caught and came punctually to Karl to/ AUX punctually to Karl
 angekommen.
 arrived
 'He caught the bus and arrived at Karl's on time.'

In Section 3, I showed that the anaphoric reading of the simple past is stronger than the uniqueness reading: namely, if the simple past denotes a time that is anaphoric to some previous time, then it is the *unique* such time. The German data suggest that it is easier for the present perfect to cover the uses of the unique simple past, because of the weaker reading.

In cases where no antecedent for the topic time is available, but only its (existence and) uniqueness can be inferred, German uses the present perfect. This is illustrated by the following sentences (86)-(87). Moreover, the German simple past cannot get the covarying reading: (87c) must be interpreted anaphorically, that at a particular time, the doctors graduated at the same time. For the intended covarying reading, German needs the present perfect (87d).¹³

¹³It is difficult to test passives like *Every boy was born in New Zealand* since for the passive voice auxiliary, German only uses the simple past, just like other auxiliaries.

- (86) (*Pointing at a church:*)
 # Wer baute diese Kirche?
 Who built this church
 Intended: 'Who built this church?'
- (87) a. Penny hat die Uni nicht abgeschlossen.
 Penny has the university neg graduated
 'Penny didn't graduate from college.'
 b. # Penny schloss die Uni nicht ab.
 Penny graduated the university neg from
 Intended: 'Penny didn't graduate from college.'
 c. # Jeder von diesen Ärzten schloss die Universität ab.
 each of these doctors graduated the university from
 Intended: 'Each of these doctors graduated from college.'
 d. Jeder von diesen Ärzten hat die Universität abgeschlossen.
 each of these doctors has the university graduated
 'Each of these doctors graduated from college.'

The German data may point to a possible diachronic generalization: as the simple past becomes obsolete in a language, it is more likely to lose the unique reading first. I leave it for future research to find more evidence for this.

In conclusion, I believe that a competition-based analysis is more favourable than previous analyses in deriving the crosslinguistic variation of the present perfect and the simple past. This analysis also allows us to maintain the same semantics of the present perfect in languages that have it, and it also parallels the patterns we find in the nominal domain.

5. Conclusion

In this paper, I analyze the simple past in English as a definite description for times, which can be either unique or anaphoric. I propose that the present perfect then functions as an indefinite due to the competition with the presuppositionally stronger simple past. Many special properties of the present perfect can then be derived from antipresuppositions that arise due to the failure of using the simple past. This analysis allows us to capture many parallel phenomena in the temporal and nominal domains, as well as the crosslinguistic variation.

The scope of this paper is limited to the simple past in matrix clauses, and the various embedded pasts are excluded. The role of the past perfect is also ignored here. In future research, we can consider how far this idea can be pushed and which instances of the 'simple past' are really of the same nature, and which instances are not.

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References

- Abusch, D. (2010). Presupposition triggering from alternatives. *Journal of Semantics* 27:1, pp. 37–80.
- Austin, J. L. (1979). Truth. *Philosophical Papers*, pp. 349–375.
- Bombi, C. (2018). Definiteness in Akan: Familiarity and uniqueness revisited. *Semantics and Linguistic Theory* 28, pp. 141–160.
- Büring, D. (2004). Crossover situations. *Natural Language Semantics* 12:1, pp. 23–62.
- Dayal, V. (2016). *Questions*. Oxford Surveys in Semantics and Pragmatics, Oxford University Press, Oxford.
- Dowty, D. R. (1979). *Word meaning and Montague Grammar*. Studies in Linguistics and Philosophy, Springer.
- Elbourne, P. (2013). *Definite descriptions*. Oxford Studies in Semantics and Pragmatics, Oxford University Press, Oxford.
- Elbourne, P. D. (2005). *Situations and individuals*. MIT Press, Cambridge, MA.
- Ernst, T. (2004). Domain adverbs and the syntax of adjuncts. Austin, J., S. Engelberg & G. Rauh (eds.), *Adverbials: The interplay between meaning, context, and syntactic structure*, John Benjamins Publishing, Amsterdam/Philadelphia, pp. 103–130.
- Frege, G. (1892). Über Sinn und Bedeutung. *Zeitschrift für Philosophie und philosophische Kritik* 27, pp. 25–50.
- Frey, W. (2003). Syntactic conditions on adjunct classes. Lang, E., C. Maienborn & C. Fabricius-Hansen (eds.), *Modifying Adjuncts*, De Gruyter Mouton, Berlin, pp. 163–209.
- Giorgi, A. & F. Pianesi (1997). *Tense and aspect: From semantics to morphosyntax*. Oxford University Press on Demand.
- Groenendijk, J. & M. Stokhof (1982). Semantic analysis of wh-complements. *Linguistics and Philosophy* 5, pp. 175–233.
- Groenendijk, J. & M. Stokhof (1991). Dynamic predicate logic. *Linguistics and Philosophy* 14:1, pp. 39–100.
- Grønn, A. & A. Von Stechow (2016). Tense. Aloni, M. & P. Dekker (eds.), *Handbook of Formal Semantics*, Cambridge University Press, Cambridge, pp. 313–341.
- Grønn, A. & A. Von Stechow (to appear). The perfect. Matthewson, M., C. Meier, H. Rullman & T. E. Zimmermann (eds.), *Wiley's Linguistics Companion (Companion to Semantics)*, Wiley, Oxford.
- Haider, H. (2002). Adverbials at the syntax-semantics interface. Kamp, H. & U. Reyle (eds.), *How we say WHEN it happens: Contributions to the theory of temporal reference in natural language*, Max Niemeyer Verlag, Tübingen, pp. 53–70.
- Hamblin, C. L. (1973). Questions in Montague English. *Foundations of Language* 10, pp. 41–53.
- Hawkins, J. A. (2015). *Definiteness and indefiniteness: A study in reference and grammaticality prediction*. Routledge Library Editions: The English Language, Routledge, Abingdon/New York.
- Heim, I. (1982). *The semantics of definite and indefinite noun phrases*. [PhD thesis]. University of Massachusetts, Amherst.
- Heim, I. (1990). E-type pronouns and donkey anaphora. *Linguistics and philosophy* 13:2, pp. 137–177.
- Heim, I. (1991). Artikel und Definitheit. Von Stechow, A. & D. Wunderlich (eds.), *Semantik: Ein internationales Handbuch der Zeitgenössischen Forschung*, De Gruyter Mouton, Berlin/Boston, pp. 487–535.
- Heim, I. (2011). Definiteness and indefiniteness. Von Heusinger, K., C. Maienborn & P. Portner (eds.), *Semantics: An international handbook of natural language meaning*, De Gruyter Mouton, Berlin, pp. 996–1025.
- Iatridou, S., E. Anagnostopoulou & R. Pancheva (2003). Observations about the form and meaning of the perfect. Alexiadou, A., M. Rathert & A. Von Stechow (eds.), *Perfect Explorations*, De Gruyter Mouton, Berlin/Boston, pp. 153–204.
- Jenks, P. (2015). Two kinds of definites in numeral classifier languages. *Semantics and Linguistic Theory* 25, pp. 103–124.
- Jenks, P. (2018). Articulated definiteness without articles. *Linguistic Inquiry* 49:3, pp. 501–536.
- Karttunen, L. (1977). Syntax and semantics of questions. *Linguistics and philosophy* 1:1, pp. 3–44.
- Karttunen, L. & S. Peters (1976). What indirect questions conventionally implicate. *Papers from the 12th Regional Meeting. Chicago Linguistic Society, Chicago, IL*, 12, pp. 351–368.
- Klein, W. (1992). The Present Perfect Puzzle. *Language* 68, pp. 525–552.
- Klein, W. (1994). *Time in Language*. Routledge, London.
- Kratzer, A. (1989). An investigation of the lumps of thought. *Linguistics and Philosophy* 12:5, pp. 607–653.
- Kratzer, A. (1998). More structural analogies between pronouns and tenses. *Semantics and Linguistic Theory* 8, pp. 92–110.
- Kratzer, A. (2007). Situations in natural language semantics. Zalta, E. N. (ed.), *The Stanford Encyclopedia of Philosophy*, Metaphysics Research Lab, Stanford University, summer 2019 edn.

- Maratsos, M. P. (1976). *The use of definite and indefinite reference in young children: An experimental study of semantic acquisition*. Cambridge University Press, Cambridge.
- McCoard, R. (1978). *The English perfect: Tense-choice and pragmatic inferences*. North-Holland Publishing Company, Amsterdam.
- Pancheva, R. & A. Von Stechow (2004). On the present perfect puzzle. Mouton, K. & M. Wolf (eds.), *Proceedings of NELS 34*, 2, pp. 469–484.
- Partee, B. H. (1973). Some structural analogies between tenses and pronouns in English. *The Journal of Philosophy* 70:18, pp. 601–609.
- Percus, O. (2006). Antipresuppositions. *Theoretical and empirical studies of reference and anaphora: Toward the establishment of generative grammar as an empirical science* 52.
- Perry, J. & J. Barwise (1983). *Situations and attitudes*. MIT Press, Cambridge, MA.
- Portner, P. (2003). The (temporal) semantics and (modal) pragmatics of the perfect. *Linguistics and Philosophy* 26:4, pp. 459–510.
- Portner, P. (2011). Perfect and progressive. Von Heusinger, K., C. Maienborn & P. Portner (eds.), *Semantics: An international handbook of natural language meaning*, De Gruyter Mouton, Berlin/Boston, pp. 996–1025.
- Rothstein, S. (1995). Adverbial quantification over events. *Natural Language Semantics* 3:1, pp. 1–31.
- Sauerland, U. (2002). The present tense is vacuous. *Snippets* 6:11, pp. 12–13.
- Sauerland, U. (2003). A new semantics for number. *Semantics and Linguistic Theory* 13, pp. 258–275.
- Sauerland, U. (2008). Implicated presuppositions. Steube, A. (ed.), *The discourse potential of underspecified structures*, De Gruyter Mouton, Berlin, pp. 581–600.
- Schlenker, P. (2012). Maximize presupposition and Gricean reasoning. *Natural Language Semantics* 20:4, pp. 391–429.
- Schwarz, F. (2009). *Two types of definites in natural language*. [PhD thesis]. University of Massachusetts, Amherst.
- Schwarz, F. (2013). Two kinds of definites cross-linguistically. *Language and Linguistics Compass* 7:10, pp. 534–559.
- Singh, R. (2011). Maximize presupposition! and local contexts. *Natural Language Semantics* 19:2, pp. 149–168.
- Strawson, P. (1950). On referring. *Mind* 59, pp. 320–344.

Sentence adverbs and theories of secondary meaning

Non-at-issueness and its problems

Kalle Müller

This paper poses three challenges that any account for sentence adverbs has to account for, the answer problem, the projection problem, and the commitment problem. These challenges are used to evaluate the basic working mechanisms of three types of existing accounts, i.e. unidimensional, multidimensional and illocutionary accounts, concluding that only a hybrid account can deal with these problems collectively. Then, a such account building on a unidimensional semantics, where multidimensionality only arises in certain contexts is sketched out, using the notion of propositional discourse referents. Finally, the findings are used for a basic taxonomy of non-at-issue meanings.

1. Introduction

Sentence Adverbs (=SAdvs) are comments on a core proposition. This core proposition is the main point of the utterance and constitutes a primary level of meaning. Beyond this primary level, items such as expressives, appositives, conventional implicatures and presuppositions have been described as kinds of secondary meaning which provide additional information on and qualification of the core proposition or its individual parts.

SAdvs like *wahrscheinlich* ‘probably’, *offenbar* ‘apparently’, and *unglücklicherweise* ‘unfortunately’ in (1a) are also known to contribute secondary meaning (Jackendoff 1972; Bellert 1977 for English; Lang 1979 for German; see also Müller 2019a). In this respect, they differ from constructions with Clause Embedding Predicates (=CEPs) with similar meaning like *es ist wahrscheinlich/unglücklich* ‘it is probable/unfortunate’ which embeds a *that*-clause in (1b).¹

- (1) a. Wahrscheinlich / unglücklicherweise kommt Angela.
probably unfortunately comes Angela
‘Probably/unfortunately, Angela is coming.’
b. Es ist wahrscheinlich / unglücklich, dass Angela kommt.
it is probable unfortunate that Angela comes
‘It is probable/unfortunate that Angela is coming.’

¹ Most examples, especially for SAdvs, will be from German and translated into English. In general, I expect the problems to be replicated in English, but some judgments might differ depending on individual lexical items.

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<https://www.universiteitleiden.nl/en/events/series/sole>

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The labels and characterizations of this property vary between objective vs. subjective, propositional vs. non-propositional, and at-issue (=AI) vs. not-at-issue (=NAI) meaning. Different labels often correlate with different approaches, e.g. objective with propositional modification, subjective with illocutionary or speech act modification. In this paper, I will use the term NAI because it is, in my opinion, the broadest term and neither necessarily implies nor rejects any of the different approaches and notions. In the research following Potts (2005), however, multidimensional approaches have been prominent and appositive relative clauses (=ARCs) have been at the centre of attention. For this reason, I will compare some relevant aspects of SAdvs regarding discourse and semantic embedding to ARCs.

There are three problems that any approach to SAdvs has to account for, the answer problem, the projection problem, and the commitment problem. The challenge is to account for all three problems collectively.² Some of the reasons why this has not been done yet in a satisfying manner may be that, first, SAdvs in subclauses have either been neglected or have been described to be ungrammatical, especially in conditionals (e.g. Nilsen 2004; Haegeman 2012), and that, second, more recent literature concerning NAI-ness has often focused on more independent kinds of NAI meanings such as ARCs (e.g. Potts 2005; AnderBois et al. 2015) or on evidentials which do not appear in subclauses (Murray 2017).^{3, 4}

In the next section, I will introduce and explain the three problems mentioned above. Section 3 will lay out the general mechanism of three different kinds of approaches, uni- and a two-dimensional ones, both truth-conditional, and the non-truth-conditional illocutionary approach. It then shows how recent dynamic proposals behave with respect to this taxonomy.

In Section 4, I sketch out my proposal in three steps arguing that epistemic and evidential SAdvs are unidimensional propositional modifiers and multidimensional interpretations may arise in embedding contexts. Section 5 will exemplify this proposal. Section 6 gives a short discussion of a taxonomy of NAI items and Section 7 is the summary.

This paper has three main goals. The first one is to introduce the three challenges as a common set of problems which may also arise for items similar to SAdvs. The second goal is to evaluate different types of approaches with respect to this set of problems. Finally, the third goal is to set a direction for further research on SAdvs. The paper will primarily be concerned with the general mechanisms behind individual accounts and abstract away from technical details as much as possible.

² This paper is not concerned with giving a complete overview of the data, possible readings and different judgements. Especially with respect to the answer problem and interpretations of SAdvs in conditionals, different judgements can be found in the literature (see Müller 2019a for a short overview). Instead, this paper generalizes to the worst case, i.e. the case that a SAdv cannot be easily rejected in a direct response and that there are readings of SAdvs in conditionals which are judged acceptable and in which the SAdv is not semantically embedded.

³ The (supposed) ungrammaticality of SAdvs in conditionals has been observed in the semantic literature as ‘Positive Polarity’ (e.g. Nilsen 2004; Ernst 2009). In the syntactic literature, a connection has been made between the distribution of SAdvs and the integration of subclauses (e.g. Haegeman 2012). The data is discussed more thoroughly in Müller (2019b).

⁴ The anonymous reviewer(s) pointed the work of Taglicht (2001) and Shu (2011) out to me. Both authors mention SAdvs in subclauses and argue for an analysis based on features. Since syntactic features would need a substantial discussion of their own, this is neglected for the purpose of the present paper.

2. The challenge

2.1. Answer problem

SAdvS can answer questions about their prejacent, i.e. their embedded proposition, as in (2), but they cannot felicitously answer questions about themselves. In this respect, they contrast with CEPs which provide a much more natural answer, compare (3a) and (3b). The same behaviour as from SAdvS is also known from ARCs, which are standard NAI items, compare (4a) and (4b).

- (2) A: Kommt Angela?
 comes Angela
 ‘Is Angela coming?’
 B: Vielleicht.
 maybe
 ‘Maybe’
- (3) A: Für wie wahrscheinlich hältst du es, dass Angela kommt?
 for how probable consider you it that Angela comes
 ‘How probable do you think it is that Angela is coming?’
 a. B: #Möglicherweise (kommt sie).
 possibly comes she
 ‘Possibly, she is coming.’
 b. B': Es ist möglich, dass sie kommt.
 it is possible that she comes
 ‘It is possible that she is coming.’
- (4) A: Where does Angela live?
 a. B: Angela, who likes to go drinking, lives in Amsterdam.
 b. B': #Angela, who lives in Amsterdam, likes to go drinking.

SAdvS cannot be directly agreed with or rejected. The response is more natural for CEPs, compare (5) and (6).⁵

- (5) A: Möglicherweise kommt Angela.
 possibly comes Angela
 ‘Maybe, Angela is coming.’
 B: #Nein, das ist sogar wahrscheinlich. / Nein, wahrscheinlich.
 no that is even probable no probably
 ‘No, that’s even likely. / No, probably.’

⁵ It is important to acknowledge the contrast. Often, NAI items can actually be rejected in a direct response as well, as Syrett & Koev (2015) show for sentence final ARCs and Cummins et al. (2013) do for presuppositions triggered by *quit*.

- (6) A: Es ist möglich, dass Angela kommt.
 it is possible that Angela comes
 ‘It is possible that Angela is coming.’
 B: Nein, das ist sogar wahrscheinlich.
 No that is even probable
 ‘No, that’s even likely.’

Again, the same is true for ARCs as in (7).

- (7) A: Angela, who is a pilot, lives in Amsterdam.
 B: No, she doesn’t / #isn’t.

2.2. Projection problem

NAI items like ARCs project out of entailment cancelling environments such as conditionals, as illustrated in (8a). There are two important observations (see also Müller 2019a:324-325): First, the speaker does not necessarily have a commitment to the antecedent proposition that Angela lives in Amsterdam, but he does commit to the ARC within the antecedent, i.e. that Angela is a pilot. Second, the ARC is not part of the restriction of the conditional, i.e. it is not semantically embedded.⁶ Rather it has a wide scope reading, as in (8b), (cf. Potts 2005).

- (8) a. If Angela, who is a pilot, lives in Amsterdam, she must have a bike.
 ↗ Angela lives in Amsterdam.
 → Angela is a pilot.
 ≠ If Angela is a pilot and lives in Amsterdam, she must have a bike.
 b. If Angela lives in Amsterdam she must have a bike and Angela is a pilot.

Similar observations can be made for SAdvS. In (9a), *vielleicht* ‘maybe’ is not interpreted as the corresponding CEP, i.e. not as a part of the conditional restriction, but projects out like the parenthetical in (9b).

- (9) Falls du vielleicht Zeit hast, kannst du mir helfen.
 if you maybe time have can you me help
 a. Falls es möglich ist, dass du Zeit hast, kannst du mir helfen.
 if it possible is that you time have can you me help
 ‘If it is possible that you have some time, you can help me.’
 b. Falls du Zeit hast –was vielleicht der Fall ist–, kannst du mir helfen.
 if you time have what maybe the case is can you me help
 ‘If you have some time, which may be the case, you can help me.’

Examples in which SAdvS project can be found with epistemic SAdvS like *vielleicht* ‘maybe’, evidential SAdvS like *anscheinend* ‘apparently’, and evaluative SAdvS like *leider* ‘unfortunately’ (see Müller 2019a, 2019b for corpus examples). Since the projection of a SAdv out of a conditional restriction *p* implies that the speaker commits to *SAdv p*, this is only possible

⁶ In other terms, it does not have a ‘local effect’. The local effect is defined as being ‘part of the content that serves as the operator’s semantic scope’ (Tonhauser et al. 2013:67).

in special cases, like factual conditionals (Iatridou 1991), (10a), where the antecedent is taken to be true, or negated counterfactuals, (10b), where the negated antecedent is taken to be false.

- (10) a. *Context: A couple wants to go to a nice restaurant, but then they discover that they have already spent all of their money this month.*

Wenn wir offenbar kein Geld mehr haben, müssen wir
 if we apparently no money anymore have must we
 wohl zuhause bleiben.
 supposedly at-home stay
 ‘If there is, apparently, no money left, I guess we have to stay at home.’

- b. Wenn du nicht leider vergeben wärst, würde ich gerne
 if you not unfortunately taken were would I gladly
 mit dir ausgehen.
 with you go-out.
 ‘If you weren’t unfortunately already in a relationship, I would like to take you on a date.’

Examples similar to (10b) can be found for English as well, see (11).

- (11) Just imagine how good her brother's research would be if he hadn't apparently gone to join a monastery.

(comment on <https://www.econjobrumors.com/topic/the-racist-origin-of-the-minimum-wage-deirdre-mccloskey>, last access 2019/09/15)

There is a certain line of argument saying that these types of conditionals only look like conditionals, but are not proper conditionals, so the compatibility with SAdvS and their projection need not be explained. In the case of factual conditionals, for example, one might say that they do not express conditional relations at all, but a causal one or sometimes a temporal one.⁷ However, SAdvS of epistemic possibility like *vielleicht*, *möglicherweise*, *eventuell* ‘maybe/possibly’ in German are less restricted and can also appear in other types of conditionals such as the more restrictive clauses introduced by *falls* (‘if’) which do not allow for causal or temporal readings. In the *falls*-clause used in example (9) above, *vielleicht* is interchangeable with other SAdvS denoting epistemic possibility such as *möglicherweise* and *eventuell*. This suggests that SAdvS can generally project, but the specific meaning of the individual SAdv limits the number of contexts in which it can project.

2.3. Commitment problem

SAdvS do not just comment on an AI core but often also change the commitment of the speaker toward the embedded proposition. In (12a), both conjoined AI propositions are contradictory, however the use of the respective SAdv in (12b/c) lifts this contradiction.

⁷ Since causal and temporal clauses are not necessarily entailment-cancelling, this argument might explain why the entailment of the SAdv survives. However, the SAdv should then be expected to be interpreted in the scope of the causal or temporal operator.

- (12) a. #Angela ist eine Pilotin, aber sie ist (in Wirklichkeit) keine Pilotin.
 Angela is a pilot but she is in fact not-a pilot
 ‘Angela is a Pilot, but (in fact), she isn’t a pilot.’
 b. Vielleicht ist Angela eine Pilotin, vielleicht ist sie keine.
 maybe is Angela a pilot maybe is she none
 ‘Maybe Angela is a pilot, maybe she isn’t.’
 c. Angeblich ist Angela eine Pilotin, aber sie ist es (in Wirklichkeit) nicht.
 allegedly is Angela a Pilot but she is it in fact not
 ‘Allegedly Angela is a pilot, but (in fact) she isn’t.’

This problem does not apply to evaluative SAdvS, because they usually imply their prejacent. Nor does it apply to ARCs, because their content is completely independent of the AI content. For this reason, this paper focuses on other types of SAdvS, namely epistemic and evidential ones.

3. Three types of approaches

3.1. Unidimensional approach

In standard unidimensional truth-conditional approaches (e.g. along the lines of Kratzer’s 1981 modal semantics), we expect SAdvS and CEPs by and large to behave similarly. Accordingly, *möglicherweise* ‘possibly/maybe’ should equal *es ist möglich, dass...* ‘it is possible that’ and *angeblich* ‘allegedly’ should have roughly the meaning of *es wurde gesagt, dass...* ‘it is said that’.

Given this, the answer problem is unexpected. If both kinds of constructions have equal meaning, there is no reason why one can be easily rejected in a direct response, but not the other, or why one should be an adequate answer about probability, but not the other. However, the problem can be explained away with additional assumptions, such as that subjective epistemic claims are inscrutable (Papafragou 2006) or with the use of propositional discourse referents which make a certain proposition available for anaphoric reference (e.g. Krifka 2018). The former assumption draws on Lyon’s (1977) distinction between subjective and objective modality. Papafragou (2006) argues that subjective epistemic claims cannot be rejected because they are inscrutable, i.e. because the addressee does not know the sources and the reasoning of the speaker. However, the notion of subjectivity and the distinction between subjective and objective is hard to define (e.g. Nuyts 2001) and Lyons (1977) himself ties subjective modality to an illocutionary approach.

Projection is the main problem for unidimensional approaches. If SAdvS are propositional modifiers which take an embedded proposition and yield a new proposition, then any operator syntactically scoping above the SAdv should embed this new proposition instead of the lower, unmodified one. So, a SAdv in the antecedent of a conditional should be interpreted in the form of (13a) and not in the form of (13b).

- (13) a. If it is possible/probable/... that p, then q
 b. ~~If p, which is possible/probable/..., then q~~

There is no commitment problem for unidimensional approaches. Since the embedded propositions are modified and conjoined in their modified version, we only expect a

contradiction, if these are contradictory. For the examples above in (12), this is illustrated as (14).

- (14) a. $\# p \wedge \neg p$
 b. $\text{possible}(p) \wedge \text{possible}(\neg p)$
 c. $\text{alleged}(p) \wedge \neg p$

3.2. Multidimensional approach

In multidimensional accounts, individual parts of an utterance are separated into different dimensions of meaning, each of which has their own truth value. The most prominent multidimensional account is provided by Potts (2005). One prime characteristic of such an account is that dimensions are not only separate, but also ranked, such that there is a primary level of truth-conditional meaning, the AI level, and a secondary level of truth-conditional meaning, the NAI level. Items that contribute to the secondary, NAI level are called conventional implicatures. In (15), this is illustrated with an ARC, in (16) with an evaluative SAdv.

- (15) Angela, who is a pilot, lives in Amsterdam.
 AI live-in-amsterdam(Angela)
 NAI pilot(Angela)
- (16) Unglücklicherweise kommt Angela nicht.
 unfortunately comes Angela not
 ‘Unfortunately, Angela isn’t coming.’
 AI $\neg \text{come}(\text{Angela})$
 NAI unfortunate($\neg \text{come}(\text{Angela})$)

Because the parts are not only separate, but also within different levels, the answer problem can be easily dealt with: Answers and questions can only target the AI level. If SAdvS are interpreted at the NAI level, then they cannot be targeted by a question nor can an answer target them.

Projection does not pose a problem, either, since projection is one of the core phenomena which multidimensional approaches set out to account for. AI operators target AI content and NAI content cannot be targeted by any operator.⁸ So, take a basic sentence, which involves a SAdv and is separated into two levels as in (16). If it is syntactically embedded in the antecedent of a conditional, only its AI part is taken up to form the restriction of this conditional. The result is illustrated in (17), which is also a good representation of the readings discussed in Section 2.2.

- (17) If SAdv ..., then ...
 AI if p, then q
 NAI SAdv(p) (= possible(p) / unfortunate(p) / alleged(p))

⁸ In accounts like Potts (2005) and AnderBois et al. (2015), there is no operator which targets NAI content. However, ARCs start out as AI content – which can be targeted by other AI operators – and then shifted to the NAI level by a COMMA operator.

Commitment is the main problem for multidimensional approaches. In a single main clause, the thought that the speaker would commit to an unmodified proposition p as well as to the possibility of p is unintuitive, but not a contradiction. By conjunction, however, it can be shown that the speaker actually commits only to the modified proposition. In (12) only example (12a) was not acceptable, but (12b/c) were. In (18), however, the AI content is the same for all three examples. Thus, in a multidimensional approach, a contradiction arises at the AI level, as in (18) for (12) above.

- (18) $p = \llbracket \text{Angela is a pilot} \rrbracket$
- a. Angela is a pilot, but she isn't a pilot.

| | |
|------------|-------------------|
| <i>AI</i> | $p \wedge \neg p$ |
| <i>NAI</i> | — |
 - b. Maybe ... and maybe not ...

| | |
|------------|---|
| <i>AI</i> | $p \wedge \neg p$ |
| <i>NAI</i> | $\text{possible}(p) \wedge \text{possible}(\neg p)$ |
 - c. Allegedly ..., but in fact not ...

| | |
|------------|---------------------|
| <i>AI</i> | $p \wedge \neg p$ |
| <i>NAI</i> | $\text{alleged}(p)$ |

3.3. Illocutionary accounts

Earlier work on modality and evidentiality has suggested that subjective modals, evidentials, SAdvS are not truth-conditional or propositional at all, but that they modify the illocution or the speech act (e.g. Drubig 2001; Faller 2002; Lyons 1977; Westmoreland 1998).

For such approaches the answer problem does not arise because it is commonly assumed that only truth-conditional or propositional content can be challenged or questioned. Since the AI proposition is unaltered, it is instead questioned or challenged, and the SAdv just changes the speech act or the illocutionary conditions.

Further, illocutionary accounts can handle the commitment problem, by saying that the proposition is still the same, but that the new, modified illocution does not involve a full commitment towards it. That is, unlike standard illocutions in which the speaker commits to the uttered proposition, the modified illocution is also felicitous if the speaker has no or less commitment to the proposition.

Finally, the main problem with such accounts is scope which also causes a projection problem. Modifying the illocution means scoping above the illocution. Since traditionally most subclauses do not perform separate speech acts, SAdvS would be expected always to have widest scope, i.e., not only over the antecedent, but over the whole conditional. This is illustrated in (19).

- (19) a. If SAdv ..., then ...
 = SAdv(if p , then q)
- b. Falls du vielleicht Zeit hast kannst du mir ja helfen.
 if you maybe time have can you me PARTICLE help
 ‘Possibly, if you have time, then you can help me.’

If it were assumed that the antecedent performs a separate speech act, then there would still be two remaining problems: What is the reason that it cannot constitute a full utterance and speech

act on its own? How is the conditional connection derived, if the two parts are separate? Even in conditional assertion approaches to special cases like biscuit conditionals (e.g. DeRose & Grandy 1999), it is the illocution of the consequent that is modified by the antecedent. The antecedent does not constitute its own illocution, but is an illocutionary modifier.

Furthermore, the syntactic literature around Haegeman (2003, 2012) does separate integrated, more dependent from non-integrated, less dependent subclauses, whereof only the latter are supposed to host SAdvS. However, this is not true: The fact that the negation and the focus particle have scope over the causal clause in (20) is clear evidence that it is fully integrated (cf. Reis 1997; Reis & Wöllstein 2010).

- (20) Nici ist nicht nur insolvent, weil offenbar Bilanzfälschungen
 Nici is not only insolvent because apparently falsification-of-balance-sheets
 Betrieben wurden, sondern auch, weil die Firma in falsche Produkte
 practised were but also because the company in wrong products
 investiert hatte.
 invested had

(Nürnberger Zeitung, 31.05.2006, from Müller 2019b:215, ex. 4.78)

‘Nici is insolvent not only because apparently the financial statements were falsified, but also because the company had invested in the wrong products.’

Moreover, they appear within DPs as in (21), which are usually not considered separate speech acts.

- (21) Das ist der vermutlich dümmste Vorschlag, den ich bisher gehört
 that is the presumably most-stupid suggestion that I so-far heard
 habe.
 have

‘This is the presumably worst suggestion I have heard so far.’

3.4. Summary of the approaches

Since all three types of approach differ with respect to scopal properties, their differences can be best illustrated with the conditional. Of the different readings of (11) in (22), only the multidimensional approach yields the correct one.

- (22) Just imagine how good her brother's research would be if he hadn't apparently gone to join a monastery.
 ≠ Apparently, just imagine how good her brother's research *illocutionary*
 would be if he hadn't gone to join a monastery.
 ≠ ... if it didn't seem/weren't apparent that he had gone to *unidimensional*
 join a monastery.
 = ... if he hadn't gone to join a monastery, which apparently, *multidimensional*
 he has.

The desired result for each case and the respective predictions by the different accounts are summarized in Table 1. The label of the projection problem is changed to the special case of the conditional in order to make label and prediction more easily perspicuous.

| | <i>Unidimensional</i> | <i>Multidimensional</i> | <i>Illocutionary</i> | <i>Desired</i> |
|--------------------|--------------------------------|---|--------------------------------|---|
| <i>Answer</i> | SAdv(p) | p | p | p |
| <i>Commitment</i> | SAdv(p) | $p \wedge \text{SAdv}(p)$ | SAdv(p) | SAdv(p) |
| <i>Conditional</i> | $\text{SAdv}(p) \rightarrow q$ | $p \rightarrow q \wedge \text{SAdv}(p)$ | $\text{SAdv}(p \rightarrow q)$ | $p \rightarrow q \wedge \text{SAdv}(p)$ |

Table 1. Predictions with respect to three types of approaches.

The arguments that were made rest on the basic conceptual mechanisms of such approaches and not on their specific technical implementations. I do not want to make claims for certain accounts about whether they account for these problems or not. Rather, this set constitutes a litmus test on the nature of accounts. This is most important for multidimensionality which is not always advertised as such: If you run into the commitment problem, as described in Section 2.3, then your account is basically multidimensional.

As can be readily seen, neither approach in its primitive form can account for all three problems. Thus, we need a tailored solution that enhances one of the primitive approaches with certain features of another approach.

In the next section, I will quickly illustrate why recently proposed dynamic accounts of NAI-ness run into the same problem as multidimensional accounts do and how this is fixed by Murray (2017).

3.5. Why some dynamic accounts are multidimensional

Recently, dynamic accounts of NAI-ness have been proposed by AnderBois et al. (2015) and Murray (2017). In both accounts NAI meanings update the common ground directly, whereas AI meanings update a proposal to update the common ground.

I subsume both accounts under the category of multidimensionality because they face the same problem which is the commitment problem. I argue that two basic assumptions are responsible.

First and mainly, AI meaning constitutes a proposal to update the common ground and this proposal is accepted per default, it ‘does not require explicit acceptance by any interlocutor’ (Murray 2017:105; cf. AnderBois et al. 2015:126).⁹ So by default, content which is AI is going into the common ground if it is not rejected by the interlocutor.

Second, there is no distinction between what the speaker commits to and what is in the common ground. In a random sentence like *The earth is flat*, the proposition that the earth is flat is the AI proposal which the speaker intends to add to the common ground. But even if an interlocutor rejects this proposal we would still feel that the speaker has already committed to this proposition.

This arising issue is illustrated in the examples in (23). Given the assumption stated in the quote, it is plausible in (23a) to assume that the AI proposition that *Anna is a Guatemalan* is added to the common ground when the addressee does not explicitly agree or disagree. In (23b) however, the same proposition is AI, but it is not plausible that both have suddenly accepted that Anna is a Guatemalan.

⁹ In Murray (2017:102-106), the update of the common ground with the proposal is part of the declarative mood.

- (23) a. A: Anna is a Guatemalan.
 B: I've never been to Guatemala.
 b. A: Maybe, Anna is a Guatemalan.
 B: I've never been to Guatemala.

This issue carries over to the sentences discussed earlier in (12), *Maybe Angela is a pilot, maybe she isn't* and *Allegedly Angela is a pilot, but (in fact) she isn't*, where two contradicting AI propositions are conjoined, but the contradiction is lifted by the relevant SAdv. If the common ground were updated with both AI propositions consequently and all worlds in which each AI proposition is not true were eliminated then the context set would result in an empty set because there can be no world in which Angela is a pilot and Angela is not a pilot at the same time.

Murray's (2017) account is designed to solve this problem for evidentials in Cheyenne.¹⁰ This is achieved by introducing illocutionary updates together with certain NAI items at the end of each sentence. They shift the commitment of the speaker to whatever is necessary. Because of these illocutionary updates, the declarative mood can pick up either the AI proposition, the NAI proposition or a new proposition introduced by the illocutionary update.¹¹

In (24) and (25), the account is carried over from the reportative evidential in Cheyenne to the English SAdv *allegedly*. The three resulting types of updates are illustrated in (25) in a simplified manner.

- (24) a. Allegedly Angela is a pilot,
 b. but she isn't.
- (25) a. Introduce AI proposition that Angela is a pilot.
 Add NAI part that you have reportative evidence for this to the common ground.
 Introduce propositional argument for declarative mood, relating it to the NAI part.
 Add last propositional argument to the common ground, which is the NAI part.
 b. Introduce AI proposition that Angela is not a pilot.
 Add last propositional argument to the common ground, which is the AI part.

Having identified the set of problems for individual approaches above and the predictions of each kind of approach for these respective problems, the fact that these last updates are necessary at all shows that the account is basically a two-dimensional one which is combined with illocutionary features. That is, meanings are separated into two different levels and commitment is changed additionally. Thus, the commitment problem is not avoided, but it is fixed.

In the following section, I will pursue another approach by laying out the combination of a unidimensional and a multidimensional approach.

¹⁰ She uses Updates with Modal Centering (Bittner 2011).

¹¹ In the case of the reportative it is the reportative proposition, in the case of the direct evidential it is nothing, in the case of the inferential, it is an additional proposition that the AI proposition is considered possible.

4. A hybrid proposal in three steps

In this proposal, epistemic and evidential SAdvS are unidimensional. However, in embedding contexts, a multidimensional interpretation may arise. Thus, this proposal does not disregard multidimensionality completely, but rather argues that these SAdvS do not generally lie on a separate dimension.¹² Hence, the combination of a unidimensional account with a multidimensional account is not contradictory because SAdvS are not uni- and twodimensional at the same time, but the epistemic and evidential SAdvS are unidimensional in unembedded contexts and may get multidimensional readings in certain embedded contexts like conditionals.

4.1. Step one: Propositional discourse referents

There are many cases where anaphoric relations become important. A standard case is the introduction of a new entity by an indefinite noun phrase like *a table*, which can be taken up later by referring phrases like *it* or *the table*. In dynamic accounts, anaphoric relations can be established via discourse referents (=drefs).

I assume that propositions can have/introduce drefs and that the anaphoric relations of these drefs are responsible for what can be answered or targeted by a response (e.g. Krifka 2013; AnderBois et al. 2015; Murray 2017). That is, propositional drefs are responsible for what can be AI.¹³

Following Krifka (2013), I assume that these propositional drefs are introduced at the syntactic level of TP/IP (henceforth the latter).

Since most syntactic approaches place SAdvS above IP, the propositional dref is introduced before the SAdv has merged, see (26). Hence, the SAdv is not part of the dref.

(26) [Maybe [_{IP} Angela is pilot]]

For this purpose, it does not matter, whether the SAdv is adjoined as in (26), or it is the specifier of a Cinquean (1999) hierarchy or of a JudgeP (Krifka 2018).

If answers like *Yes* or *No* target the available propositional drefs in an utterance, then it becomes clear why a SAdv like *maybe* in (26) cannot be easily rejected: The propositional dref is introduced by the IP for the content of the IP, which is the proposition that Angela is a pilot. Since the SAdv is above the IP, it is not referred to by the given dref and therefore cannot be targeted by a direct response.

The account is still unidimensional and truth-conditional, but the answer problem is solved by enhancing the account with a feature which is very commonly assumed in the literature on NAI-ness, namely propositional drefs, and it is based on a very uncontroversial syntactic assumption about SAdvS.

The crucial point of this step is the anaphoric prominence of material within the IP. So far, drefs are the easiest and most prominent way to guarantee this, but they would be easily replaceable with something that manages the same anaphoric prominence of IP material in another way.

¹² Potts (2005), Liu (2012) and Scheffler (2013) argue for a multidimensional analysis of evaluative SAdvS. As argued in this paper, Scheffler (2013) considers epistemic SAdvS to be unidimensional, but also considers them to be generally AI. Given this generalization, none of the problems discussed in this paper arise.

¹³ Cf. Snider (2017) for an opposing view on propositional drefs.

4.2. Step two: Immediate commitments

The two-dimensional nature of dynamic accounts arises from the fact that according to them NAI meanings update the common ground immediately, but AI meanings are proposals which also enter the common ground later and by default.

Following the work of Krifka (e.g. 2014, 2018), I make the following three assumptions in (27).

- (27) a. Commitments are propositions, the common ground is not a set of worlds, but a set of propositions.
 b. If a speaker A asserts a sentence S, his commitment to S is immediately added to the common ground.
 c. S itself is only added to the common ground via implicature.

What is most important is that there is no crucial difference between the utterance of a sentence with a SAdv and that of a sentence without a SAdv. In both cases, the speaker immediately commits to the whole sentence, not only to the AI part. The only difference is that what the addressee can target in a direct response happens to be identical with the whole sentence if it does not contain a SAdv. If it does contain a SAdv, only part of what the speaker has committed to can be targeted.

Since the report or the possibility of Angela being a pilot does not entail that Angela actually is a pilot, the speaker can contrast the possibilities of two contradicting propositions in the case of *maybe* and he can contrast the report of something with his better knowledge in the case of *allegedly*.

So, contrary to other accounts employing the notion of AI drefs, AI drefs are not proposals of what should be added to the common ground and which are accepted by default if the interlocutor does not intervene. Rather, AI drefs tell us what the speaker wants to talk about, you may also say what is AI, but not necessarily what the speaker wants the addressee to believe.

For this reason, the commitment problem does not arise, whereas it does for other accounts involving drefs, which heavily rely on the notion of the update proposal.

4.3. Step three: Conditional embedding of discourse referents

In order to achieve projection, the simplest way would be to use a comma-operator as in Potts (2005) and shift the SAdv to a two-dimensional NAI operator when necessary (see Müller 2019b). Since this seems arbitrary, this section will explore another possibility building on a property that was established in Section 4.1: SAdvS lack anaphoric potential.

In the work of Kratzer (e.g. 2012), conditional subclauses, i.e. antecedents of conditionals, are restrictor sets of possible worlds to (silent) modals or quantifiers in the main clause. Thus, neglecting other ingredients which are irrelevant for the present case, the modal embeds and relates two propositional arguments as in (28). The subordinating conjunction *wenn/falls* ‘if’ is semantically empty.

- (28) a. $\lambda q \lambda p . \text{MODAL}(p)(q)$
 b. MODAL
 / \
 (if) p q

In an attempt to unite dynamic semantics with classic compositional Montague semantics and account for modal subordination, Brasoveanu (2010) proposes that conditional subclauses introduce propositional drefs to possible worlds which are taken up by Kratzerian modals in the main clause. In (29), *if* p introduces a dref for p , while MODAL_p embeds the proposition q and anaphorically retrieves p via its dref as a restrictor set.

- (29) If p , $\text{MODAL}_p(q)$

Brasoveanu (2010) argues that the subordinating conjunction *if* is actually not semantically vacuous, as commonly assumed, but introduces the dref for p .

In this proposal however, *if* is semantically vacuous. Introducing it with the head of the CP would have the consequence that the SAdv would be part of the dref because it would be merged syntactically lower than the subordinating conjunction. As laid out in Section 4.1, the relevant dref is already introduced at the level of IP, so the SAdv is not included and the conditional subordinating conjunction is semantically vacuous.

In this view, the commitment to the proposition of the subclause is usually cancelled because it is embedded by a higher modal. In most cases, the antecedent of the conditional and the content of the subclause is identical. However, if the subclause contains a SAdv only the part that is syntactically below the SAdv is anaphorically retrievable. Thus, the contribution of the SAdv is not cancelled.

As in Section 4.1, the most crucial point of this section is not the dref itself or *how* it is retrieved by the modal, but the notion *that* it is retrieved *anaphorically*. Another way to retrieve it would be the assumption of a silent anaphoric *dann* ‘then’ in the main clause, which would be supported by the fact that in German, conditional clauses with an initial antecedent in the left periphery can most naturally and most frequently of all subclauses violate V2 by placing a resumptive pronoun in the so-called prefield before the finite verb.

5. Exemplification and comparison

Returning to the answer problem, (30) shows a short conversation. The IP introduces an AI dref for the proposition that Anna loves Hannah. This can be challenged by the interlocutor, adding that Anna hates her or that she loves somebody else. B' tries to challenge the SAdv, which fails because the SAdv is not part of p_1 and thus cannot be taken up in an answer.

- | | | |
|---------|---|--|
| (30) A: | Angeblich liebt [_{IP} Anna Hannah liebt allegedly loves Anna Hannah ‘Allegedly Anna loves Hannah.’ | <i>Introduces dref for</i> $p_1 = \llbracket \text{Anna loves Hannah} \rrbracket$ |
| B: | Nein, das ist falsch. (Sie liebt Jana.) no that is wrong she loves Jana ‘No, that’s wrong. (She loves Jana.)’ | <i>Can only take up p_1</i> |

- B': #Nein, das hast du gesehen *Tries to take up SAdv*
 no that have you seen
 /hat niemand gesagt.
 has nobody said
 'No, you saw it/nobody said that.'

As explained before, this naturally deals with the answer problem while maintaining a unidimensional and truth-conditional analysis.

Since both properties are maintained, there is no problem with commitment, as illustrated in (31) and (32). The plus sign is a replacement for the union, c is the old common ground and c' the new one.

- (31) Marla: Allegedly, [_{IP} Anna loves Hannah], but [_{IP} she doesn't].

- (32) Updates to common ground c *available prop. drefs*
 $c' = c + \text{comm}(\text{Marla}, \ll \text{Allegedly, Anna loves Hannah} \gg)$ $p_1 = \ll \text{Anna loves Hannah} \gg$
 $c' = c + \text{comm}(\text{Marla}, \ll \text{Anna doesn't love Hannah} \gg)$ $p_2 = \neg \ll \text{Anna loves Hannah} \gg$

Example (31) does not lead to contradicting commitments of Marla. Furthermore, the first dref is not a proposal to add the proposition that Anna loves Hannah to the common ground. Instead, this is the topic Marla addresses specifying that it is something that people say. By committing to the contrary proposition, she implies that she has better knowledge.

Finally, projection arises through the architecture of conditionals. The basic build-up of (33) is given in (34).

- (33) Wenn Sanna offenbar im Lotto gewonnen hat,
 if Sanna apparently in-the lottery won has
 wird's uns ja gut gehen.
 will-it us PARTICLE well go
 'If Sanna has won the lottery, which she apparently has, we will be fine.'
- (34) [_{CP} [_{CP} Wenn Sanna offenbar *Speaker commits to SAdv*
 [_{IP} Sanna im Lotto gewonnen hat]], *Introduces dref for p_1*
 $= \ll \text{Sanna won the lottery} \gg$
 MODAL_{p1} wird's uns ja gut gehen]. *p_1 is taken up by the modal*

Because the dref p_1 and not the SAdv is retrieved by the modal in main clause, the SAdv does not end up as part of the conditional restriction. Because the modal is also responsible for the entailment cancelling effect, the commitment of the SAdv is not cancelled.

The predictions of this approach are shown with the grey area in Table 2. It is a unidimensional account in which multidimensionality only arises in certain contexts.

| | Approach | | |
|-------------|--------------------------------|---|--------------------------------|
| Problem | <i>Unidimensional</i> | <i>Multidimensional</i> | <i>Illocutionary</i> |
| Answer | p | p | p |
| Commitment | SAdv(p) | $p \wedge \text{SAdv}(p)$ | SAdv(p) |
| Conditional | $\text{SAdv}(p) \rightarrow q$ | $\text{SAdv}(p) \wedge p \rightarrow q$ | $\text{SAdv}(p \rightarrow q)$ |

Table 2. Predictions of the proposed hybrid account.

As the table shows, it is a tailored hybrid approach. However, all the central parts have been proposed and motivated independently and for different reasons. Moreover, other accounts like AnderBois et al. (2015) and Murray (2017) rely on propositional drefs and their importance for projection as well. The ways in which they mainly differ from this proposal are their inherent multidimensionality of NAI items and their conception of AI proposals. In both accounts NAI content is added immediately to the common ground and at the end of each sentence the AI content is added to the common ground as well.

This proposal also provides a compositional account for the difference between SAdvS and CEPs, as in (35). Respectively, (36a/b) show how the syntax-semantics-mapping provides a dref for both the embedded proposition and the judgment in the case of CEPs, but only one for the latter in the case of SAdvS: In (36a), there are two IPs, one embedded in the other. Thus, the first dref p_1 refers to the judgement of the embedded proposition – which still includes the proposition that is judged, just like the IP of the matrix clause includes the IP of the subordinate clause. The second dref p_2 refers only to the embedded IP and hence only to the proposition that is judged. Hence, (36b) does not differ from other biclausal sentences like *Someone told me that you were naughty*. Since such sentences involve two different propositional drefs, it is predicted that both parts can be AI.

- (35) a. Es ist möglich, dass Paula kommt.
 it is possible that Paula comes
 ‘It is possible that Paula is coming.’
 b. Möglicherweise kommt Paula.
 possibly comes Paula
 ‘Possibly, Paula is coming.’
- (36) a. [_{CP} Es [_C ist [_{IP} möglich [_{CP} [_C dass [_{IP} Paula kommt]]]]]]
 \downarrow_{p_1} = Es ist möglich, dass... \downarrow_{p_2} = Paula kommt
 b. [_{CP} Möglicherweise [_C kommt [_{IP} Paula ~~kommt~~]]]
 \downarrow_{p_1} = Paula kommt

6. Taxonomy of NAI meanings

Work on NAI-ness has often focused on appositives which are easy to deal with in a two-dimensional framework because they constitute independent statements.

Evidential and modal claims, on the other hand, modify the AI core.

Regarding presuppositions at last, the AI statement usually relies on the fulfilment of the presupposed NAI parts.

A comparison between different types of meaning which are ‘not at-issue’ has been carried out by Faller (2014) who distinguishes between presuppositions, conventional implicatures and illocutionary modifiers as different types of meaning which are NAI. I have argued against an illocutionary account for SAdvS. Thus, I do not want to refer solely to illocutionary modifiers, but to all modifiers which are situated above the AI proposition, including illocutionary modifiers.

Faller discusses the problem that the AI proposition cannot directly enter the common ground in reportative statements and favours an illocutionary account for reportative evidentials. Furthermore, she argues that illocutionary modifiers, which encompass expressions like the English *alas* and the reportative evidential in Cuzco Quechua, are independent of the

AI content. This is based on examples like (37) and (38) which are slightly modified in their presentation from Faller (2014:68).¹⁴

(37) A: Alas, Jo couldn't come.

B: Right, so we're only 5 then. But be honest, you are not really sad that she's not here.

(38) *Translation of a Quechuan dialogue*

A: *AI* Juan stole the cow.

NAI Speaker was told that Juan stole the cow.

B: Yes, it was him. But nobody told you this. You saw it yourself, didn't you.

However, both examples depend on the content the speaker has a certain attitude or stance towards.

With respect to A's utterance in (37), it would be also possible that Jo could not come and that A is sad, but not about the fact Jo did not come.

Considering the dialogue in (38), we would judge that Juan was truthful with respect to the AI proposition, but lied with respect to the NAI evidential part. However, it is possible to think of a scenario where Juan actually stole the cow and A has reportative evidence of who stole the cow, but A was actually told Maya stole the cow. In this scenario, it is much more difficult to judge which part of the utterance A was truthful about because A did have reportative evidence, but he had reportative evidence of something else.

Hence, just as the judgement introduced by a SAdv relies on the content that is judged (and syntactically, the respective IP in a main clause), i.e. the content that the speaker considers probable, possible or unfortunate, illocutionary modifiers rely on the content of the illocution they modify. If the embedded content is changed, then the whole judgement and the whole illocution, respectively, are changed as well.

Hence, I take these examples to be cases of NAI content which is based on the AI content. This type of NAI content includes illocutionary modifiers.

Given the problems and differences discussed in this paper, I distinguish this type of NAI content from other types like appositives or presuppositions. The resulting taxonomy of NAI meanings is given in Table 3.

| <i>NAI based on AI</i> | <i>AI NAI both independent</i> | <i>AI based on NAI</i> |
|--|--------------------------------------|------------------------|
| SAdvs, evidentials, modal particles like <i>wohl</i> , illocutionary modifiers | appositives, expressives | presuppositions |

Table 3. *Types of NAI meanings.*

7. Conclusion

This paper has sketched out a hybrid account in which epistemic and evidential SAdvs are standard unidimensional propositional modifiers. Multidimensional readings arise only in certain embedded contexts. In conditionals, unidimensional readings are shifted to multidimensional readings based on the following assumptions: SAdvs lack anaphoric potential

¹⁴ In (37), the Quechuan original is omitted and only the translation is cited.

due to their syntactic height, which is implemented through drefs; AI propositions are not proposals in a narrow sense; conditionals are (mostly silent) modals that embed their restrictor by anaphoric retrieval.

The paper has also illustrated problems which similar items have to deal with. The commitment problem arises, for example, also for many evidentials (e.g. Faller 2002; Korotkova 2016; Murray 2017). However, many evidentials are excluded from subclauses, so the projection problem or the problem of scope does not arise in these cases.

Abbreviations

| | |
|------|----------------------------|
| SAdv | Sentence Adverb |
| CEP | Clause Embedding Predicate |
| NAI | Not-At-Issue |
| AI | At-Issue |
| ARC | Appositive Relative Clause |
| dref | Discourse Referent |

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References

- AnderBois, S., A. Brasoveanu & R. Henderson (2015). At issue proposals and appositive impositions in discourse. *Journal of Semantics* 32, pp. 93-138.
- Bellert, I. (1977). On semantic and distributional properties of sentential adverbs. *Linguistic Inquiry* 8, pp. 337-351.
- Bittner, M. (2011). Time and modality without tenses or modals. Musan, R. & M. Rathert (eds.), *Tense across languages*, de Gruyter, Berlin, pp. 147-188.
- Brasoveanu, A. (2010). Decomposing modal quantification. *Journal of Semantics* 27, pp. 437-527.
- Cinque, G. (1999). *Adverbs and functional heads. A cross linguistic perspective*. OUP, Oxford.
- Cummins, C., P. Amaral & N. Katsos (2013). Backgrounding and accommodation of presuppositions: An experimental approach. Chemla, E., V. Homer & G. Winterstein (eds.), *Proceedings of Sinn und Bedeutung* 17, pp. 201-218. <https://semanticsarchive.net/sub2012/SuB2013.pdf>.
- DeRose, K. & R. E. Grandy (1999). Conditional assertions and biscuit conditionals. *Nous* 33:3, pp. 405-420.
- Drubig, H. B. (2001). On the syntactic form of epistemic modality. [Ms]. University of Tübingen.
- Ernst, T. (2009). Speaker-oriented adverbs. *Natural Language & Linguistic Theory* 27, pp. 497-544.
- Faller, M. (2002). Semantics and pragmatics of evidentials in Cuzco Quechua. [PhD thesis]. Stanford University.
- Faller, M. (2014). Reportativity, (not-)at-issueness, and assertion. Leung, H., Z. O'Hagan, S. Bakst, A- Lutzross, J. Manker, N. Rolle & K. Sardinha (eds.), *Proceedings of BLS* 40, pp. 62-84.

- Haegeman, L. (2003). Conditional clauses. External and internal syntax. *Mind and Language* 18, pp. 317-339.
- Haegeman, L. (2012). *Adverbial clauses, main clause phenomena, and the composition of the left periphery*. OUP, Oxford.
- Iatridou, S. (1991). *Topics in conditionals*. [PhD thesis]. MIT.
- Jackendoff, R. (1972). *Semantic interpretation in generative grammar*. MIT Press, Cambridge, MA.
- Korotkova, N. (2016). Heterogeneity and universality in the evidential domain. [PhD thesis]. UCLA.
- Kratzer, A. (1981). The notional category of modality. Eikemeyer, H. & H. Rieser (eds.), *Words, Worlds, and Contexts*. De Gruyter, Berlin, pp. 38-74.
- Kratzer, A. (2012). *Modals and conditionals*. OUP, Oxford.
- Krifka, M. (2013). Response particles as propositional anaphors. Snider, T. (ed.), *Proceedings of SALT 23*, pp. 1-18.
- Krifka, M. (2014). Embedding illocutionary acts. Roeper, T. & M. Speas (eds.), *Recursion, Complexity in Cognition*, Springer, Berlin, pp. 125-155.
- Krifka, M. (2018). Assertions and questions, public commitments and private judgements. Talk at the University of Tübingen, November 9th.
- Lang, E. (1979). Zum Status der Satzadverbiale. *Slovo a Slovenost* XL:3, pp. 200-213.
- Liu, M. (2012). *Multidimensional semantics of evaluative adverbs*. Brill, Leiden.
- Lyons, J. (1977). *Semantics*. Vol. 2. Cambridge University Press, Cambridge.
- Müller, K. (2019a). Sentence adverbials, (non-)at-issueness, and orientation in German. Evidence from conditionals. Gutzmann, D. & K. Turgay (eds.), *Secondary content (as Current Research in the Semantics / Pragmatics Interface 37)*, Brill, Leiden, pp. 311-340.
- Müller, K. (2019b). Satzadverbien, Evidentialität und Non-at-issueness. [PhD thesis]. University of Tübingen.
- Murray, S. (2017). *Semantics of evidentials*. OUP, Oxford.
- Nilsen, Ø. (2004). Domains for adverbs. *Lingua* 114, pp. 809-847.
- Nuyts, J. (2001). Subjectivity as an evidential dimension in epistemic modal expressions. *Journal of Pragmatics* 33, pp. 383-400.
- Potts, C. (2005). *The logic of conventional implicatures*. OUP, Oxford.
- Papafragou, A. (2006). Epistemic modality and truth conditions. *Lingua* 116, pp. 1688-1702.
- Reis, M. (1997). Zum syntaktischen Status unselbständiger Verbzweit-Sätze. D'Avis, F. & U. Lutz (eds.), *Zur Satzstruktur des Deutschen*, Arbeitspapiere des SFB 340 Nr90. Stuttgart and Tübingen, pp. 121-142.
- Reis, M. & A. Wöllstein (2010). Zur Grammatik (vor allem) konditionaler V1-Gefüge im Deutschen. *Zeitschrift für Sprachwissenschaft* 29, pp. 111-179.
- Scheffler, T. (2013). *Two-dimensional semantics. Clausal adjuncts and complements*. De Gruyter, Berlin.
- Shu, C. (2011). Sentence adverbs in the kingdom of agree. [PhD thesis]. Stony Brook University.
- Snider, T. (2017). *Anaphoric reference to propositions*. [PhD thesis], Cornell University.
- Syrett, K. & T. Koev (2015). Experimental evidence for the truth conditional contribution and shifting information status of appositives. *Journal of Semantics* 32, pp. 525-577.
- Taglicht, J. (2001). Actually, there's more to it than meets the eye. *English Language and Linguistics* 5:1, pp. 1-16.
- Tonhauser, J., D. Beaver, C. Roberts & M. Simons (2013). Toward a taxonomy of projective content. *Language* 89:1, pp. 66-109.
- Westmoreland, Robert R. (1998). *Information and intonation in natural language Modality*. [PhD thesis]. Indiana University.

On stative Mandarin sentences with aspectual marker *-le*

Yan Zhang

Mandarin Chinese has many simple word forms that can receive a change-of-state (CoS) interpretation when combining with the aspectual marker *-le*, and the CoS interpretation has been widely accounted for aspectually. However, the observations that *-le* can also give rise to two types of stative readings challenge the aspectual account and complicate the definition of *-le*. To address this problem, I develop an alternative analysis according to which the stative forms and the CoS verb form co-exist but happen to be homophonous. Based on this account, I also propose an updated definition for *-le*, which successfully captures its full range of interpretations.

1. Introduction

-le is a Mandarin Chinese aspectual marker that has been widely discussed in the literature. Most researchers agree that *-le* gives rise to a change of state (CoS) reading when it combines with stative predicates (Li & Thompson 1981, Shi 1990, Smith 1991, Ross 1995, Klein et al. 2000, Lin 2003, among others), which is shown in (1).¹

- (1) *men kai le*
 door open ASP
 ‘The door has opened.’

However, I show that besides the prominent CoS reading, *-le* can also yield two stative readings, which, as far as I know, have not drawn much attention in the literature. One stative reading is associated with examples like (1), which is therefore ambiguous (see (2)), while the other one is obtained in a structure where *-le* is followed by a durational modifier (exemplified in (3)).

¹ Since *-le* in examples like (1) is both verb-final and sentence-final, there are disagreements on whether it is an instance of verbal *-le* or sentential *-le*. I hold the view that it is verbal *-le* based on parallel data in Cantonese, where verbal *-le* and sentential *-le* are morphologically distinct (*-zo* for verbal *-le* and *-laa* for sentential *-le*). The Cantonese counterpart of (1) is only compatible with *-zo*.

*mun hoi zo/*laa*
door open ASP/*PRT
‘The door has opened.’

- (2) men (xianzai) kai le
 door now open ASP
 ‘The door is open(ed) (now).’

- (3) men kai le wu fenzhong le
 door open ASP five minute PRT
 ‘The door has been open for 5 minutes.’

I argue that the traditional aspectual account for *-le* in (1) fails to capture the two stative readings. In the meantime, although it appears to explain the CoS reading in (1), further investigation reveals some potential issues. I propose instead an alternative approach for *-le*, while attributing the various readings to lexical ambiguity of the predicates concerned. This proposal suggests that there are two systematic derivational routes found in Mandarin Chinese, namely *basic adjective*→*CoS Verb*→*deverbal adjective* and *basic CoS-V*→*deverbal adjective*, following and supporting Tham’s (2013) earlier claim that Chinese adjectives can derive CoS verbs. Based on this proposal, an updated definition for *-le* that accounts for the full range of interpretations is suggested.

The paper is arranged as follows. In Section 2, I will investigate the two stative readings found with *-le* and show their distinctions through various diagnostic tests. In Section 3, I will introduce the traditional aspect-based account, represented by Klein et al. (2000), reviewing how *-le* is captured in their framework and pointing out some drawbacks. Following this discussion, in Section 4 I will develop an alternative account of the CoS/stative ambiguity, as well as a novel characterisation of the aspectual marker *-le*. Section 5 concludes the paper.

2. The two stative readings of *-le*

In this section, I will demonstrate the properties of the two stative readings found with *-le* and their differences. I argue that the stative reading of *X-le* has an obligatory event implication, while the one followed by durational modifiers is purely stative.

2.1 The CoS/stative ambiguity of *X-le*

Given an appropriate context, the example in (1) permits a stative reading, as shown in (4). Thus, apart from the CoS reading, the combination of a stative predicate and *-le* can also give rise to a stative reading. To my knowledge, this observation has not been made in any previous studies.

- (4) men (xianzai) kai le,
 door now open ASP
 dan wo bu zhidao shi shenme shihou kai de
 but I not know be what time open PRT
 ‘The door is open(ed) now, but I don’t know when it opened.’

The stative reading seems to be close to the reading yielded by the durative aspectual marker *zhe*. In fact, it is true that *-zhe* can replace *-le* in (4) without much difference in meaning.

- (5) men (xianzai) kai zhe,
 door now open ASP
 dan wo bu zhidao shi shenme shihou kai de
 but I not know be what time open PRT
 ‘The door is open now, but I don’t know when it opened.’

However, although not shown in the translations above, these examples are not semantically identical, since (4) presupposes reference to a previous door-opening event, while (5) does not. The presence/absence of event implications in the two types of stative readings can be revealed in four tests.

Firstly, a denial of the previous change-of-state (CoS) event is incompatible with the stative reading yielded by *-le*, while *-zhe* is not selective.

- (6) a. #men kai le, qishi ta conglai mei guan guo
 door open ASP in fact it ever not close ASP
 ‘The door is open(ed) now. In fact, it has never closed.’
 b. men kai zhe, qishi ta conglai mei guan guo
 door open ASP in fact it ever not close ASP
 ‘The door is open now. In fact, it has never closed.’

Secondly, this subtle difference in semantics can be shown more straightforwardly with predicates such as *huo* ‘alive’. To be more specific, in the stative reading of (7a), there is a strong implication that John is alive as a result of the resurrection. Contrastively, (7b) simply demonstrates that John is alive and does not imply any previous resurrections at all.

- (7) a. John huo le
 John alive ASP
 ‘John became alive/John is alive now.’
 (Implication: John used to be dead)
 b. John hai huo zhe
 John still alive ASP
 ‘John is still alive.’
 (No implication that John was dead)

The presence/absence of event implications with *-le* and *-zhe* has been discussed with regard to the locative inversion structure. Hu (1995) and Djamouri & Paul (2011) suggest that in a locative structure, although *-le* and *-zhe* are generally interchangeable, *-le* presupposes a previous CoS event while *-zhe* does not.

- (8) shushao shang gua *le/zhe yilun ming yue
 tree.top on hang ASP one-CL bright moon
 ‘The bright moon is hanging over the top of the tree.’

- (9) shushao shang gua *le/zhe yipian yezi
 tree.top on hang ASP one-CL leaf
 ‘A leaf is hanging over the top of the tree.’

Since the moon and the leaf are hanging on the tree metaphorically rather than physically, no previous hanging event is involved. In these cases, *-zhe* is compatible while *-le* is not, which indicates that the stative reading found with *-le* requires such an event.

Last but not least, the adverb *yizhi* ‘the whole time’ is impossible with any presuppositions of prior events and thus only compatible with *-zhe* but not *-le*.

- (10) a. *men yizhi kai le
 door the whole time open ASP
 ‘The door has been opened the whole time.’
 b. men yizhi kai zhe
 door the whole time open ASP
 ‘The door has been open the whole time.’

This contrast is reminiscent of the resultant statives and pure statives in English proposed by Embick (2004). He points out that (11) has a resultative reading that denotes a state that results from an event, which is in contrast of the pure stative reading shown in (12).

(11) The door was opened./The door was built opened.

(12) The door was open./The door was built open.

(11) is reported to presuppose that the door has undergone an opening event, which is also what we find with the stative reading of *X-le*. The parallel between English and Chinese suggests a zero morphology approach for the CoS/stative ambiguity in (1).

2.2 The stative reading of *X-le* + durational modifier

The stative reading shown in (4) is not the only stative reading found with *-le*. *-le* can be followed by an atelic temporal modifier marking the duration of a state, as is shown in (13).

- (13) men kai le wu fenzhong le
 door open ASP five minute PRT
 ‘The door has been open for 5 minutes.’

One may wonder whether (13) has a true stative reading or simply a change-of-state reading with the culminating state being modified. Klein et al. (2000) discuss the example below and suggest that it has both an inchoative reading and a perfective reading. In other words, they suggest that the meaning of (14) is that Zhangsang got sick at the beginning of the two days and was sick for exactly two days.

- (14) Zhangsan bing le liang tian
 Zhangsan sick ASP two day
 ‘Zhangsan was sick for two days.’

(Klein et al. 2000:756)

This structure was also noticed by Smith (1991), who suggests that the adverbials that follow *-le* mark the endpoint of the state. As a result, examples such as (14) undergo an interpretation shift from a state to a dynamic event, which is ‘the change out of the state’ (pp. 265), namely a transition from *p* to $\neg p$. This analysis assumes that (14) has the reading that Zhangsan was fine after the two days, which is a perfective reading.

However, I argue that although listeners will assume that the door was open for precisely 5 minutes in (13) and Zhangsan was sick for exactly two days in (14), that assumption is by virtue of pragmatics rather than semantics. In fact, given an appropriate context, the durational modifiers do not have to mark either the beginning or the end of the predicated state, as shown by the example in (15).

- (15) Zhangsan shang zhou bing le liang tian,
 Zhangsan last week sick ASP two day
 zhe zhou bing le san tian
 this week sick ASP three day
 ‘Last week Zhangsan was sick for two days, and this week he was sick for three days.’

Suppose that Zhangsan was sick from last Saturday to this Wednesday, so he was sick for five consecutive days, namely two days in last week and three days in this week. This situation is compatible with (15). If Smith (1991) and Klein et al. (2000) are correct, then this is unexpected, since Zhangsan was still sick after the two days last week (hence not a perfective reading) and already sick before the three days this week (hence not an inchoative reading). (15) suggests instead that (13) and (14) have a purely stative reading that matches their English translations.

The question then is whether the stative reading found in (13) is identical to the one in (4), i.e., whether it also has an event implication. The tests of section 2.1 can all be applied to *X-le* + duration modifier except for the locative inversion test, since durational modifiers are incompatible with locative inversion.

Denial of CoS:

- (16) men kai le san tian le,
 door open ASP three day PRT
 qishi ta conglai mei guan guo
 in fact it ever not close ASP
 ‘The door has been open for three days. In fact, it has never closed.’

Huo ‘alive’:

- (17) John huó le sānshí nián le
 John alive ASP thirty year PRT
 cōnglái měi jiàn guo zhè yàng de shì
 ever not see ASP this kind SUB thing
 ‘John has been alive for thirty years, and he has never seen anything like this.’
 (No implication that John was dead formerly)

Yizhi ‘the whole time’:

- (18) mén yizhí kāi le sān tiān
 door the whole time open ASP three days
 ‘The door has been open the whole time for three days.’

The tests show that *X-le* + durational modifier structures do not presuppose a prior event, unlike stative *X-le* structures without a durational modifier. The next questions are therefore how the two stative interpretations should be captured and furthermore whether *-le* can receive a unified definition that is compatible with all the interpretations that are found with it.

3. Klein et al.’s (2000) aspectual account for Chinese predicates

To explore how the different readings discussed in Section 2 should be captured, I will start with the question of how the CoS reading is obtained with stative predicates. The mainstream academic view appears to be that this is a matter of aspect: *-le* is able to create a bound and thereby changes an atelic predicate into a telic one (Shi 1990, Smith 1991, Klein et al. 2000, Lin 2003). This camp is represented by the aspectual framework proposed in Klein (1994) and expanded with regard to Chinese data particularly in Klein et al. (2000). In this section, I provide a brief overview of the essential components of Klein’s ideas and discuss its shortcomings in dealing with the stative readings of *-le* discussed in Section 2.

Klein (1994) develops a framework with three significant time spans, namely ‘time of utterance’ (TU), ‘time of situation’ (T-SIT) and ‘topic time’ (TT). TU, as the name suggests, refers to the time when the sentence is uttered; T-SIT represents the interval at which the situation obtains; and TT is the time span about which an assertion is made. These three time spans are related by tense and aspect as follows. tense marks a temporal relation between TT and TU, while aspect expresses a temporal relation between TT and T-SIT.

Before I proceed to the definitions of *-le*, there is one more concept to introduce, which is the phase of T-SIT. Klein et al. (2000) categorise verbs into 1-phase verbs and 2-phase verbs. 1-phase verbs do not have clear bounds. *To walk*, *to talk* and *to be dead* are all examples of 1-phase contents. These verbs correspond to the atelic group of Vendler’s (1957) typology, namely states and activities. 2-phase contents refer to verbs of which T-SIT contains a change, e.g., *to die* and *to arrive*. These verbs correspond to achievements and accomplishments in Vendler’s (1957) system. For these verbs, the former phase is named the source phase and the latter the target phase. A 1-phase predicate was exemplified in (1), while a 2-phase predicate appears in the following example.

- (19) John dao le lundun
 John arrive ASP London
 ‘John arrived in London.’

To ensure that their definition of *-le* can fit both the types, Klein et al. (2000) propose a concept of Distinguished Phase (DP), which is the single phase in a 1-phase predicate and the second phase (which they name the ‘target phase’) in a 2-phase predicate in Mandarin Chinese. In this framework, the semantics of *-le* is represented roughly as in (20) and (21), where TT covers part of the pre-time of T-DP and T-DP. This arrangement means that a transition is asserted and is therefore sufficient to capture an inchoative reading in the absence of any CoS in T-SIT. Thus, in their framework, the change of state in (1) is not from the predicate itself, but introduced by *-le*.

- (20) T-SIT ————
 TT ●———●
 1-phase predicates
- (21) T-SIT - - - - - ●———
 TT ●———●
 2-phase predicates

While Klein et al.’s (2000) theory successfully capture the CoS reading of both 1-phase predicates and 2-phase predicates, it faces problems when dealing with the stative readings found with *-le*. For the stative reading of X-*le* shown in (4), it seems that the only solution based on Klein et al.’s framework is to position TT in T-SIT. Otherwise, a stative reading cannot be obtained. But such an alignment is identical to how Klein et al. (2000) define *-zhe*, the imperfective aspectual marker.

- (22) T-SIT ————
 TT ●———●
-zhe: TT in T-SIT

It is problematic that the stative reading of *-le* and *-zhe* are not differentiated in this solution, since the stative reading of *-le* has an obligatory event implication that *-zhe* does not have. If the stative reading of X-*le* is also represented as (22), the event implication cannot be anchored anywhere. It is also unclear how to arrive at a unified characterization of *-le*.

Klein et al.’s (2000) proposal also faces issues with the stative reading of X-*le* + durational modifier. As I mentioned earlier in this section, Klein et al. (2000) treat this reading as both a change-of-state reading and a perfective reading, where the durational modifier measures from the CoS event to the endpoint of the culminating state. Nevertheless, as (15) shows, this reading can be a purely stative one without any CoS events involved. Although it is true that an alignment for *-le* identical to that for *-zhe* in (22) can be applied to this pure stative reading (assuming that TT is measured by the durational modifier), we again run into the problem that the stative reading of *-le* and *-zhe* are not differentiated in this solution. Similarly, as before, it remains unclear how to unify the stative and the CoS reading of *-le*.

To conclude, Klein et al.’s (2000) aspectual approach for examples like (1) can capture the CoS reading, but not the two stative readings discussed in Section 2. In fact, it is not easy to see how aspectual account could satisfactorily account for the three readings concerning *-le*. In the

next section, I will propose an alternative approach suggesting that the distinctions between the three readings should be captured at the lexical level rather than obtained aspectually.

4. An alternative approach on the lexical level

As I have argued, Klein et al.'s (2000) popular aspectual account faces problems with the two stative readings of *-le*, but captures the CoS reading. However, even with the CoS reading, the proposal is not without problems. Sybesma (1997) (see also Tham 2013), observes that a verb like *pang* 'fat' is compatible with a CoS reading even if *-le* is absent.

- (23) ta hui pang
 3SG will fat
 'He/she will get fat.'

(Sybesma 1997:230)

Furthermore, *pang* can be modified by a manner adverb in the absence of *-le*.

- (24) pang de kuai
 fat SUB quickly
 'getting fat quickly'

As the CoS flavours of (23) and (24) cannot be attributed to *-le*, we are led to the alternative proposal that a CoS is always lexically encoded. This is the view held by Tham (2013), who suggests that there are separate but homophonous stative and CoS lexical items. These items are responsible for the pure stative reading and the CoS reading, respectively. For example, in (5) and (13), which are found with the pure stative reading, *kai* 'open' is equivalent to the adjectival *open* in English, while in (1) where the CoS reading is obtained, *kai* is a counterpart of the verbal *open*.

Under the assumption that a predicate like *kai* 'open' corresponds to at least two homophonous forms, one important question that must be answered is which form is the basic one from which the other is derived. I propose that we answer this question by relying on the Principle of Monotonic Composition (PMC) of Koontz-Garboden (2005).

(25) Principle of Monotonic Composition (PMC):

Word meaning is constructed monotonically on the basis of event structure constants and operators.

(Koontz-Garboden 2005:100)

PMC indicates that the only derivational route is $\text{open}_A \rightarrow \text{open}_V$, since the opposite route would involve deletion of the CoS in open_V , in violation of the PMC. Tham (2013) also suggests that such a route exists systematically in Chinese and attributes the CoS reading of (1) to the derived verbal form of the predicate. However, it should be noted that not all CoS verbs are derived from basic adjectives like *kai* 'open'. As is also pointed out by Tham (2013), there exists a set of basic CoS verbs in Mandarin (e.g. *dao* 'arrive' and *hua* 'melt'), which is also the case in English.

After tackling the CoS reading and the pure stative reading, the next question is how the stative reading with an event implication such as (4) should be accounted for. Based on the

current approach, there are two possible options. One is to suggest that the predicate in (4) is a CoS verb, which is identical to the predicate in a CoS reading. As a result, what differentiates this reading and the CoS reading is the flexibility of the alignments of TT and T-SIT: CoS is covered in TT in the CoS reading but not in the stative reading with an event implication. The other possibility is that this reading corresponds to an adjective derived from the CoS verb. Based on PMC, the adjective has to have a CoS event implication.

The first option assumes that the stative reading with an event implication is attributed to *-le*, while the second accounts for it lexically. Thus, to check which one is better, we need to look into whether a predicate can have the stative reading with an event implication when *-le* is absent. Such an example is not commonly found in Chinese, but exists: The response to an attendance taking is a single *dao* ‘arrive’ with no *-le* following it, which undoubtedly obtains a stative reading that means *here* in the situation. Meanwhile, since *dao* can have a CoS reading but does not have a corresponding pure stative reading that means simply *being somewhere*, the only way to account for *dao* in the attendance-taking case is to assume that it is an adjective derived from the homophonous CoS form, which suggests that the second option should be preferred. I therefore assume that the stative reading with an event implication as in (4) is attributed to a deverbal adjectival predicate.

What also supports the second option is that the derivation is found cross-linguistically. As I have reviewed in Section 2, Embick (2004) observes the resultative reading of *opened* in English, and what differentiates it from the pure stative reading yielded by the adjectival *open* is that *opened* has an implication of an opening event prior to the state. The contrast between *the door is opened* and *the door is open* in English is thus parallel to the contrast between (4) and (5).

Similar phenomena are also found in languages such as Greek and German. According to Alexiadou & Anagnostopoulou (2008), the *-menos* participle that combines with a state presupposes a prior event.

- (26) #Afti i varka ine fusko-**meni** alla den
 this the boat is pumped but not
 tin exi fuskosi kanis akoma
 it has pumped no one yet
 ‘This boat is pumped up but no one has pumped it up yet.’

(Alexiadou & Anagnostopoulou 2008:34)

The predicate *pumped up* is also found with the similar event implications in German. Kratzer (2001) observes that (27) entails that there was a pumping up event prior to the state.

- (27) Die Reifen sind immer noch aufgepumpt
 the tires are still pumped up
 ‘The tires are still pumped up.’

(Kratzer 2000:385)

Although scholars may have disagreements on whether the event implications should receive a lexical approach or a syntactical one (see Embick 2004 for discussion), the rich morphology in these languages reveals more straightforwardly that it is the predicate itself rather than any aspectual markers that contributes to the event implications. The cross-linguistic parallelism

thus adds confidence to the view that the event implications in the stative reading found in *X-le* are not due to *-le*, but to the predicates *per se*.

Based on the analysis for the different structures above, it seems that there are two possible derivational routes found with Chinese predicates shown as follows.

- (28) i) Basic Adj → CoS-V → deverbal Adj (*fat, open, etc.*)
 ii) Basic CoS-V → deverbal Adj (*arrive, melt, etc.*)

That basic adjectives in Chinese can systematically derive CoS verbs has been proposed earlier by Tham (2013). However, Tham (2013) suggests that the derivation from CoS verbs to deverbal adjectives are at most found in Chinese as a few exceptions arising from conceptual-pragmatic factors. She holds the view that a predicate like *mie* ‘extinguish’ can only have a CoS interpretation, as is shown in (29a), but I argue that in order to account for the grammaticality of (29b), the only choice is to propose that *mie* has a deverbal adjectival form as well.

- (29) a. huó mie le
 fire extinguish ASP
 ‘The fire went out.’
 b. huó xiānzài mie le,
 fire now extinguish ASP
 sān xiǎoshí qián jiù mie le
 three hour ago just extinguish ASP
 ‘The fire is out now. It extinguished three hours ago.’

It is impossible for the first half of (29b) to have a CoS interpretation, because the fire went out three hours ago rather than now. The fact that no contradiction is observed in (29b) suggests that (29a) can have a stative reading and thus is ambiguous. In the meantime, this stative reading cannot be attributed to a basic adjectival form, since *mie* does not have a meaning of *not burning*. A candle that has never burnt, for example, contradicts with *mie*.

- (30) #zhèzhī cōng měi shāo guò de làzhú mie le
 this-CL ever not burn ASP SUB candle extinguished ASP
 Intended reading: ‘The candle that has never burnt is not burning now.’

As a result, the route CoS-V → deverbal Adj also exists systematically in Mandarin, which accounts for the stative reading with event implications found with *X-le*. Meanwhile, the CoS reading of *X-le* is straightforwardly obtained with the CoS-V form.

As for *X-le* + durational modifier, since it does not necessarily have an event implication, we may assume that *X* is a basic adjectival form in this structure. This in turn raises the question whether only basic adjectival forms are compatible with durational modifiers, and the answer is no. Deverbal adjectives can also appear in this structure, which is shown in (31). Based on a judgement questionnaire I conducted among native Mandarin speakers, although listeners will by default assume that in (31) the wax melted precisely three hours ago, it is not incompatible with a context in which the wax has been in a melted state for four hours. It thus suggests that people’s default assumption that the melting event happened three hours ago is simply pragmatics. We thus have evidence that the predicate in (31) can be a deverbal adjective. It should be noted, though, that it does not mean that (31) has no event implications. Since the

predicate is a deverbal adjective, it necessarily presupposes a previous melting event, and what is important is that the event does not have to occur exactly three hours ago.

- (31) *la* *hua* *le* *san* *xiaoshi* *le*
 wax melt ASP three hour PRT
 “The wax has been melted for three hours.”

What should be noted here is that there is no way to test whether the CoS verb form can appear in (31) as well, similar to the English example *the door opened for three hours* where the opening event has to occur at the beginning of the three hours. This is because the output from the CoS verb form can also be provided by pragmatic factors in a stative reading. To be more specific, if *hua* in (31) can be a CoS verb, then the interpretation that the melting event occurred precisely three hours ago is provided semantically. However, if *hua* is a deverbal adjective, the same reading can be contributed by pragmatic factors, too. In other words, this interpretation does not rule out a CoS verb predicate but does not support it, either. Therefore, I will leave this question for further investigation and assume for the moment that the structure *X-le* + durational modifier is compatible with adjectives, both basic ones and deverbal ones.

The last case I will deal with is *X-zhe*, which also has the pure stative reading as *X-le* + durational modifier does. We may therefore assume that basic adjectives can combine with *-zhe*. The distinction between *X-zhe* and *X-le* + durational modifier is that deverbal adjectives are incompatible with the former but not the latter, as shown by the ungrammaticality of (32).

- (32) **la* *hua* *zhe*
 wax melt ASP
 Intended meaning: “the wax is liquid.”

Therefore, the four interpretations that I have covered are captured as follows.

- | | | |
|------|---|------------------------------------|
| (33) | <i>X-le</i> (CoS reading) | CoS-V |
| | <i>X-le</i> (stative reading with event implications) | Deverbal adjective |
| | <i>X-le</i> + durational modifier | Basic adjective/deverbal adjective |
| | <i>X-zhe</i> | Basic adjective |

I discussed earlier why Klein et al.’s (2000) theory is problematic with all the three cases concerning *-le*, and the proposed analysis reveals another issue of the theory, which is the unnecessary existence of the notion of ‘distinguished phase’ (DP). Based on the assumption that all the predicates in *X-le* with a CoS interpretation are CoS verbs, a predicate that appears to be a 1-phase verb in Klein et al.’s proposal, such as *pang* ‘fat’, should be treated instead as an equivalent of *fatten* in English. As a result, predicates with a CoS reading are always 2-phase verbs, hence there is no necessity to categorise predicates by how many phases they contain.

So far I have argued that Klein et al.’s (2000) suggestion for *-le* has three problems: i) nothing in their framework can account for the two stative readings found with *-le*; ii) evidence shows that the CoS reading is attributed to the predicates *per se* rather than *-le*; iii) the concept of DP is not needed. It remains to be seen whether a simpler characterization of the meaning contribution of *-le* is possible under the present proposal.

At first glance, the property shared by the three cases of *-le* seems to be boundedness: bounds are provided by the CoS events in *X-le* (CoS), the event implications in *X-le* (stative), and the modifiers in *X-le* + durational modifier. By contrast, *-zhe* requires a completely unbounded environment, so that only basic adjectives are compatible. This hypothesis predicts that *-zhe* cannot be followed by durational modifiers, which is borne out.

- (34) *men kai zhe wu fenzhong le
 door open ASP five minute PRT
 Intended meaning: ‘the door has been open for 5 minutes.’

The unacceptability of (34) can be understood if we assume that *-zhe* is only compatible with unbounded situations, since the durational modifier sets bounds on the opening state as it does in the structure of *X-le* + duration modifier.

The boundedness as a shared property of the three cases sounds feasible, but it is not specific enough to be a definition for *-le*. Although I disagree with Klein et al.’s (2000) aspectual account for *-le*, I side with their view that aspectual markers such as *-le* reflect the relation between T-SIT and TT. Therefore, ideally, an alternative definition for *-le* should throw light on how T-SIT and TT interact with each other and explain the boundedness at the same time.

Based on their semantics, the three cases of *-le* are illustrated as follows in terms of the alignments of T-SIT and TT.

- (35) a. *X-le* (CoS) T-SIT •
 TT •————•
- b. *X-le* (stative) T-SIT —(•)→ event implication
 TT •————•
- c. *X-le* + durational modifier T-SIT —•—time—•—
 TT •————•

The dots on T-SIT represent the various bounds. In (35a), the whole T-SIT is the CoS event on its own, which is a bound *per se*. For the case of (35b), since a stative predicate is homogeneous, the event implication is encoded in the predicate but not shown straightforwardly on T-SIT. In (35c), the modifier sets a time span on T-SIT, which are shown with two dots. The line that represents the predicative state stretches out of the bounds to show that the bounds are not necessarily the beginning and endpoint of the state (see 2.2).

I thus hypothesize that *-le* requires all the bounds of T-SIT to be covered in TT. The only bound of (35a) is the CoS event, which is properly contained in TT. (35c) has two bounds provided by the modifier, and both fall in TT. (35b), however, is an interesting case, as its bound is not revealed on T-SIT, unlike (35a) and (35c). I argue that since the predicate is homogeneous, the event implication is covered by TT as long as any part of T-SIT is covered by TT. Therefore, the state does not have to terminate at the end of TT, which matches the observation in (4) that this stative interpretation is compatible with adverbials such as *xianzai* ‘now’. Similarly, if the predicate in (35c) is a deverbal adjective rather than a basic one, there will be one more bound

contributed by the event implication, and it is well covered since TT overlaps T-SIT at least partially.

Furthermore, this hypothesis also captures the perfective reading that *-le* yields when combining with telic predicates such as *write a letter*, which I have not gone through in the previous sections. Since *write a letter* is telic, it encodes a bound that is the endpoint of the letter-writing event. Based on the proposed analysis, this bound needs to be covered in TT, as is shown in (37), which thus gives rise to a perfective reading.²

- (36) Bill xie le (yifeng) xin.
 Bill write ASP one-CL letter
 ‘Bill wrote a letter.’

- (37) T-SIT ———●
 TT ●————●

5. Conclusion

This paper started with the observation that there are two types of structures marked by *-le* that have stative readings, a fact rarely explored in the literature to the best of my knowledge. Using diagnostic tests, I tried to show that the stative reading of *X-le* necessarily has a prior event implication, while the stative reading of *X-le* + durational modifier is generally a purely stative one. The existence of these stative readings is at odds with the aspectual account for *-le*, which primarily aims to capture CoS readings found with *-le*: such an account attributes the CoS event to *-le* rather than to the predicate itself. Once the two stative readings found with *-le* are taken into considerations as well, *-le* can hardly receive a unified aspectual definition. Meanwhile, the aspectual account also faces problems in the cases where a predicate obtains a CoS reading in the absence of *-le*. To overcome these problems, I proposed an alternative approach based on the conventional idea that adjectives such as *kai* ‘open’ (responsible for the purely stative reading) can be input to a derivation that yields homophonous CoS verb form, from which in turn can be derived a deverbal adjective, which is responsible for the stative reading with the event implication. Since some CoS verbs do not have an adjectival source, the proposal hypothesizes the existence of two derivational routes in Mandarin.

- i) Basic Adj → CoS-V → deverbal Adj (*fat*, *open*, etc.)
- ii) Basic CoS-V → deverbal Adj (*arrive*, *melt*, etc.)

² One remaining issue is the termination reading of (36), which has been widely discussed (see Tai 1984, Smith 1991, Sybesma 1997, Klein et al. 2000, Soh & Kuo 2005, among others). The observation is that (36) does not necessarily entail that the letter is completed, as it is not contradictory with the continuation *but he didn't finish it*. I will not discuss in detail why Chinese allows such a termination reading, since it is beyond the scope of this paper. Nevertheless, I side with Koenig & Muansuwan (2000) in their analysis for a similar phenomenon in Thai and believe it also accounts for the termination reading in Chinese. They propose a notion of *maximality* as a weaker version of *telicity*, which is an operator that selects the maximal eventuality that fits the description. Therefore, when an event of *writing a letter* is terminated rather than finished, the unfinished event is the maximal subpart that matches the description of *writing a letter*, so the terminated eventuality is given an arbitrary endpoint, which is bounded. If that is correct also for Chinese examples like (36), then it fits the hypothesis for *-le* in this paper as well: the bound provided by the arbitrary endpoint falls in TT, which yields the termination reading.

This proposal allows a relatively simple characterization of the *-le*, namely that it requires all the bounds of T-SIT to be covered in TT. This hypothesis, in combination with the lexical-based approach, successfully captures the full range of interpretations found with *-le*.

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Abbreviations

| | |
|-----|-----------------------|
| 3SG | Third Person Singular |
| ASP | Aspectual marker |
| PRT | Perfect marker |
| SUB | Subordinator |
| CL | Classifier |
| CoS | Change of state |
| DP | Distinguished Phase |

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References

- Alexiadou, A. & Anagnostopoulou, E. (2008). Structuring participles. In *Proceedings of WCCFL* (Vol. 26, pp. 33-41). Somerville, MA: Cascadilla Press.
- Djamouri, R. & Paul, W. (2011). A new approach to *-zhe* in Mandarin Chinese. Paper presented at IACL-19, Tianjin, June 2011. Retrieved from http://crlao.ehess.fr/docannexe/file/1980/djamouri_paul_public.pdf
- Embick, D. (2004). On the structure of resultative participles in English. *Linguistic Inquiry*, 35(3), 355-392.
- Hu, W. (1995). Functional perspectives and Chinese word order. [PhD thesis]. The Ohio State University. https://etd.ohiolink.edu/!etd.send_file?accession=osu1392908184&disposition=inline
- Klein, W. (1994). *Time in Language*, Routledge, London.
- Klein, W., Li, P. & Hendriks, H. (2000). Aspect and assertion in Mandarin Chinese. *Natural Language & Linguistic Theory*, 18(4), pp.723-770.
- Koenig, J. P., & Muansuwan, N. (2000). How to end without ever finishing: Thai semi-perfectivity. *Journal of Semantics*, 17(2), 147-182.
- Koontz-Garboden, A. (2005). On the typology of state/change of state alternations. In *Yearbook of Morphology 2005* (pp. 83-117). Springer, Dordrecht.
- Kratzer, A. (2000). Building Statives. In *Proceedings of the Twenty-Sixth Annual Meeting of the Berkeley Linguistics Society: General Session and Parasession on Aspect*. (p. 385).
- Li, C.N. & Thompson, S.A. (1981). *Mandarin Chinese: A Functional Reference Grammar*. Berkeley and Los Angeles: University of California Press.
- Lin, J. (2003). Temporal reference in Mandarin Chinese. *Journal of East Asian Linguistics* 12:259-311.
- Ross, C. (1995). Temporal and Aspectual Reference in Mandarin Chinese. *Journal of Chinese Linguistics* 23, pp. 87-135.

- Shi, Z. (1990). Decomposition of Perfectivity and Inchoativity and the Meaning of the Particle Le in Mandarin Chinese, *Journal of Chinese Linguistics* 18, 95–123.
- Smith, C. (1991). *The Parameter of Aspect*. Kluwer, Dordrecht.
- Soh, H.L. & Kuo, J. (2005). Perfective aspect and accomplishment situations in Mandarin Chinese. *Perspectives on aspect*, pp.199-216.
- Sybesma, R. (1997). Why Chinese verb-le is a resultative predicate. *Journal of East Asian Linguistics*, 6(3), 215-261.
- Tai, J.H. (1984). “Verbs and Times in Chinese: Vendler’s Four Categories,” in David Testen, Veena Mishra and Joseph Drogo (eds.), *Papers from the Parasession on Lexical Semantics*, Chicago Linguistic Society, pp. 289–296.
- Tham, S. W. (2013). Change of state verbs and result state adjectives in Mandarin Chinese. *Journal of Linguistics*, 49(3), 647-701.
- Vendler, Z. (1957). 'Verbs and Times'. Philosophical Review. In 1967, *Linguistics in Philosophy*. Ithaca: Cornell University Press.