Relative Measures: Implications for the Semantics and Syntax of Pseudo-Partitives

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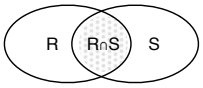
Previous work on measurement has exclusively considered absolute, intersective measures. 'Gram' is a typical example: '30 grams of gold' are both 30 grams heavy *and* entirely golden. Intersectivity is implicitly assumed as a universal property of the grammar of measurement by Krifka (1989), Schwarzschild (2006), Champollion (2010), Scontras (2014), and others.

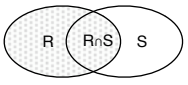
(1) 30 grams of (the) gold / 3 ounces of gold
   a. λx . grams$(x) \wedge$ gram$'(x) = 30 \wedge \ldots$ [quantization requirement] (after Krifka 1989)
   b. $\exists x$ $\exists$ Dim: gold(x) & 3-ounces(Dim(x)) & MON(Dim,gold) (after Schwarzschild 2006)

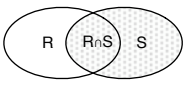
But, there are also relative, non-intersective measures! – namely proportion nouns and fractions:

(2) 40 percent / two fifths of (the) Llamas

Two Readings Relative measures require a new, non-intersective take on the semantics of measurement. But furthermore, the phrase structure must also be reconsidered because, in many languages, relative measures give rise to ambiguities not observable with intersective measures. Consider the sets relevant to different measures M in the phrase 'thirty M of R are S' in (3). Intersective measures like 'thirty grams R are S' only measure the intersection of $R \cap S$ so the order of the arguments is irrelevant to interpretation. Relative measures like 'thirty percent R are S' could measure either the ratio of $R \cap S$ to R or S. In terms of generalized quantifier theory, either R or S could be the restrictor.

(3) intersective: 

relative conservative: 

relative reversed: 

We call the reading targetting the $R \cap S$ to R ratio the *Conservative Reading*, and the one targetting the $R \cap S$ to S ratio the *Reversed Reading*. Languages differ as to whether and how they distinguish between the two readings. In Mandarin, relative measures are ambiguous. The reversed reading requires focus on *běndì-rén* 'local person'.

(4) c/r: Tāmen lùyòng le 30% de běndì-rén (MANDARIN)
   3PL hire perf. 5% DE local-person
   'They hired 30% of the locals.' / '30% of the people they hired are locals.'

In English the reversed reading is much more restricted, but when it is available as in (5b), it is distinguished from the conservative reading by case (i.e. 'of') and definiteness:

(5) con: The company hired 30% of the locals last year.
   rev: The company hired 30% locals$_F$ last year.

In French, disambiguation is made by definiteness (6), while case is decisive in German (7):

(6) con: Ce film a été vu par deux tiers des journalistes (FRENCH)
   this movie has been seen by two thirds of-the journalists
   con/*rev: 'Two thirds of the journalists have seen this movie.'
   rev: Ce film a été vu par deux tiers de journalistes$_F$
   this movie has been seen by two thirds of journalists
   rev/*con: 'Two thirds of the people who have seen this movie are journalists.'

(7) con: Zwei Drittel westfälischen Bieres werden in Berlin getrunken. (GERMAN)
   two thirds.NOM Westphalian-GEN beer-GEN are in Berlin drunk
   con/*rev: 'Two thirds of the Westphalian beer is drunk in Berlin.'
   rev: Zwei Drittel westfälisches Bier$_F$ wurde in Berlin getrunken.
   two thirds.NOM Westphalian-NOM beer.NOM was in Berlin drunk
   rev/*con: 'Two thirds of what was drunk in Berlin was Westphalian beer.'

Finally in Korean, the position of the case marker determines the available readings.

(8) con: [Kyosu isip-phulo]-ka wassta. (KOREAN)
   professor twenty-percent-NOM come-PAST-DECL
   con/*rev: 'Twenty percent of the professors came.'

c/r: Kyosu$_F$-ka isip-phulo wassta.
professor-NOM twenty-percent come-PAST-DECL
rev/?con: 'Twenty percent of those who came were professors.'

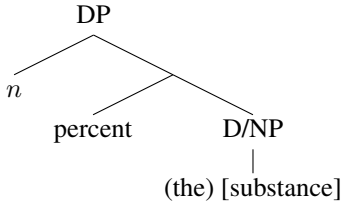
While proportional *many/few* allow two readings as well (Herburger 1998 et al.), no language distinguishes between the two readings of *many/few* morphologically.

Focus Sensitivity In all languages, the reversed reading requires focus on the substance noun. With complex substance NPs, more narrow focus is possible as in (9). The unfocussed parts of the substance noun in this case also restrict the reference set.

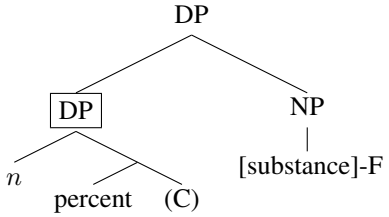
(9) Zwei Drittel DEUTsche Frauen haben das Konzert besucht. (GERMAN)
two thirds German women have the concert visited
'Two thirds of the women who attended the concert were from Germany.'

Proposal We propose that measures are ambiguous between two distinct structures. In the (pseudo-)partitive structure (10), the measure noun and the substance noun form a constituent as in a partitive structure, and this structure receives the conservative interpretation. Reverse interpretations are derived from (11), where the degree argument and the measure noun form a constituent, the boxed DP in (11). We assume the meaning of 'percent' in (12) based on a mereological approach.

(10) **Conservative (partitive)**



(11) **Reversed (appositive)**



(12) $[\![\text{percent}]\!] = \lambda x \in D_e\ \lambda n \in D_d\ \lambda y \in D_{et}\ .\ \frac{\mu(x \sqcap \oplus y)}{\mu(x)} = \frac{n}{100}$

With (12), (10) can be interpreted directly, but (11) cannot. We propose that the measure noun and its degree argument must raise as illustrated in (13), applying trace conversion (Fox 2002) to its result. The restrictor argument of *percent* is then provided by maximizing closure of the focus value of its scope within Rooth's (1992) focus semantics. Specifically we assume the maximalization operator in (13a).

(13) 30% λx the company hired [the$_x$ locals$_F$]
[thirty percent $\max(C)$] $\sim_C$ λx the company hired [the$_x$ locals$_F$]

a. max(C) = $\bigoplus_{c \in C} \bigoplus_{c(x)=1} x$
b. $C = \{\lambda x.$ the company hired the$_x$ locals, $\lambda x.$ the company hired the$_x$ non-locals$\}$
c. $\max(C) = \bigoplus\{x \mid$ the company hired $x\ \}$

For example, in (13), the focus alternative set is (13b), and maximization in (13c) results in the plurality of all people the company hired. This correctly predicts the reversed reading that 30% of all the people hired by the company were locals. This LF adjustment is covert in English, German, and Chinese, but overt in Korean. We propose that '20%' in (8) must move in Korean overtly to an adverbial position before the subject DP moves to the nominative case position as shown schematically in (14). Subject movement must reconstruct to bind the variable x.

(14) ~~[professor$_F$ the$_x$]~~ -NOM 20% λx [professor$_F$ the$_x$] came

Conclusion We show that 1) relative measures require a new semantics of measurement, and 2) that relative measures also reveal novel structural ambiguities of measure in many languages.

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The complexity of events: The empirical side of the event-state distinction

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Since Vendler (1957) an overwhelming amount of theoretical work on the categorization of situations concerning their lexical aspect has emerged within linguistics and philosophy. Telicity, change of state, and punctuality vs. durativity are the main features used to distinguish between events and states.

Surprisingly, the empirical studies concerning this topic can be counted on one hand. The two leading questions of these few studies are the following: How does the representation of an event differ from the representation of a state? And how is this difference reflected in processing times? Gennari & Poeppel (2003), for example, report longer reaction times (RTs) to event sentences than to state sentences and, therefore, suggest that the processing of state sentences is easier. The longer processing times after reading event sentences arise from the higher level of complexity in the decompositional semantic structure of the eventive verbs. In contrast to a stative verb like *love*, the semantic structure of an eventive verb like *build* contains the operators BECOME and CAUSE, denoting a change of state and a causal relation.

A closer look at these studies, however, reveals that in nearly all of them different verbs were compared: As mentioned above, Gennari & Poeppel (2003) used eventive verbs like *build* and stative verbs like *love*. To avoid this problem, in the present self-paced reading studies German ambiguous verbs were used: Depending on the context, verbs like *bedecken* (to cover), *schmücken* (to decorate), and *füllen* (to fill) lead to an eventive or a stative reading.

In the first experiment, with these verbs sentence pairs were created, consisting of an eventive (1) and a stative sentence (2). The two sentences of one pair differed only in their grammatical subject, but contained the same verb and direct object:

(1) *Der Gärtner / bedeckt / das Beet / […].*
The gardener / covers / the flowerbed / […].

(2) *Die Plane / bedeckt / das Beet / […].*
The tarp / covers / the flowerbed / […].

A preceding questionnaire production study and a corpus analysis revealed that these verbs indeed occur in the eventive as well as in the stative reading, although there are differences concerning the verbs' main tendency towards one of these readings.

Note that in the event sentences all referents described by the grammatical subjects were animate, whereas in the state sentences all subjects were inanimate. Therefore, a main effect of animacy was expected on the subject position. Since this effect could influence the potential event-state effect measured on the verb position as a spillover effect, control items containing the same subjects but non-ambiguous verbs like *liegen* (to lie) were added:

(3) *Der Gärtner / liegt / auf der Wiese / […].*
The gardener / lies / on the meadow / […].

(4) *Die Plane / liegt / auf der Wiese / […].*
The tarp / lies / on the meadow / […].

The results confirmed this assumption: Mean RT measured on the subject position was significantly shorter for the animate than for the inanimate referents, $F(1, 56) = 9.65$, $p = .003$ (587 vs. 602 ms). Within the control items, this animacy effect influenced the RTs on the verb position: After animate subjects RTs of the (non-ambiguous) verbs were shorter than after inanimate subjects (502 vs. 515 ms), revealing a slight spillover effect.

However, within the target items mean RT measured on the position of the (ambiguous) verb showed the opposite pattern: After animate subjects RTs of the verb were significantly *longer* than after inanimate subjects, $F(1, 56) = 4.12$, $p = .047$ (534 vs. 520 ms). Here no spillover effect emerged, but a main effect which can be attributed to the different lexical aspect of the two situation types.

Like in Gennari & Poeppel (2003), the longer processing times for the event sentences are explained by the higher level of semantic complexity in the mental representation of eventive situations. An interesting alternative or parallel explanation is provided by the simulation account (e.g., Barsalou, 2008): Imagine what is mentally simulated during the processing of a state like *the tarp covers the flowerbed*: The simulation contains a tarp and a flowerbed, but nothing more. In contrast, the simulation of an event like *the gardener covers the flowerbed* not only requires additional participants like the gardener, but also action, movement, change and a relevant time course. Under the assumption that a simulation constitutes at least a part of the mental representation of a situation, it seems comprehensible that the complexity of such a simulation has an influence on its processing and that the higher degree of complexity in the simulation of events leads to longer RTs.

To find more evidence for the hypothesis that a higher degree of semantic complexity has an influence on processing time, a second experiment will be conducted: This self-paced reading study uses a paradigm introduced by Kelter et al. (2004), who examined how the difference between long and short situation duration is reflected in reading times. Methodically the authors used anaphor resolution in short discourses and they found evidence for the hypothesis that it takes longer to resolve an anaphor if an event with a long duration is introduced between the anaphor and its referent.

The second experiment is motivated by the similar assumption that anaphor resolution times are longer if there is "more" between the anaphor and its referent, i.e. more semantic content like it is suggested for event sentences. Again, ambiguous verbs are used in the target sentences, which differ only in the temporal adverbial specifying the situation type: The target sentence *Die Blumen verschönern die ganze Kirche* (The flowers decorate the whole church) in (5) gets an eventive reading in combination with the temporal adverbial *in kurzer Zeit* (in a little while), and a stative reading in combination with *für kurze Zeit* (for a short time). In contrast to the first experiment, this stimulus material has the advantage for keeping the grammatical subjects in the two conditions identical.

(5) *Context:* Sonja works as a florist and has to decorate a church for a wedding ceremony.
Antecedent sentence: *Die kleinen Rosensträußchen befestigt sie mit weißen Bändern*.
She attaches the small bunches of roses with white ribbons.
Event sentence: *In kurzer Zeit verschönern die Blumen die ganze Kirche.*
In a little while the flowers decorate the whole church.
State sentence: *Für kurze Zeit verschönern die Blumen die ganze Kirche.*
For a short time the flowers decorate the whole church.
Anaphor sentence: *[…] Sonja sammelt die Gestecke ein und löst die weißen Bänder.*
[…] Sonja collects the bouquets and unties the white ribbons.

If semantic complexity has the same influence on anaphor resolution like situation duration, longer RT for the anaphor sentence following an event sentence than following a state sentence are expected.

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Ordering patterns and the syntax of the Person Case Constraint (PCC)

1. Outline. The paper investigates a puzzle for syntactic approaches to the PCC, namely that it arises in clusters of weak objects/clitics regardless of their relative order. The literature on clitics has mostly remained silent about this, implicitly or explicitly resorting to templatic clitic ordering. But since templates are implausible for weak pronouns, different serializations in clusters showing PCC effects in e.g. German vs. English force us to spell out the relationship between different ordering patterns and the emergence of PCC effects in a way that explains the observed indifference to word order variation. Following Richards (1997), I argue that IO>DO orders involve movement of the two objects to a single probe which results in crossing (1), while DO>IO orders result from targeting two probes and nesting (2). In this analysis, the higher IO blocks person licensing of the 1st/2nd DO in both orders.

(1) [IO DO **H^0** ….. [~~IO~~ ~~DO~~]] (2) [DO **Z^0** [IO **Y^0** ….. [~~IO~~ ~~DO~~]]]

Evidence for attachment to a single head in (1) vs. two heads in (2) comes from a difference w.r.t. 3rd person case syncretisms in the two patterns (Nicol 2005), which has broader implications for agglutinative vs. fusional object agreement morphology and supports the view that object agreement markers are clitics (Preminger 2009, Nevins 2011, Kramer 2014).

2. The PCC in German. The PCC prohibits 1st/2nd person phonologically weak DOs in clusters with IOs of the same type. It has been documented for a large number of typologically unrelated languages and comes in several versions (Strong, Weak, "Me-First", Ultrastrong; Bonet 1991, Anagnostopoulou 2005, Nevins 2007). While the PCC with clitics and agreement has been extensively discussed, its manifestation in weak pronoun clusters is an understudied domain. English and Swiss German have the PCC (Bonet 1991). Cardinaletti (1999) and Haspelmath (2004) claim that German lacks it on the basis of examples like (3), but Anagnostopoulou (2008) has identified PCC effects in contexts like (4).

(3) weil er/Maria **dich ihm** vorgestellt hat (4) *weil **dich ihm** er/Maria vorgestellt hat
'because he/Mary you to-him introduced has' 'because you to-him he/Maria introduced has'

German weak pronouns undergo obligatory movement to the W(ackernagel) position (Lenerz 1977), a position preceding all adverbs and non-pronominal arguments. Subjects may either precede or follow W-pronouns (Müller 2001). Crucially, PCC effects arise only when the subject follows the W-pronoun cluster, as in (4), and not when the subject precedes it, as in (3). German has the weak PCC, i.e. 1st and 2nd IO/DO combinations like *mich dir* 'me to you' are fine in contexts like (4). There is a second factor influencing the emergence of the PCC in German. W-pronouns are reported in the literature to have a rigid DO>IO order (*es ihm* 'she it-DO him-IO' **ihm es*, Lenerz 1977). The speakers that have PCC effects require a strict serialization of W-pronouns. However, speakers of mostly Southern dialects (e.g. Austrian German) accept both permutations; for these speakers, PCC effects do not arise in (4).

3. A high head entering Agree. Syntactic research has treated the PCC as arising in a configuration where two goals, IO/G1 and DO/G2, enter Agree with a higher head H (v or T) bearing a φ-probe, as in (5a), or, alternatively, as a case where the G2/ DO is in the complement domain of H (v or applicative Appl) and the G1/IO is its specifier, as in (5b):

(5) a. [Hφ [G1φ G2φ]] b. [G1φ Hφ [G2φ]]

In approaches based on (5a), the PCC has been argued to result from the intervening G1/IO, which blocks person Agree between H and G2/DO (Anagnostopoulou 2003, 2005; Bejar and Řezáč 2003; Richards 2005; Nevins 2007, 2011). Accounts based on (5b) have either assumed that the specifier G1 blocks person Agree between Hφ and G2, which requires a Spec, Head configuration, (Baker 2008, who takes H to be v EPP-attracting the IO), or that G2 enters cyclic Agree with Hφ, preventing Hφ from selecting for/agreeing with G1, (Adger & Harbour 2007 taking H to be Appl; cf. Bejar and Řezáč 2009). German provides evidence for the syntax in (5a): the fact that the PCC only arises in the pre-subject position suggests that H entering Agree with W-pronouns is high in the T domain, close to the left periphery.

4. PCC regardless of order. While the site hosting W-pronouns is high in German, the locus of weak pronoun clusters in English is low. Pronouns in (6) follow the main verb which remains vP-internal. In contrast to German, English pronouns are strictly IO>DO.

(6) a. John showed **her it** b. *John showed **it her**

Like German, English has the PCC, as shown in (7b, c) (Bonet 1991). (7c), in addition, shows that English has the Strong PCC (M. Richards 2008):

(7)a. They showed **me it** b. *They showed **her me** c. *They showed **me you**/**you me**

The comparison between German and English shows that PCC effects arise both when the order of pronouns is DO>IO, as in German, and when the order is IO>DO as in English. The same holds for clitics. Nicol (2005) studies a wide variety of Romance modern and older varieties (e.g. Aragonese, European Spanish, Latin American Spanish, Galician, Standard Italian, Italian dialects, Occitan, Romanian, Catalan, Corsican, Modern and Old French) and establishes that even though they vary a lot with respect to IO>DO or DO>IO ordering, they uniformly show PCC effects. In Romance, the DO>IO ordering is an old pattern and the IO>DO ordering a modern one. Most languages have shifted from DO>IO to IO>DO with the exception of French (Wanner 1974, Nicol 2005). Despite the fact that clitic languages vary a lot w.r.t. clitic ordering, they all have (different versions of) PCC effects.

5. The syntax of different orders, evidence from syncretism. All pronominal and clitic languages that have been studied in some detail have been argued to have an IO>DO order of DPs (Larson 1988 for English, Frey 1989, Haider 1993, Lechner 1998 for German, contra Müller 1995, cf. the literature on clitic languages). This entails that IO>DO pronoun/clitic clusters preserve the base object order, while DO>IO pronominal/ clitic clusters reverse it. Following Richards (1997) I propose that order preserving movement results from the syntax in (1) and reversal of base orders results from the syntax in (2). Both (1) and (2) have been independently proposed for the PCC, by Anagnostopoulou (2003, 2005) and Preminger (2014), respectively. Preminger takes Y in (2) to be a Person probe P and the higher Z to be N(umber) (building on Bejar and Řezáč 2003). In the present account, both analyses are correct, but for different clusters. In e.g. English (7) a single head (bearing P and N) hosts the IO>DO pronouns, while in German (4) the IO attaches to P and the DO to the higher N. The same applies to IO>DO vs. DO>IO clusters of clitics. Old Romance patterns involve clitic attachment to P and N, while clitics attach to a single head in modern Romance orders where P and N have been fused into a single head. An additional assumption needed for clitics is that they undergo Matushansky (2006)-style head movement (Nevins 2011). Independent evidence for (1) and (2) comes from the following correlation: Romance languages with IO>DO clusters have case syncretic 3rd person clitics, while in DO>IO languages, 3rd person clitics are asyncretic. The IO>DO order is associated with productive syncretic allomorphs in the plural, the same form for singular dative and plural accusative, etc. By contrast, the conservative DO>IO group has asyncretic clitics or employs asyncretic allomorphs in clitic combinations. See Nicol (2005) for extensive discussion of 'the Case Syncretism Property (CSP)' in Romance, which will be shown to be further supported from Greek and German. The CSP can be accounted for if the mechanisms deriving the relevant types of syncretism (e.g. the rule of Impoverishment; Bonet 1991; 1995) operate in local domains, and attachment to a single head in (1) counts as local, while attachment to two different heads in (2) is non-local. Note that the CSP considers only 3rd person pronouns; 1st/ 2nd person pronouns are case syncretic due to feature identity (Adger and Harbour 2007). Moreover, when DO>IO permutations are employed as a strategy to circumvent PCC violations (Swiss German, Greek imperatives), a single head is targeted by the DO first. I discuss the implications for the syntax of object agreement markers in agglutinative languages showing nesting (in e.g. Sambaa, Riedel 2009) vs. languages with portmanteau morphemes. Modeling this distinction in terms of the derivations in (2) vs. (1) entails that object agreement markers qualify as clitics.

TWO TYPES OF DERIVED STATES IN BZHEDUG ADYGHE

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Adyghe, morphologically ergative, highly polysynthetic Circassian (< Northwest Caucasian) language spoken in the South of Russia, possesses two constructions whose semantics crucially relies on the notion of derived (resultant or target, cf. [Parsons 1990; Kratzer 2000]) state. Both of them are peculiar in that the stative interpretation is induced by the presence of the Preterite suffix (*-ʁe*), which in its primary use denotes events. On the basis of our field data from the Bzhedug dialect, we discuss the semantics of the two constructions and argue that they involve two distinct kinds of derived states.

The first construction, the Resultative proper, is formally identical to the Preterite, save that in case of transitive verbs there is no Agent cross-reference prefix (1a-b). Morpho-syntactically Resultatives behave as stative verbs. The Preterite suffix does not signal temporal reference, but acts as a stativizer in the sense of [Kratzer 2000]: Resultative denotes the resultant/target state of the base telic verb that is predicated of its Absolutive argument and holds at reference time. For explicit non-present tense reference, further temporal markers are attached to the right of the Preterite (2). The target state is fairly restricted semantically and Resultatives show some tendency towards lexicalization. In those cases when they combine with modifiers incompatible with underived statives (e.g. manner adverbs), these modifiers fall under the scope of the stativizer (3).

The second construction, the Continuative, is formed by means of the prefix *zere-*, which is historically a relativizer of manner (‘the way X Vs’), and can both occur independently and form temporal converbs. The Continuative signals that the situation denoted by the predicate held at some point before the reference time and still holds at reference time, and thus it takes in its scope only homogeneous situation descriptions. Therefore it comes at no surprise that the Continuative freely combines with verbs denoting states and activitives (4a), as well as derived Resultatives (4b), however, rather surprisingly, the regular Preterites of various verbs can also be embedded under the Continuative (4c). In the latter case the construction yields the meaning ‘the state resulting from the event denoted by the base verb still holds at reference time’.

While the latter use of the Continuative refers to a derived state, like the Resultative, there is a significant difference in the semantics of the two constructions. The Resultative selects telic predicates, existentially binds higher components of their event structure and returns a semantically restricted state predicated of the Absolutive argument; the descriptive properties of the state denoted by the Resultative are fully determined by the base predicate. By contrast, the Continuative may combine with Preterites of both telic and atelic verbs, leaves the base event structure intact and returns an underspecified target state, the exact content of which is determined both by the lexical semantics of the base predicate and by the context, cf. [Nishiyama & König 2010]. The Resultative is thus an operation on event structure that creates a new lexical predicate with properties largely coinciding with those of underived statives. The “target state” use of the Preterite under the Continuative, however, is a post-lexical syntactic operation whose interpretation instantiates aspectual coercion [de Swart 1998] in the presence of a higher-level operator selecting for a homogeneous situation description.

The Bzhedug data strongly speaks in favor of distinguishing between types of states differing in how many of their descriptive properties are specified, as well as between stativizers operating at different levels of structure (lexical vs. syntactic). Somewhat paradoxically, the “higher” stativizer in Adyghe seems to always occur in the scope of a still higher semantic operator (in our case, the Continuative), while the “lower” stativizer (the Resultative) does not have such restrictions. The fact that it is the underspecified states derived by the Continuative that are obligatorily construed as reversible challenges not only the analysis in [Kratzer 2000]

under which target state reading arises from more complex structure (i.e. an extra compositionally accessible Neo-Davidsonian state argument), but also a more recent proposal by [Baglini 2013] that ties target state passives to VPs with lexicalized property scales.

Examples:

(1) a. *te* *pʰsənčʼ-ew* *l-er* *d-ʁe-ẑe-t*
we quick-ADV meat-ABS 1PL.ERG-CAUS-cook-FUT
'We will fry the meat quickly.'

b. *l-er* *ʁe-ẑa-ʁe*
meat-ABS CAUS-cook-PST
'The meat is fried.'

(2) *wə-qə-zə-kʷe-ǯʼe* *pče-r* *ʔʷə-xə-ʁe-t*
2SG.ABS-DIR-REL.TEMP-go-INS door-ABS LOC-open-PST-FUT
'When you come, the door will be open.'

(3) *zečʼe* *gʷəšʼʰaʔe-xe-r* *saq-ew* *txə-ʁa-ʁe*
all word-PL-ABS attention-ADV write-PST-PST
'All the words were written carefully.'

(4) a. *wešʼx* *qə-zer-je-šʼx*
rain DIR-REL.MNR-rain
'It is still raining.'

b. *doske-m* *zere-tje-tx-a-ʁe-ze*
blackboard-OBL DIR-REL.MNR-LOC-write-LAT-PST-CNV
je-kʷa-ʎe-r-jə *je-ǯʼ*
DAT-go-DIR-CNV-ADD DAT-read(IMP)
'While it is still written on the blackboard, go and read.'

c. *doske-m* *qə-zere-tr-jə-tx-a-ʁe-ze*
blackboard-OBL DIR-REL.MNR-LOC-3SG.ERG-write-LAT-PST-CNV
je-kʷa-ʎe-r-jə *je-ǯʼ*
DAT-go-DIR-CNV-ADD DAT-read(IMP)
'While he has written it on the blackboard [=while it is still written on the blackboard as a result of his writing], go and read.'

Abbreviations:

ABS – absolutive; ADD – additive; ADV – adverbial; CAUS – causative; CNV – converb; DAT – dative; DIR – directive; ERG – ergative; FUT – future; IMP – imperative; INS – instrumental; LAT – lative; LOC – locative; MNR – manner; OBL – oblique case; PL – plural; PST – (perfective) past; REL – relativization; SG – singular; TEMP – temporal relation.

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Transitive-ergative alternation in the domain of P

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The main aim of this work is to argue for the existence of a transitive/ergative alternation in the domain of P, based on evidence from absolute constructions (**ACs**) in French.

Observations. Ruwet (1978) ([1]) distinguishes between two types of French ACs of the form *avec* 'with' – *DP* – *X* (***avec*-ACs**), as illustrated by (1) and (2), showing that the *DP–X* that follows *avec* in (1) and that in (2) do not involve the same semantic relation.

(1) Avec John Wayne pour Reagan, on va voir ce qu'on va voir.
'With John Wayne for Reagan, we will see what we will see.' [1]

(2) Avec Pierre pour guide, nous avons visité Florence.
'With Pierre as a guide, we visited Firenze.' [1]

In the first type, the *DP–X* can be paraphrased by a sentence of the form *DP is X* (cf. *John Wayne est pour Reagan*. 'John Wayne is for Reagan.'). In the second type, on the other hand, the *DP–X* does not allow such paraphrasing (cf. **Pierre est pour guide*. (lit.) 'Pierre is for a guide.'), but rather corresponds to a phrase in a sentence of type *Y has DP X* (cf. *Nous avons Pierre pour guide*. 'We have Pierre for a guide.') (for related discussions, see McCawley 1983 for English, Riemsdijk 1978 for Dutch). The two types of *avec*-ACs as exemplified by (1) and (2) (henceforth, the **be-type** and **have-type** *avec*-ACs, respectively) also differ syntactically, as Ruwet points out. First, the be-type allows quantifier float (**QF**) of *tous* 'all' associated with the DP, while the have-type does not, as shown by (3) and (4).

(3) Avec {**tous** ces imbéciles/ces imbéciles **tous**} pour Reagan, Ford est foutu.
'With all those imbeciles for Reagan, Ford is doomed.' [1]

(4) Avec {**tous** ces imbéciles/?* ces imbéciles **tous**} pour guides, on n'a pas cessé de s'égarer.
'With all those imbeciles as guides, we were always getting lost.' [1]

Second, the be- and have-types of *avec*-ACs behave differently with respect to the position of adverbs. In the former, an adverb can occur between *DP* and *X* following *avec*, while in the latter, inserting an adverb between *DP* and *X* yields a deviant result, as shown by (5) and (6).

(5) Avec Napoléon personnellement responsible des opérations, le succès est assuré.
'With Napoleon personally responsible for operations, success is guaranteed.' [1]

(6) *Nous avons visité Florence, avec Pierre personnellement pour guide.
(lit.)'We visited Firenze, with Pierre personally as a guide.' [1]

To the best of my knowledge, no satisfactory explanation has been given to the data in (3)–(6), so far in the literature (see [1] for explorations of possible explanations).

Analysis. I claim that the two types of *avec*-ACs can receive a unified treatment in terms of a transitive/ergative alternation in the domain of P, analogous to that observed in the verbal domain (cf. *The missiles will sink the ship./The ship will sink.*). Specifically, I propose that the derivations of be- and have-type *avec*-ACs start out as in (7) and (8), where DP and XP form a small clause (SC) complement to a different type of P, an ergative (P_{erg}) and a transitive one (P_{tra}) respectively, only the latter having a case-assigning property (for the SC analysis of prepositional ACs, see McCawley 1983, Beukema and Hoekstra 1984, Hoekstra 1992).

(7) *be-type* $[_{PP}\, P_{erg}\, [DP\ XP]]$ (8) *have-type* $[_{PP}\, P_{tra}\, [DP\ XP]]$

Consequently, in the derivation of the be-type, where P_{erg} does not assign case, the DP inside the SC must raise to a higher position. I propose that in this case, the PP has an extended projection headed by the phase head *p* (cf. Den Dikken 2003, Svenonius 2004), which case-licenses the DP in the SC by raising it to Spec,PP. This raising operation, followed by a subsequent P-to-*p* head-movement, derives the be-type *avec*-AC, whereas the PP structure in (8), without an extended projection, derives the have-type. To illustrate, the examples of the two types of *avec*-ACs in (1) and (2) are assigned the structures in (9) and (10).

(9) *be-type* $[_{pP}\, avec\, [_{PP}\, \textbf{John Wayne}\, [_{P'}\, P_{erg}\, [_{SC}\, \boldsymbol{t_{JW}}\, [\text{pour Reagan}]]]]]$

(10) *have-type* $[_{PP}\, avec\, [_{SC}\, \text{Pierre}\, [\text{pour guide}]]]$

Explanation of the data. The present analysis provides an explanation of the data in (3)–(6). First, consider (3) and (4), which show the difference with respect to the possibility of QF. On the one hand, in the be-type *avec*-AC in (3), the DP that follows *avec* originates in the SC and is raised to a higher position, according to my proposal. Now, let us assume, with Doetjes (1997), that floating quantifiers are base-generated in adjoined positions and bind an empty category in an argument position. Then, the floating quantifier *tous* in (3), which originates in an adjoined position (to SC or P' (see (9))), can bind the trace of the raised DP

and remain in place with no problem. On the other hand, in the have-type *avec*-AC in (4), DP remains in-situ in the SC, and therefore, the quantifier that "floats" to the right of the DP is analyzed as being located below its base position. This is why the QF is not observed in (4). Next, consider (5) and (6), where an adverb appears in a position between the DP and the XP following *avec*. The fact that only (6) is ruled out can be accounted for if we assume that the adverb in these examples is a modifier of a state denoted by the DP and XP that form an SC, hence appearing in a position adjoined to the SC. On this assumption, the have-type *avec*-AC in (6), where the adverb occurs inside the SC, is correctly predicted to be unacceptable.

Semantics. Under this proposal, the semantic BE/HAVE dichotomy observed in *avec*-ACs can be attributed to an ergative/transitive alternation of P, in a way analogous to the dual meaning associated with ergative and transitive variants of some class of verbs. On the one hand, in a be-type *avec*-AC, where the P is ergative, the argument DP in the SC complement undergoes raising to the surface position for case. Thus, it is not surprising that the DP raised out of the PP is interpreted as the subject of the predicate, just as the internal argument of an ergative verb, which is raised to a higher position external to the VP, is interpreted as the subject of the verbal predicate (cf. *The ship*$_i$ *will* $[_{VP}$ *sink* $t_i]$). On the other hand, in a have-type *avec*-AC, where the P is transitive, it is expected that the DP which remains within the PP is interpreted as a direct object of the P in a way similar to an internal argument of a transitive verb that remains in the VP, which is interpreted as a direct object of the verb (cf. *The missiles will sink the ship*.) This explains Ruwet's intuition that the DP in a have-type, say *Pierre* in (2), has a semantic role similar to that of a possessee object in a possessive sentence like *Nous avons Pierre pour guide*. 'We have Pierre as a guide.', if we assume that the P *avec*, just like the verb *avoir* 'have,' encodes the relation of possession.

Supporting evidence. This proposal offers us a new perspective to another type of AC in French, the 'bare' AC (**BAC**), which appears without a preposition, as illustrated below:

(11) [Le chat parti], les souris se sont mises à danser.
'With the cat gone, the mice started to dance.' (Léard 1991)

(12) Perrette se promène [un panier au bras].
'Perrette walks with a basket in her hand.' (Hanon 1989 ([2]))

BACs exhibit a semantic dichotomy similar to *avec*-ACs (see [2], Mouret 2011). For example, the *DP–X* in the BAC in (11) can be paraphrased by a sentence of the form *DP is X* (cf. *Le chat est parti*. 'The cat is away.'), whereas the *DP–X* in the BAC in (12) corresponds to that in a sentence of type *Y has DP X* (cf. *Perrette a un panier au bras.* 'Perrette has a basket in her hand.'). Moreover, the two types of BACs pattern with the two types of *avec*-ACs with respect to the possibility of QF: only the be-type BAC allows QF (Mouret 2011).

(13) {**Tous** les chats partis/les chats **tous** partis}, les souris se sont mises à danser.
'With all the cats gone, the mice started to dance.'

(14) {**Toutes** ses pinces à la main/*ses pinces **toutes** à la main}, elle refait sa coiffure.
'With all her clips in her hand, she redoes her hair.' (cf. Mouret 2011)

Similarities seen above suggest that *avec*-ACs and BACs can be analyzed in a unified way. These data can thus be seen as supporting evidence for the current analysis.

Theoretical implication. The presented proposal has an implication for the syntax of SCs. To the extent that it is correct, it provides the evidence that two non-head terms (i.e. XP and YP) which form an SC may both remain in-situ, contrary to the claim that one of the terms of the SC must undergo raising (Moro 2000, Chomsky 2013). There is another piece of evidence that supports this view. As shown below, a have-type *avec*-AC and a have-type BAC both allow the permutation of DP and XP, making a sharp contrast with the be-type.

(15) a. Nous avons visité Florence, avec pour guide Pierre. (cf.(2)) [1]
b. ?Perrette se promène au bras un panier. (cf.(12)) [2]

(16) a. *Avec pour Reagan John Wayne, on va voir ce qu'on va voir. (cf.(1))
b. *Parti le chat, les souris se sont mises à danser. (cf.(11))

This fact can be readily accounted for if only in the have-type, DP and XP remain in-situ within an SC, being in a mutually c-commanding relation, as I propose, and in such a case, either one of the two terms can take precedence (but contra, e.g. Kayne 1994, Moro 2000).

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Reference to states across lexical categories

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Property concepts across categories Adjectival meanings—known in the typological literature as *property concepts* (PCs)—are lexicalized in two ways in the Senegambian language Wolof: i) via stative verbs (PCVs) denoting relations between individuals and properties (1); ii) via mass nouns, denoting the abstract properties themselves (PCNs) (2).

(1) PCV*s: xonq/njool/bees/baax/rafet*
red/tall/new/good/pretty

(2) PCN*s: doole/sago/wërsëk/xel/rafetaay*
strength/calm/luck/wit/prettiness

The latter strategy is widespread in languages which lack an open class of adjectives (Dixon, 1982). It has recently been argued that PCNS cross-linguistically have mass-like substance denotations, establishing a modeltheoretic link between mereological structure and gradable PC meanings (Francez and Koontz-Garboden, Forthcoming) (henceforth F&KG). This paper argues against such a link, and claims that data from Wolof suggest a contrary position: that PC lexemes, regardless of category, are characterized by denoting in *non*-mereologically ordered domains.

Empirical landscape Unlike a predicate nominal like *pokal* 'strong person' (3), a PCN is not predicated of individuals with a copula (4); nor does it predicate directly like a PCV (6). (N.B. the *na* element, glossed FIN, indicates present temporal orientation with PCVs.) Instead the possessive verb *am* 'have' is semantically required to achieve truth conditions when predicated of an entity. Thus a compositional PCN predicate like in *am doole* (5) looks indistinguishable from a possessed mass substance noun like *am ceeb* 'have rice' (7)

(3) *Ali pokal la-∅*
Ali strong.pers. COP-3SG
'Ali is a strong person.'

(4) **Ali doole la-∅*
Ali strength COP-3SG
Intended: 'Ali is strong.'

(5) *Ali* ***am*** *na-∅ doole*
Ali **have** FIN-3S strength
'Ali is strong.'

(6) *Awa rafet/*doole na-∅*
Aliou pretty/*strength FIN-3SG
'Awa is pretty/*strong.'

(7) *Ali* ***am*** *na-∅ ceeb*
Ali **have** FIN-3S rice
'Ali has rice.'

According to F&KG, predication of PCNS via possessive morphosyntax is found in a wide array of unrelated languages and is consistent with PCNS having abstract mass substance denotations. In (7), composition with *am* supplies the semantically necessary possessive relation between the substance and individuals who have it, as reflected in the denotation in (8). In (8), p is a variable over portions of abstract matter, and **strength** a constant naming the substance strength in the model.

(8) a. $[[\textit{doole}]] = \lambda p.\mathbf{strength}(p)$ b. $[[\textit{am doole}]] = \lambda x \lambda D^{\uparrow}.\exists^{D^{\uparrow}} p[\mathbf{strength}(p)\ \&\ \pi(x,p)]$
c. $D^{\uparrow}$ ranges over positive portions and restricts quantifier to elements of $D^{\uparrow}$.

This analysis has implications for the grammar of gradability and comparison of PCNs: F&KG note that while portions are ontologically distinct from degrees, they can be systematically related to scales. In many languages, mass nouns license gradable morphology (e.g. English *(so) much; more*), and in these cases measurement is monotonic on mass domains' ordering under the mereological part-of relation (Schwarzschild, 2006; Wellwood et al., 2012). Thus, PCNS are expected to pattern exactly with other mass w.r.t gradable morphology, the only difference being the more 'abstract' nature of the quantified portions.

Against portions However, evidence from Wolof gradable constructions suggests that gradability is not linked to mereological structure with PCNs, unlike with mass nouns. First of all, qualitative intensifiers *lool* and *torop* (both meaning 'very') co-occur with both PCVS (9) and possessed PCNS (10), but not possessed substances (11) The reverse pattern obtains if the quantity adverbial *bu bëri* (consisting of *bu*, a relative marker, and *bëri*, a stative verb meaning 'to be a lot') is substituted for *lool* in (9)-(11).

(9) *Awa rafet na-∅ (lool)*
Awa pretty FIN-3SG (very)
'Awa is (very) pretty.'

(10) *Awa* ***am*** *na-∅* ***xel*** *(lool)*
Awa **have** FN-3S **wit** (very)
'Awa is (very) witty.'

(11) *Ali* ***am*** *na-∅ ceeb (*lool)*
Ali **have** FN-3S rice (*very)
'Ali has rice.'

Additionally, Wolof has two morphologically distinct exceed comparative constructions, which differ in their selectional restrictions. Bare PCNS only occur with the noun-selecting *ëpp* comparative, which measures quantity (12). Surprisingly, a *possessed* PCN can also freely occur with the qualitative *gën(-a)* comparative, which otherwise only selects for gradable PCV (13). Note that composition with *gën(-a)* is not available for possessed substance nouns like *ceeb* 'rice'.

(12) *Awa-a ëpp* $\left\{\begin{array}{l} *rafet_{\text{PCV}} \\ doole_{\text{PCN}} \\ ceeb_{\text{N}} \end{array}\right\}$ *Aida*
Awa-FOC EXC *pretty/strength/rice Aida
'Awa is stronger/has more rice than Aida.'

(13) *Ali-a gën-a* $\left\{\begin{array}{l} rafet_{\text{PCV}} \\ \textbf{am}\ doole_{\text{PCN}} \\ *\text{am}\ ceeb_{\text{N}} \end{array}\right\}$ *Aida*
Ali-FOC EXC pretty/π strength/*π rice Aida
'Ali is prettier/stronger than Aida.'

PC lexemes denote states The Wolof data challenge F&KG's claim the the denotations of PCNs are modeltheoretically equivalent to substance nouns. I propose instead that Wolof PCNS denote **sets** of Davidsonian states, and PCVS denote **relations** between individuals and Davidsonian states (the latter is consistent with Anderson and Morzycki (2012)'s state-based analysis of gradable adjective denotations). Composition with *am* 'have' derives a predicate of individuals, type-theoretically equivalent to a PCV denotation.

As ontological entities, as atoms and extensive parts are undefined for states, I take this domain to be ordered by **intensity**, *not* by the mereological part-whole relation. PCNS still satisfy the grammatical conditions on mass nounhood by denoting non-atomic structures. But the ontologically distinct nature of state and substance domains is clear in gradable contexts: substance measurement tracks mereological quantities, while state measurement tracks intensity along a qualitative dimension.

Conclusion I conclude that Wolof provides important insights into the question of semantic variation in PC constructions, and challenges analyses of PCNS involving portions of abstract matter. The data support an enrichment of the semantic ontology with (Neo-) Davidsonian states and for treating property concept lexemes as a semantic natural class, unified in their reference to ordered state domains.

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De re tenses and Trace Conversion

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This talk discusses problems for previous *de re* analyses of tenses, and argues for a quantificational account in which the seemingly peculiar behavior of tenses that are interpreted *de re* fall out from a general Trace Conversion rule that applies to quantifiers.

Background. It has been long observed (Jespersen, 1924; Ogihara, 1989; Abusch, 1997, a.o.) that a Past-under-Past sentence like (1a) in English can have either a backward-shifted ((2a)) or a simultaneous ((2b)) reading wrt the attitude time (AT=the embedded clause's local evaluation time (t_0), John's "now" in (1)). Additionally, a Present-under-Past sentence as in (1b) has only the *double access* reading (DAR) that requires the embedded event not only to hold at AT but to encompass the utterance time (UT=the matrix clause's t_0, the speaker's "now" in (1)) too.

(1) a. John thought that Mary was ill. b. John thought that Mary is ill.

(2) a. John's thought: "Mary was ill" b. John's thought: "Mary is ill"
c. John's thought: "Mary will be ill"

Abusch (1997) in her influential work suggests that the simultaneous reading of (1a) involves a zero tense in the embedded clause, whereas the DAR of (1b) results from interpreting the embedded Present *de re*, i.e., Present wrt UT, and not wrt AT. Given the assumption that tenses can be interpreted *de re*, an immediate question arises: why can neither (1a) nor (1b) have the forward shifted reading in (2c)? Abusch (1997)'s answer is that *de re* readings result from tense movement that leaves behind a trace which is subject to the stipulative Upper Limit Constraint (ULC), that posits a restriction on the interpretation of the trace such that it must not follow AT. (3)-(4) state the necessary ingredients for Past-under-Past ((3)) and Present-under-Past ((4)) *de re* structures and their semantic contribution given a ULC-based approach.

(3) a. Moved PAST: precedence wrt UT. b. ULC: precedence/inclusion wrt AT.

(4) a. Moved PRES: inclusion wrt UT. b. ULC: precedence/inclusion wrt AT.

Ogihara (1989) differs in suggesting that tense movement leaves a copy that causes the unavailability of (2c). The comparable schema for the Copy-based approach is in (5)-(6):

(5) a. Moved PAST: precedence wrt UT. b. PAST in-situ: precedence wrt AT.

(6) a. Moved PRES: inclusion wrt UT. b. PRES in-situ: inclusion wrt AT.

Problem #1. On top of being based on an ad hoc constraint, the ULC-based approach faces problems; Bary and Altshuler (2014) provide the scenario in (7) to argue against it:

(7) John thinks Bill's 40th birthday is in the past and that Mary was ill on that day. Bill's 40th birthday is in fact the day of John's thinking, which is today.

In this context, (1b) is infelicitous. However, the requirements in (4) are satisfied: the time of Bill's 40th birthday includes UT (in the real world) and precedes AT (in all of John's belief worlds it is Past). Therefore the ULC-based approach predicts it to be felicitous.

Problem #2. (8a) challenges the ULC-based approach as well. It is judged to be true if either all the doctors said "Mary was pregnant" or they all said "Mary is pregnant"; but not if some of them said "Mary was pregnant" and some said "Mary is pregnant" ((8b)).

(8) a. Every doctor said Mary was pregnant.
b. *Some doctors said: "Mary was pregnant", and some said: "Mary is pregnant".

It is not clear how (8b) can be ruled out given the ULC-based approach and given that tenses can get 'functional' readings (i.e., (8a) is true if they all said "Mary was pregnant" but each had a different past-time in mind). Particularly, the restriction put by the ULC in (3b) is satisfied.

Problem #3. The Copy-based approach predicts the right results for (7) and (8b), but it is problematic from a crosslinguistic point of view: as Ogihara and Sharvit (2012) point out, the Copy-based approach is ill-equipped to explain simultaneous readings of Past-under-Past in 'non-SOT languages', given that a zero tense account cannot work for them. Hebrew is traditionally

considered a 'non-SOT language', since the Hebrew equivalent of (1a) has typically only the reading in (2a). However, consider the following context: Dina is telling me a story about her class reunion two years ago. She says that she met Rina, who had been very skinny when they were attending college together, and saw that she had a swollen belly. Then Dina says:

(9) yadati še-hi hayta be-herayon!
Knew.1sg that-she was in-pregnancy!
'I knew she was pregnant!'

In this scenario, (9) has a simultaneous reading which is unexplainable within the Copy-based approach: because of (5b), a *de re* Past-under-Past structure only yields anteriority. The *de re* analysis for tenses becomes then questionable. But there is a connection between the DAR of (1b) and the simultaneous reading of (9) that supports it: when the context described for (9) is such that the story is about yesterday rather than two years ago, a simultaneous reading for (9) is impossible. This correlates with a well known contrast: when (1b) is preceded by "yesterday" it is felicitous, but not with "two years ago". This argues in favor of a *de re* account in which both phenomena stem from the same structure; approaches that build the indexical component into the semantics of PRES (e.g., Bary and Altshuler 2014) cannot capture this correlation.

Proposal. The generalization in (10) correctly rules out (1b) in the context of (7) (Problem #1) and the reading in (8b) (Problem #2), and rules in the simultaneous reading of (9) (Problem #3).

(10) If a tense is interpreted *de re*, then it must be interpreted as *including* AT.

Therefore, my account aims to predict (10). I propose that it follows from assuming (i) a slightly modified quantificational semantics for tenses; (ii) that tense QR leaves a copy; (iii) that the Trace Conversion rule suggested by Fox (2002) (defined in (11)) applies to temporal quantifiers.

(11) a. Variable Insertion: (Det) Pred $\rightarrow$ (Det) [Pred $\lambda y(y = x)$]
b. Determiner Replacement: (Det) [Pred $\lambda y(y = x)$] $\rightarrow$ the [Pred $\lambda y(y = x)$]

The semantics of tenses is given in (12). Tenses take a contextually provided domain of times (C), a property of times (T) and a clause. The second argument of tenses (T) is a function that is the result of applying the predicate $\mathscr{T}$ (defined in (13a)) to the local evaluation time t_0, as in (13b): $\mathscr{T}$ applied to t_0 yields the set of times that include t_0.

(12) a. $[\![\text{PRES}]\!](C_{\langle i,t\rangle})(T_{\langle i,t\rangle})(P_{\langle i,t\rangle}) = 1$ iff $\exists t[C(t) \wedge T(t) \wedge P(t) = 1]$
b. $[\![\text{PAST}]\!](C_{\langle i,t\rangle})(T_{\langle i,t\rangle})(P_{\langle i,t\rangle}) = 1$ iff $\exists t[C(t) \wedge \exists t'[T(t') \wedge t < t']] \wedge P(t) = 1]$

(13) a. $[\![\mathscr{T}]\!] = \lambda t.\lambda t'.t' \supseteq t$ b. $[\![\mathscr{T}_{t_0}]\!] = [\![\mathscr{T}]\!](t_0) = \lambda t'.t' \supseteq t_0$

The *de re* structures for (1a)/(1b) in which the embedded tense has undergone QR are in (14) (the copies are underlined); the LFs that result from applying the Trace Conversion rule to (14) are in (15), and the truth conditions for (15) are in (16).

(14) [PAST/PRES$_C$ $\mathscr{T}_{t_0}$] $\lambda 3$ [PAST$_C$ $\mathscr{T}_{t_0}$] $\lambda 1$ J. think$_{t_1}$ $\lambda 0$ [PAST/PRES$_C$ $\mathscr{T}_{t_0}$]$_3$ $\lambda 2$ M. ill$_{t_2}$

(15) [PAST/PRES$_C$ $\mathscr{T}_{t_0}$] $\lambda 3$ [PAST$_C$ $\mathscr{T}_{t_0}$] $\lambda 1$ J. think$_{t_1}$ $\lambda 0$ [the $\mathscr{T}_{t_0}$ $\lambda y.y = t_3$] $\lambda 2$ M. ill$_{t_2}$

(16) $\exists t''[C(t'') \wedge t'' < t_0/t'' \supseteq t_0 \wedge \exists t'[C(t') \wedge t' < t_0 \wedge$ for all $\langle w,t\rangle$ compatible with what John thinks in w_0 at t': Mary be-ill in w at the t''' s.t. $t''' \supseteq t$ and $t''' = t''$]]

As in (3)-(6), the current *de re* mechanism can be represented in the following schema:

(17) a. Moved PAST: precedence wrt UT. b. 'the $\mathscr{T}_{t_0}$' in-situ: inclusion wrt AT.

(18) a. Moved PRES: inclusion wrt UT. b. 'the $\mathscr{T}_{t_0}$' in-situ: inclusion wrt AT.

As desired, a *de re* tense structure always involves inclusion of AT; with respect to UT, it requires precedence for Past-under-Past and inclusion for Present-under-Past: this results in simultaneous readings as in (9) for the former and the DAR as in (1b) for the latter.

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A remnant-correlate identity condition on ellipsis

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Chung (2006, 2013) and Merchant (2013) argue that standard semantic identity conditions between the E(llipsis) site and the antecedent (Merchant 2001, AnderBois 2011, and others) need to be supplemented with a morphosyntactic identity condition between the functional heads in the E-site and the antecedent. We propose to abandon the Chung/Merchant condition, and instead supplement Semantic Identity with the Remnant Condition (RC) below. We show that the RC (i) captures the same data as the Chung/Merchant condition while avoiding its pitfalls; and (ii) covers additional data that the Chung/Merchant condition doesn't.

The Remnant Condition (RC) An ellipsis remnant must have a correlate in the antecedent clause; the correlate and the remnant must have identical categorial features.

Notes on the Chung/Merchant Condition The goal of this condition to derive the ungrammaticality of voice and argument structure mismatches under sluicing, which Semantic Identity alone cannot do (Chung 2013:3ff). It reduces (1b) to a clash between the [ACTIVE] and [PASSIVE] features of the Voice heads in the antecedent and the E-site, respectively; the inchoative/causative alternation in (2a) receives an analogous analysis. The controls (1c) and (2b) show that the ungrammaticality of (1b) and (2a) is indeed an ellipsis effect.

(1) Someone mugged Sally, but I don't know…
   a. …who [~~mugged her~~].
   b. * …by who(m) [~~she was mugged~~].
   c. …by who(m) she was mugged.

(2) The window broke but I don't know…
   a. * …who [~~broke it~~].
   b. …who broke it.

However, the Chung/Merchant condition is too strong, as it incorrectly rules out several cases where the E-site and the antecedent have non-matching sets of functional heads. A prominent case is pseudosluicing (Merchant 1998, van Craenenbroeck 2010), where a sluiced cleft takes a non-cleft antecedent (3). The same problem arises with left-branch sluices (4), which Barros et al (2013) show stem from a predicative copular clause (in support, they show that the only licit adjectives in these sluices are those that are also independently licit as copular predicates).

(3) Sally has a new boyfriend. Guess who [~~it is~~]!. [cf. #*guess who she has*]

(4) They hired a diligent worker, but I don't know how diligent [~~that worker is~~].

Finally, there is sluicing in Austronesian languages, where A-bar extraction of a non-subject is contingent on voice or argument structure alternations ((3), example from Potsdam 2007).

(5) Nandoko zavatra i Bao, fa hadinoko hoe inona [~~no~~ ~~nolokoin'~~ ~~i Bao~~].
   paint.AT something Bao but forget C what PRT paint.TT Bao
   "Bao painted something, but I don't know what (was painted by Bao)" *[Malagasy]*

The RC as an alternative We propose to abandon the Chung/Merchant analysis of (1b) and (2a), treating these examples instead as violations of the RC. The deviance of (1b) reflects a category mismatch between the remnant [$_{PP}$ *by who(m)*] and the correlate [$_{DP}$ *someone*]; the deviance of (2a) reflects the fact that [*the ice melted*] is an unaccusative predicate without an external argument, so the remnant [$_{DP}$ *who*] lacks a correlate entirely.

Importantly, because the RC doesn't make reference to the internal syntax/semantics of the E-site, it correctly allows the argument structure and voice alternations in (3)–(5), where the remnant and its correlate are uniformly adjectival ([$_{AP}$ *diligent*]/[$_{AP}$ *how diligent*]) or nominal ([$_{DP}$ *a new boyfriend*]/[$_{DP}$ *who*] and [$_{DP}$ *zavatra*]/[$_{DP}$ *inona*]). Even more importantly, as we show below, the RC successfully predicts the ungrammaticality of various classes of examples that Semantic Identity and the Chung/Merchant condition demonstrably fail to account for.

Extension #1: reverse pseudosluicing While a cleft or copular sluice may take a non-cleft or non-copular antecedent (3)/(4), the reverse configuration is ungrammatical (6b); the control (6c) shows that this is an ellipsis effect. Both the Chung/Merchant condition and semantic identity fail to capture this asymmetry between pseudosluicing and reverse pseudosluicing. Specifically, the Chung/Merchant condition cannot rule out (6b) without simultaneously ruling out pseudosluices like (3)/(4), as all these cases involve analogous functional structure mismatches. Semantic Identity fails because it is a symmetric condition (mutual truth-conditional/inquisitive entailment between the antecedent and the E-site): if a copular antecedent and a non-copular sluice (3)/(4) can satisfy Semantic Identity, so can a copular sluice and non-copular antecedent. In contrast, the RC straightforwardly rules out (6b) as a case of category mismatch between [$_{DP}$ *someone*] and [$_{PP}$ *to who(m)*].

(6) The guy Sally was talking to is someone from Accounting, but I don't know…
   a. …who (exactly) [~~the guy she was talking to is~~]/[~~it is~~].
   b. * …to who(m) (exactly) [~~she was talking~~].
   c. …to who(m) (exactly) she was talking.

Extension #2: symmetric predicates These are predicates (*make out with*, *be related to*) whose two arguments necessarily have identical participation in any event described by the predicate (Dowty 1991, Dimitriadis 2008): thus, *Jack is making out with Sally* entails both that Jack is making out and that Sally is making out. A symmetric predicate can be sluiced if it has the same argument order as its antecedent (2a), but not if the argument order is reversed (2b); the control example (2c) shows that the ungrammaticality of (2b) is an ellipsis effect.

(7) Someone was making out with Jack, but I don't know…
   a. …who [~~was making out with him~~].
   b. * …with who(m) [~~he was making out~~].
   c. …with who(m) he was making out.

The Chung/Merchant condition fails to account for (7b), as this example doesn't involve any voice or argument structure alternations, just a different order of arguments. Semantic Identity also fails, as the antecedent and the E-site entail each other both truth-conditionally (if someone is making out with Jack, then Jack is making out with someone, and vice versa) and inquisitively (both clauses are inquisitive about the individuals that participate with Jack in the making out event). However, as above, the RC correctly rules out (2b) because of the category mismatch between [$_{PP}$ *with who(m)*] and [$_{DP}$ *someone*].

Further extensions The domain of application of the RC extends further, and we will explore two additional extensions during the talk. First, we show that, given recent results about the syntax of implicit arguments (Bhatt and Pancheva 2006, Landau 2010), the RC correctly predicts the impossibility of P-stranding under sprouting (*Jack is jealous, but I don't know *(of) who*), negating the need for Chung's (2006) No New Words condition. Second, we show that restrictions analogous to the ones discussed above also arise consistently in other ellipsis types (fragments, VPE, and pseudogapping), and in languages other than English. These results support the status of the RC as a general condition on ellipsis that supplements Semantic Identity.

AnderBois 11 Issues and alternatives, PhD UCSC • **Barros, Elliott & Thoms 13** More variation in island repair *CLS 49* • **Bhatt & Pancheva 06** Implicit arguments, *Blackwell Companion to Syntax* • **Chung 06** Sluicing and the lexicon, *BLS 31* • **Chung 13** Syntactic identity in sluicing *LI 44* • **van Craenenbroeck 10** *The syntax of ellipsis*, OUP • **Dimitriadis 08** Irreducible symmetry in reciprocal constructions, *Reciprocals and reflexives* • **Dowty 91** Semantic proto-roles and argument structure, *Language* 69 • **Landau 10** The explicit syntax of implicit arguments, *LI 41* • **Merchant 01** *The syntax of silence*, OUP • **Merchant 13** Voice and ellipsis, *LI 44* • **Potsdam 07** Malagasy sluicing and its consequences for the identity requirement on ellipsis, *NLLT 25*

Representing and Learning Opaque Maps with Strictly Local Functions

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There are several current challenges to a formal theory of how the phonological component of grammar is acquired. This research addresses the particular problem of how opaque maps can be learned from finitely many examples. The concrete result is that the learning algorithms of Chandlee [3, et seq.] and Jardine et al. [11] are shown to be able to learn (in a well-defined and provably correct sense) the six cases of under- and over-application opacity discussed in Baković's [1] typology of opaque maps. We also discuss the implications of this result for a theory of phonology, its limitations, and future efforts.

The transformation from input underlying representations to output surface representations [5, 14] can be viewed as a *map* [17]. Chandlee [3] establishes that significant classes of phonological processes belong to a small subset of regular maps. They are *k-Input Strictly Local* (k-ISL), so called because of their Markovian property that the output at any given point is completely determined by the most recently read k input symbols (cf. [16]). Chandlee [3] and Chandlee et al. [4] show how this property naturally leads to a learning algorithm (ISLFLA) for such processes, a result [11] extends with the algorithm SOSFIA. Like Gildea and Jurafsky [7], ISLFLA modifies Oncina et al.'s [13] state-merging algorithm, but unlike [7], ISLFLA's principled restrictions allows [4] to prove it learns classes of ISL functions.

The present work extends these results to maps traditionally described as the *interaction* of different phonological processes. In particular we show the opaque maps described in Baković (2007)'s typology are also k-ISL and therefore learnable by the ISLFLA and SOSFIA algorithms. Take, for instance, Baković's example from Bedouin Arabic, summarized in (1). As a result of the interaction, Rule (1a) is not surface true, because non-final [i]s survive in the ouput.

(1) Counterfeeding-on-focus in B. Arabic [1]

		/katab/	
a.	i $\rightarrow \emptyset$ / __σ	—	
b.	a $\rightarrow$ i / __σ	kitab	(*ktab)

(2) Examples of (1) as a map

...iC#	$\mapsto$	...iC#
...aC#	$\mapsto$	...aC#
...iCV...	$\mapsto$	...CV...
...aCV...	$\mapsto$	...iCV...

However, this interaction is ISL when viewed as a single map, as in (2) (other vowels and consonants are represented as Cs and Vs). The opaque examples are that /iCV/ (with /i/ being non-final) gets mapped to [CV], whereas /aCV/ is mapped to [iCV]. Both changes are decided on 3-segment input sequences, /iCV/ and /aCV/, respectively, and so the Bedouin map is ISL for $k = 3$. ISLFLA, for example, would learn this distinction because it would not merge the states representing the input prefixes /iC/ and /aC/, allowing the output for any /...iCV.../ and /...aCV.../ input sequences to be distinct.

These results challenge the view of phonology as optimization. It is well-known that classical OT and its variants such as Harmonic Grammar (HG) and Harmonic Serialism (HS) cannot represent all opaque maps [10, 1, 2]. In addition, OT also overgenerates: even with simple markedness and faithfulness constraints, OT predicts non-regular maps [2, 6, 15] despite the fact that available evidence suggests all phonological maps are regular [12, 9]. In contrast, the explicit hypothesis that possible phonological maps are determined by computational properties like k-ISL provides a better approximation to the attested typology with regard to these issues. On the other hand, like OT (and HG, HS), the current proposal does not distinguish individual processes from interacting ones.

There are limitations to the current approach. First, like other algorithms such as Recursive Constraint Demotion, it assumes the underlying forms are given, and not learned [c.f. 17]. Second, the theoretical result cannot be applied directly to natural language data because it is implicational: *if* the learning sample contains the following information *then* the map is learned. We expect, however, that properly integrating features, natural classes, and/or the output-driven property [17] will help the algorithms find the right kind of information in natural language data [c.f. 7]. Third, long-distance processes are not ISL. We expect that treating long-distance phenomena distinctly from local ones will address this [8].

Despite these limitations, this research shows that a restrictive, learnable theory of phonology that also can represent opaque maps, contra OT and its variants, is viable. This is why we believe this research represents an important step forward in understanding the nature of the phonological component of grammar and how humans come to learn it.

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Mapping discourse onto syntax: A case study of Korean jussive clauses

INTRODUCTION This paper investigates how pragmatics is mapped onto syntax through the lens of jussive clauses in Korean. I argue that jussive clauses resemble the Basque allocutive agreement (AA). Following Miyagawa (2012), I propose that jussive clauses need to be embedded under Speech Act Phrase (saP/SAP) and jussive particles (JPs) locally bind and agree with the subject of jussive clauses and pragmatic argument(s) of saP/SAP. I show that the proposed analysis can account for (i) the correlation between the vocative, the subject, and the JP, and (ii) the distribution of jussive particles with respect to the politeness particle *-yo*.

AA=JUSSIVE AA is a syntactic phenomenon that arises as a result of agreement with the pragmatic argument Hearer (Miyagawa 2012). AA encodes information about the speaker-hearer relationship (see the translations for (1)); AA, being related to C °, is disallowed to occur in interrogatives (2).

(1) a. Pettek lan egin **dik**. 'Peter worked.' [*to a male friend*]
Peter.ERG work.ABS do.PRF AUX-3S.ABS-2S**.**C**.**MSC**.**ALLO-3.S.ERG

b. Pettek lan egin **din**. 'Peter worked.' [*to a female friend*]
Peter.ERG work.ABS do.PRF AUX-3S.ABS-2S**.**C**.**F**.**ALLO-3.S.ERG

c. Pettek lan egin **dizü**. 'Peter worked.' [*to someone higher in status*]
Peter.ERG work.ABS do.PRF AUX-3S.ABS-2S**.**F**.**ALLO-3.S.ERG

(2) Lan egiten **duia**/***dina** hire lagunak? 'Does your friend work?'
work AUX**.**3E**.**Q/ALLOfem**.**Q your friend.ERG

Korean jussive clauses—PROM(ISSIVES), IMP(ERATIVES), and EXH(ORTATIVES)—are similar to AA in three respects. First, JPs provide information about the discourse participants: PROM, IMP and EXH are respectively associated with speaker, hearer and speaker+hearer (Zanuttini et al. 2012). Second, I observe that JPs encode information about the speaker-hearer relationship: the speaker must be at the same level as, or higher level than the hearer. For instance, (3) is infelicitous if uttered by a student to a teacher. Related to this, humble/honorific pronoun subjects are disallowed in jussive clauses as in (4). Lastly, JPs identify the clause-type. As such they are C °-related elements and cannot co-occur with other clause-typing particles (e.g., *-ta* for declaratives or *-ni* for interrogatives).

(3) a. Nay-ka ka-**ma**. b. Ney-ka ka-**la**. c. Wuli-ka ka-**ca**.
I-NOM go-PROM you-NOM go-IMP we-NOM go-EXH
'I will go.' '(You) Go.' 'Let's go.'

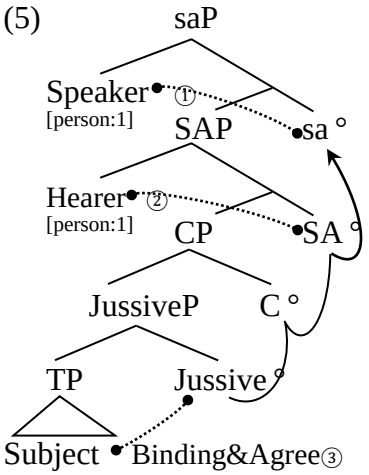
(4) a. **Cey**-ka ka-**yo**./*-**ma**. c. **Cehuy**-ka ka-**yo**./*-**ca**.
I.HUMBLE-NOM go-POL(ITE)/-PROM we.HUMBLE-NOM buy-POL/-EXH

b. **Tangsin**-i ka-**yo**./*-**la**.
you.HONORIFIC.FORMAL-NOM go-POL/-IMP

PROPOSAL Given the above similarities between AA and JPs, I assume [$_{saP}$ Speaker sa °[$_{SAP}$ Hearer SA °[$_{CP}$ C °[$_{JussiveP}$ Jussive °[$_{TP}$ SUBJECT T °[... as the clause structure in which CP (=utterance) is embedded under the SpeechActPhrase shell (saP/SAP), which provides discourse-related information such as speaker-hearer relationship (Haegeman & Hill 2013; Miyagawa 2012). I propose that binding & agreement (B&A) relationship is established between Jussive °, the subject, and the pragmatic argument(s) (Speaker/Hearer), and thus they share the same person feature and become co-referential to one another. Specifically, I propose that the B&A between Jussive °and the subject (③ in (5)) always takes place regardless of the jussive type (Zanuttini et al. 2012). At this point, no value is assigned for person but only a permanent link between them is established à la Pesetsky & Torrego 2007 (cf. Zanuttini et al. 2012). Jussive °moves en route to sa °through the intermediate heads, and binds and agrees with the pragmatic argument(s) in a Spec-Head configuration (Kratzer 2009; cf. Miyagawa 2012). Let us suppose that sa °and SA °, in addition to their regular semantic

denotation, calculate the speaker-hearer relationship on the not-at-issue tier,serving as λ-operator binding the pragmatic argument(s) (cf. Potts 2005, Kim 2014). Then B&A takes place (i) only with the Speaker argument for PROM (①) since it is sa °(⟦sa ⁋⟧^{c} = λ*x* : *x* = *Speaker* . *x*≥*hearer*$_{c}$ (where '*a*≥*b*' stands for '*a* is superior to or at the same level as *b*')) that serves as a λ-operator computing the speaker-hearer relationship, (ii) only with the Hearer argument for IMP (②) since SA °(⟦SA ⁋⟧^{c} = λ*x* : *x* = *Hearer* . *x*≤*speaker*$_{c}$) serves as a λ-operator denoting the speaker-hearer relationship, and (iii) both with Speaker and Hearer arguments for EXH (①&②). The person value which Jussive °obtains via B&A with the pragmatic argument(s) (① and/or ②) is automatically shared with the subject due to the pre-established B&A ③.

(5)



The interaction between the subject and the jussive particle with respect to politeness shown in (3-4) is straightforwardly derived: Jussive °obtains the speaker-hearer relationship information when it moves to saP/SAP. This additional information provided by the saP/SAP shell enables a jussive particle to be realized accordingly in *-ma*/*-la*/*-ca* for the relationship compatible with (3). For the other relationship, the politeness particle *-yo* occurs (4).

The proposal, assuming the vocative to be an overt realization of Hearer (Haegeman & Hill 2013), correctly captures the correlation between (i) the vocative and the jussive subject, and (ii) the vocative and the jussive/*-yo* particle. As for (i), there is a strict (non-)binding relation between the vocative and the subject of the jussive clause. That is, the vocative cannot be co-referential with the subject in PROM (6a), must be co-referential with the subject in the IMP (6b), and must be partially co-referential with the subject in the EXH (6c). As for (ii), in (7a), for example, when the speaker (*grandma*) is senior to the hearer (*grandson Inho*) as marked by the overt vocative marking *-ya*, *-ma* is used. In (7b), by contrast, the speaker-hearer relationship is reversed as marked by null vocative marking, and hence *-yo* is used instead.

(6) a. Ø$_{i}$ Inho$_{j}$-ya, nay$_{i}$-ka ka-ma$_{i}$.
S(PEAKER) Inho-VOC I-NOM go-PROM
'Inho, I will go.'

b. Ø$_{i}$ Inho$_{j}$-ya, ney$_{j}$-ka ka-la$_{j}$.
S Inho-VOC you-NOM go-IMP
'Inho, (you) go.'

c. Ø$_{i}$ Inho$_{j}$-ya, wuli$_{i+j}$-ka ka-ca$_{i+j}$.
S Inho-VOC we-NOM go-EXH
'Inho, let's buy lunch.'

(7) a. **Inho**-**ya**, halmeni-ka tangcang ka-**ma**./*-**yo**.
Inho-VOC grandma-NOM right.now go-PROM/-POL
'Grandson, grandma will go right now.' [*speaker=grandma*; *hearer=grandson Inho*]

b. **Halmeni**-**Ø**, soncwu-ka cikum ka-**yo**./*-**ma**.
grandmother-VOC grandson-NOM now go-POL/-PROM
'Grandma, grandson will go now.' [*speaker=grandson Inho*; *hearer=grandma*]

CONCLUSION I have proposed to syntactically encode the pragmatic information borne on JPs by adopting saP/SAP shell on top of CP. I have shown that the current analysis correctly captures the facts related to jussive clauses including the complementary distribution of JPs and *-yo* particle, the interaction between the subject, jussive/*-yo* particle, and vocatives.

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On Korean pro-form *kuleh*: variation in extractability and size of ellipsis

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Korean has a pro-form *kuleh* 'so' which can appear in place of various projections. It can occur in place of vP, TP and a small clause, as given in (1), (2) and (3), respectively.

(1) John-i [$_{vP}$ Mary-lul ttayli]-n-ta. Bill-to [$_{vP}$ kule]-n-ta.
John-$_{NOM}$ Mary-$_{ACC}$ hit-$_{PRES}$-$_{DECL}$ Bill-also kuleh-$_{PRES}$-$_{DECL}$
'John hits Mary. Bill does so too.'

(2) Kwanak-san-i [$_{TP}$ yesnal-ey kkoch-i manhi pi-ess-ess]-ta.
Kwanak-mountain-$_{NOM}$ past-at flower-$_{NOM}$ much bloom-$_{PERF}$-$_{PAST}$-$_{DECL}$
Pukhan-san-to [$_{TP}$ kuleh]-ta.
Pukhan-mountain-also kuleh-$_{DECL}$
'(In) Kwanak Mountain, flowers bloomed a lot in the past. (In) Pukhan Mountain, too.'

(3) Al-un *Jo-lul*$_i$ [$_{SC}$ t_i chencay-lo] po-n-ta. Ed-to *Jo-lul* [$_{SC}$ kuleh]-key po-n-ta.
Al-$_{TOP}$ Jo-$_{ACC}$ genius-$_{LO}$ see-$_{PRES}$-$_{DECL}$ Ed-also Jo-$_{ACC}$ kuleh-$_{KEY}$ see-$_{PRES}$-$_{DECL}$
(Lit.) 'Al sees Jo (as) a genius. Ed sees Jo so too.' ☞ Ed sees Jo as a genius too.

Extraction is possible from within the projection which *kuleh* replaces, when it corresponds to 'smaller' constituents such as vP (ex (4)-(5)) or a small clause (ex (3)). This suggests that *kuleh* has internal structure, and ellipsis is involved.

(4) a. *Hoswu-ka*$_i$ (sunsikkaney) [$_{vP}$ t_i el]-ess-ko, *kang-to* [$_{vP}$ kulay]-ss-ta.
lake-$_{NOM}$ instantly freeze-$_{PAST}$-$_{CONJ}$ river-also kuleh-$_{PAST}$-$_{DECL}$
'The lake froze (instantly), and the river did too.' (Unaccusative subject)

b. *kochpyung-i*$_i$ ai-tul-ey uyhey [$_{vP}$ t_i kkay-eci]-ess-ko, *mulpyung-to* [$_{vP}$ kulay]-ss-ta.
vase-$_{NOM}$ kid-$_{PL}$-by break-$_{PASS}$-$_{PAST}$-$_{CONJ}$ water bottle-also kuleh-$_{PAST}$-$_{DECL}$
'The vase was broken by the kids, and the water bottle was too.' (Passive movement)

(5) *Mary-nun*$_i$ John-i [$_{vP}$ t_i koylophi]-ø-ko, *Ann-un* Bill-i [$_{vP}$ kulay]-ø-yo.
Mary-$_{TOP}$ John-$_{NOM}$ bully-$_{PRES}$-$_{CONJ}$ Ann-$_{TOP}$ Bill-$_{NOM}$ kuleh-$_{PRES}$-$_{DECL}$
'Mary, John harshly bullies (her) and Ann, Bill does so.' (Topicalization)

Interestingly, extraction is prohibited when a 'bigger' constituent, TP, is elided. As shown in (6), the ACC-marked embedded object cannot be extracted when ellipsis targets TP. (7) is an apparent counterexample. However, the ACC-marked nominal in (7) is not an embedded object, but a Major Subject base-generated at a position higher than TP (Yoon 2005). This is supported by the fact that only in (7), but not in (6), the embedded TP denotes a characteristic property of it. The embedded object is a *pro* coindexed with the Major Subject. The data observed so far lead us to two contradictory statements: *kuleh* has internal structure, but it also lacks internal structure.

(6) A: na-nun *i chayk-ul*$_i$ [$_{TP}$ Mary-ka t_i cikum cip-eyse ilk-ko iss]-tako sayngkakha-n-ta.
I-$_{TOP}$ this book-$_{ACC}$ Mary-$_{NOM}$ now house-at read-$_{PROG}$- $_{COMP}$ think-$_{PRES}$-$_{DECL}$
'I think that this book, Mary is reading (it) in the house now.'
B: *na-nun *i chayk-ul* [$_{TP}$ kuleh]-key sayngkakha-ci anh-nun-ta.
I-$_{TOP}$ this book-$_{ACC}$ kuleh-$_{KEY}$ think-$_{CI}$ $_{NEG}$-$_{PRES}$-$_{DECL}$
'I don't think so about this book.' (ACC-marked embedded object fails to scramble out of TP)

(7) A: na-nun *i chayk-ul*$_i$ [$_{CP}$ t_i [$_{TP}$ saramtul-i *pro*$_i$ cohaha-n]-tako] sayngkakha-n-ta.
I-$_{TOP}$ this book-$_{ACC}$ people-$_{NOM}$ like-$_{PRES}$-$_{COMP}$ think-$_{PRES}$-$_{DECL}$
'I think that this book, people like (it).'
B: na-nun *i chayk-ul*$_i$ [$_{CP}$ t_i [$_{TP}$ kuleh]-key] sayngkakha-ci anh-nun-ta.
I-$_{TOP}$ this book-$_{ACC}$ kuleh-$_{KEY}$ think-$_{CI}$ $_{NEG}$-$_{PRES}$-$_{DECL}$
'I don't think so about this book.' (ACC-marked Major Subject is base-generated at Spec,CP)

In this paper, I argue that the aforementioned contradiction receives a principled account by assuming that ellipsis is derivational. Aelbrecht (2010) argues that ellipsis is licensed via Agree and it occurs as soon as the licensing head is merged. Once the ellipsis occurs, the elided domain becomes frozen and is no longer accessible to further syntactic operation. This theory suggests that a potential ellipsis remnant can escape the elided domain only before a licensing head enters the derivation. In other words, extraction requires an 'escape hatch' between the licensing head and the elided domain. I propose that the structural configuration of 'smaller' ellipses (vP and a small clause) have this escape hatch, whereas the structural configuration of a 'bigger' ellipsis (TP) does not.

I first suggest that the licensing head of *kuleh*-ellipsis is a positive polarity head (PolP) which is located at a clausal periphery. The Pol head triggers deletion of vP, TP and a small clause. Evidence comes from the fact that (i) *kuleh* can be used as an affirmative answer to a polar question (ex (8)) and (ii) the use of *kuleh* is marginal under polarity reversal (ex (9)).

(8) A: Kwanak-san-i pom-mata kkoch-i manhi pi-nun-ka?
Kwanak-mountain-$_{NOM}$ spring-every flower-$_{NOM}$ much bloom-$_{PRES}$-$_{Q}$
'In Kwanak Mountain, do flowers bloom a lot every spring?'
B: (amato/hwaksilhi) kuleh-ta.
maybe/certainly kuleh-$_{DECL}$
'(Maybe/certainly) so.'

(9) a. John-i cenyek-ul mek-ess-ta. Bill-to kulay-ss-ta.
John-$_{NOM}$ dinner-$_{ACC}$ eat-$_{PAST}$-$_{DECL}$ Bill-also kuleh-$_{PAST}$-$_{DECL}$
'John ate dinner. Bill did too.'
b. *?John-i cenyek-ul mek-ess-ta. Bill-un an kulay-ss-ta.
John-$_{NOM}$ dinner-$_{ACC}$ eat-$_{PAST}$-$_{DECL}$ Bill-$_{TOP}$ $_{NEG}$ kuleh-$_{PAST}$-$_{DECL}$
'John ate dinner. Bill didn't.'

As for *kuleh* corresponding to vP, I argue that there exists a phase, VoiceP, which serves as an escape hatch for extraction. The fact that voice mismatch is possible supports my claim that VoiceP is external to the elided domain (Merchant 2012). As a consequence, extraction is possible from within the ellipsis site. (10) illustrates how an object is extracted, as in unaccusative and passive movement.

(10)a. [$_{VoiceP}$ [$_{vP}$ [... **obj**] v] Voice] (Object moves to Spec,VoiceP prior to ellipsis)

b. [$_{CP}$ [$_{PolP}$ [$_{TP}$ [$_{VoiceP}$ **obj** ~~[$_{vP}$ [... t_{obj}] v]~~ Voice$_{[E[INFL[\sout{uPol}]]]}$] T] Pol] C] (ellipsis)
kuleh inserted at PF; escaped vP prior to ellipsis; Agree

As for *kuleh* corresponding to TP, VoiceP is included within its elided domain. It therefore lacks an escape hatch, which makes extraction impossible. This is illustrated in (11).

(11) [$_{CP}$ [$_{PolP}$ ~~[$_{TP}$ [$_{VoiceP}$ [$_{vP}$ [... **obj**] v] Voice] T]~~ Pol$_{[E[INFL[\sout{uPol}]]]}$] C] (ellipsis)
kuleh inserted at PF; frozen within the ellipsis site; licensor itself bears [E]

As for *kuleh* corresponding to a small clause, I assume that the licensor, a Pol head, is absent within the small clause. PolP is located at a clausal periphery of a higher tensed clause. Therefore, a small clause subject can undergo subject-to-object raising prior to the merge of the Pol head.

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Gradient Lengthening Effects: Evidence from Tagalog

Afton Coombs

Tagalog represents a language that has been analyzed as allowing both long and short vowels except in the ultima, where a stressed/prominent ultima does not lengthen (Schachter and Otanes 1972, Soberano 1980). This potentially represents a case of STRESS-TO-WEIGHT (Prince and Smolensky 1993/2003) that does not apply word-finally. However, this study argues for a modified account that supports an alternative grammar in nonlinear dynamical systems.

Experiment: Recordings were made of four native speakers reading five repetitions each of five penultimately and five ultimately stressed disyllabic words, plus 20 fillers, within a carrier phrase in pseudo-randomized order. Vowels were measured for duration. Ultimate stressed vowels did show increased duration as compared to ultimate unstressed vowels, counter to earlier accounts (see figure 1). However, it was also found that penultimate syllables showed greater stress lengthening compared to ultimate syllables. Consequently, syllables fell into two overall modes (long vs. short) with three of the four conditions (stressed/unstressed ultima and stressed penult) in the longer mode and only one type (unstressed penult) in the shorter mode (see figure 2). The lesser degree of lengthening on ultimate syllables causes them to still appear within the same mode, unlike penultimate syllables, which shift modes under stress. These results point to a modified analysis—that stressed final syllables lengthen continuously, but not categorically.

Fig.1.

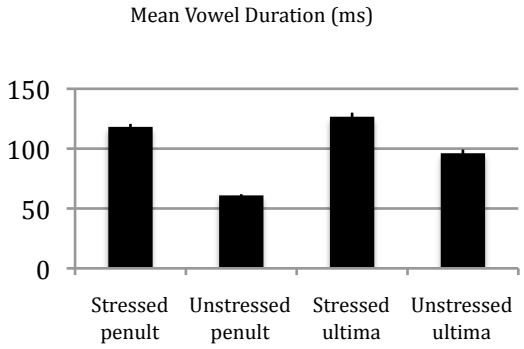
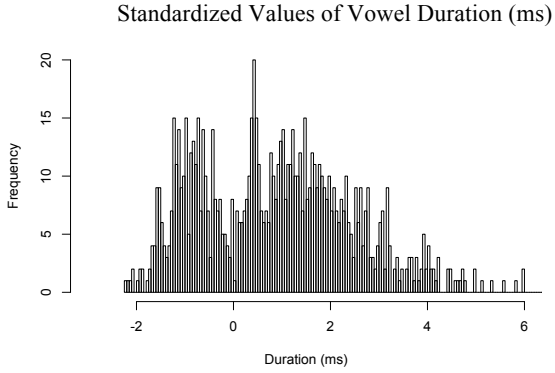


Fig. 2.



Modeling: These facts are accounted for in a grammar based in nonlinear dynamics. Low-level, continuous change can occur until a sudden categorical shift into another state, crucially through the same constraint parameters. Linguistic phenomena have been previously modeled through dynamical systems (Gafos and Benus 2006), and this study follows and builds upon such work.

The system is defined by a potential function $\dot{x} = f(x) = -dV(x)/dx$ where is x is the state of the system and $f(x)$ is the force function. The force function applied here, $f(x) = -x^3 - x$, establishes a maximally bistable space and has been used for modeling binary categories (Gafos and Benus 2006). The corresponding potential, $V(x) = x^4/4 - x^2/2$, is scaled to produce stable states at the minima of the system through coefficients, as in $V(x) = (a*x^4)/4 - (b*x^2)/2 + c*x$. These values represent grammatical parameters. Values a and b determine the stables states, or attractors, which should align with some relevant linguistic measure (see figures 3 and 4 for examples of different stable states). The parameter c creates tilt, which affects the location and magnitude of the attractors (compare attractors in figures 4 and 5). Outcomes are then modeled probabilistically over n trails with a noise factor, $\dot{x} = f(x) + Noise = -dV(x)/dx + Noise$. Noise

adds some variability, but across many trials the data points will still cluster near the minima. Histograms in figures 3, 4 and 5 give the distribution of final positions over 1000 trials.

Fig.3. a=0, b=-1, c=0

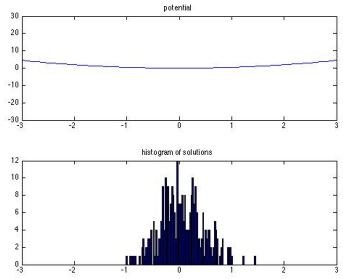


Fig. 4. a=1, b=3, c=0

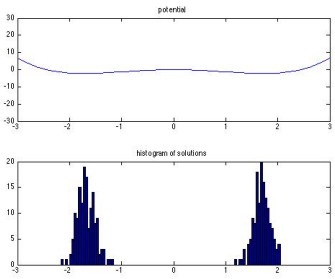
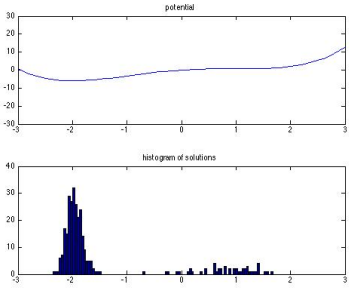


Fig. 5 a=1, b=3, c=2



In a bistable space, tilt is a switch parameter that effectively accounts for vowel durations in Tagalog. If values are determined for both word position and stress (table 1), then *added* to produce the final values for *c* (table 2), the predicted outcome is a gradient bimodal distribution.

Table 1. Input to *c*

Penultimate	1.5
Unstressed	1.5
Ultimate	-4.5
Stressed	-4.5

Table 2. Final values for *c*, representing tilt

	Stressed	Unstressed
Penultimate syllable	-3	3
Ultimate syllable	-9	-3

Based on these values, the unstressed penult falls into the short mode (figure 6), while the stressed penult and unstressed ultima fall into the long mode (figure 7). The stressed ultima (figure 8) is also in the long mode, but by greater tilt it slides *farther* into the mode.

Fig. 6. Unstressed penult

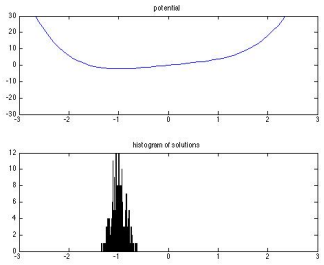


Fig. 7. Str. penult/unst. ult.

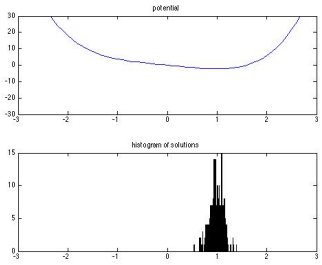
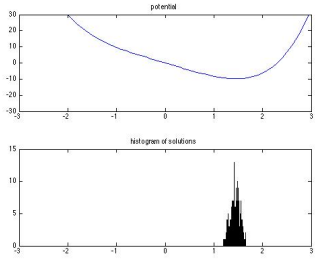


Fig. 8. Stressed ultima



Implications: A dynamical system captures an important aspect of Tagalog vowel duration—that the same STRESS-TO-WEIGHT effect that accounts for categorical length shift on the penult also accounts for non-categorical, fine-grained shift on the ultima. In adding constraints, rather than evaluating by a strict ranking as in Classic OT (Prince and Smolensky 1993/2004, McCarthy and Prince 1993), this grammar captures both the categorical and continuous changes within the language. Crucially, it makes predictions when they stem from the same constraints. Lengthening in Tagalog is then argued to support dynamical systems as a language grammar.

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Categorial Heads as Adverbial Markers

Norbert Corver (UiL-OTS, Utrecht university)

Introduction. In Dutch, quite a large number of adverbs feature the element *-s*. In traditional grammar this *-s* is simply called "adverbial *-s*" (Royen 1948). The question obviously arises as to what the true nature of this element is. In this talk, I will argue that *-s* historically relates to genitival case, and that —building on Emonds (1985) and Pesetsky (2012)— genitival case is not a primitive feature of human language but rather an alternative (viz. affixal) realization of a categorial head. Specifically, *-s* is an alternative realization of little *n* or *a*, the categorial head that combines with a root (√) in order to form a nominal/adjectival expression. Identifying "adverbial" *-s* as affixal n/a implies that a large number of Dutch adverbs/adverbial expressions can be reduced to (projections of) different parts of speech — *in casu* n(P), a(P)— quite along the lines of Emonds (1987).

Data description. The following observations will be made: First, adverbial -s is found on different types of adverbs: e.g., (i) temporal: *een**s***, one-s, 'once', (ii) frequency: *som**s***; some-s 'sometimes', (iii) location: *ergen**s***; there-g-en-s, 'somewhere', (iv) degree: *hond**s** brutaal*, dog-s impudent 'very impudent', (v) measure: *deel**s***, part-s, 'partly'. Second, adverbial -s is found on modifiers within all phrasal domains (say, VP, NP, AP, PP). Third, the phenomenon of adverbial *-s* displays variation across Dutch (dialectal) varieties: e.g., while Standard Dutch has the form *strak**s*** 'soon' (with adverbial *-s*), certain dialects have the form *strak* (without adverbial *-s*). Vice versa, certain Dutch varieties allow the adverbial forms *vermoedelijk**s*** 'presumably' or *hoe**s*** 'how' (with *-s*), where Standard Dutch has *vermoedelijk* or *hoe* (without *-s*) This diversity across varieties shows that adverbial *-s* is not an intrinsic part of the adverb, and that adverbial forms featuring *-s* can be decomposed into (at least) two parts: "host" + *-s*. In this talk, the question will also be addressed as to how this cross-dialectal variation can be accounted for.

Signs of systematic (syntactic) behavior. Although in traditional grammar adverbs featuring adverbial *-s* have mostly been analyzed as single (i.e., non-decomposable) words, there are reasons for saying that adverbs featuring adverbial *-s* are complex objects with an internal syntax. Importantly, such adverbs are not (parts of) compounds (i.e. composite words), but rather phrasal (i.e. syntactic) units. Evidence in support of this phrasal composition will come from a variety of phenomena, including the following. First, placement of phonological stress —e.g. phrasal stress pattern *inEEN**s***, at-one-s 'at once' rather than word stress pattern; compare *INzicht* 'insight'). Second, selection behavior —e.g., as opposed to "normal" prepositions, "prepositional" adverbs like *tijdens* (time-en-s 'during'), *wegens* (way-en-s, 'because'), which feature adverbial *-s*, can never combine with a so-called R-pronoun (Van Riemsdijk 1978); e.g. **waar wegens* (where because, 'because of what') versus *wegens wat* (because what). Third, interaction with its syntactic environment, specifically the determiner system: presence of a definite article blocks the appearance of adverbial *-s*. For example, a bare-NP adverb (see Larson 1987) like *Maandag* (Monday, meaning 'on Monday') can surface in different forms in Dutch: *de Maandag* (the Monday), *Maandag**s*** (featuring adverbial *-s*) and even ***'s** Maandag**s*** (with adverbial *-s* both before and after the noun); what is not possible is the pattern ****de** Maandag**s***. In short, the appearance of adverbial *-s* is dependent on the larger syntactic context.

Analysis. My analysis of adverbial *-s* starts from the following theoretical assumptions: First, case is not a primitive category but an alternative (i.e., affixal) realization of a Part-of-Speech category (Emonds 1985, Pesetsky 2012). Second, a word bearing genitive case is a stem to which a category N(oun) has been attached as a suffix. Third, under the assumption that each "word" (e.g. a Noun) consists of a category-neutral root (√) that combines with a categorial head (e.g., *n*), genitive case equals n. Thus, [$_{nP}$ n [Root]] can be alternatively realized as [$_{nP}$ ~~n~~

[[Root]+n (=GEN)]]. Fourth, following Pesetsky (2012) I will assume that there are two ways in which Case (i.e., a Part-of-Speech-affix) can get associated with a constituent: (i) Lexically: in Pesetsky's terms, every noun (*n*) can be described as "born genitive." (ii) Syntactically: assignment of "Case" (= categorial feature) by a Case assigner to a Case receiver (see Vergnaud 1976/2006; Rouveret & Vergnaud 1980). Fifth, in line with GB-theory (Chomsky 1981), I will assume that nouns and adjectives (the [+N]-categories) are associated with genitival Case (see: *the destruction *(of) the city* and *proud *(of) John*). From the perspective that takes words to consist of a Root (√) plus a categorial head (e.g., *n* or *a*), this means that *n* and *a* are the "carriers" of the genitival case property. Lexically, "genitival case" can surface on the word itself (i.e. alternative (viz., affixal) realization of the categorial head on the Root). Syntactically, "genitival" case (i.e. categorial *n/a*) can be assigned to a case-receptive constituent.

With this theoretical background, adverbial *-s* will be analyzed as an affixal categorial feature (*n/a*) that surfaces on a Root. More concretely, the "adverbs" in the left column will have the "base form" in the mid-column and the derived structure in the right column.

*deel**s*** (part-s 'partly')	[$_{nP}$ n [√deel]]	[$_{nP}$ n [√deel]+n (=**s**)]
*Dinsdag**s*** (Tuesday-s)	[$_{nP}$ n [√Dinsdag]]	[$_{nP}$ n [√Dinsdag]+n (=**s**)]
*strak**s*** (soon-s)	[$_{aP}$ a [√strak]]	[$_{aP}$ a [√strak]+a (=**s**)]

In certain "adverbial" expressions, both the "base" categorial feature and its alternatively realized variant surface (double spell-out). It also happens that the categorial feature surfaces as *van* 'of'. And the adverb *'s*, the weak/clitic variant of *eens* 'once', only spells out the categorial head. In short, different externalizations of nP/aP are attested. In the talk, I will elaborate on these (and other) surface manifestations of the "adverbial blue print".

's Maandags	[n [√Maandag]]	[$_{nP}$ n (= **s**) [√Maandag]+n (= **s**)]
vanochtend (of-morning, 'this morning')	[n [√ochtend]]	[$_{nP}$ n (= **van**) [√ochtend]]
's	[n [√ø]]	[n (= **-s**) [√ø]]

I will argue that *assignment* of genitival case (i.e. of categorial *n/a*) is attested in manner "adverbial expressions" like *(erg) zachtje**s*** (very) soft-DIM-s, 'very slowly' and measure-adverbial expressions like *ietsjes* (something-DIM-s 'a little'), as in *ietsje**s** langer* 'a little taller'). I propose that both *zacht* and *iets* assign genitival case (i.e. *a/n*) to the (nominal) DIMinutive morpheme, which acts as a sort of complement of *zacht* and *iets*. The categorial feature spells out as *-s* on the diminutive morpheme.

zachtjes	[a [[zacht] [-je]]]	[a [[zacht] [-je+a (=**s**)]]]
ietsjes	[n [[iets] [-je]]]	[n [[iets] [-je+n (=**s**)]]]

A cross-linguistic perspective. I will extend my analysis of Dutch adverbial *-s* as an affixally realized categorial feature to adverbial markers in other languages (e.g. English *-ly* and *-s*, as in *quickly* and *upward(s)*, and Romance *-ment(e)*, as in Brazilian-Portuguese *immensamente* 'enormously'). I will relate the appearance of *-ly* on English adverbs to the impossibility of having *of*-complements with those same adverbs (**proudly of John*; Jackendoff 1977). If *-ly*, just like the Dutch DIM *-je*, is a receiver of the genitival case (i.e. the categorial feature *a*) assigned by *a*, then there is no room for assignment of genitival case to another complement (viz. *John*). In a way, *-ly* has absorped genitival case quite analogously to the absorption of accusative case by passive morphology. It will be argued that Brazilian Portuguese patterns such as *imensa *(de) grande* (enormous of big, 'enormously big') and *immensamente (*de) grande* also suggest that *de* and *mente* are realizations of the same categorial information, viz. genitival case (= n/a).

Conclusion. Dutch "adverbial" *-s* and adverbial markers in other languages are alternative realizations of the categorial properties *n* ans *a* (e.g., *-ly, -s, de, mente*). Possibly, this further supports the idea that adverbs can be reduced to other parts of speech (Emonds 1987).

Features and c-command in the acquisition of syntactic dependencies: arguments against constructionism

João Costa & Maria Lobo (CLUNL/FCSH/ Univ. Nova de Lisboa)

Introduction. Recent debates in the literature on language acquisition address the issue of the relevance of syntactic principles in the determination of children's linguistic performance. According to the proposals by Tomasello (2000), Diessel and Tomasello (2000) and O'Grady (2013), children's production and comprehension of word order patterns is guided by frequency and by parsing routines. Accordingly, the fact that children are quite successful in the production of word order patterns found in the language they are acquiring is explained by the frequency of the canonical word orders, which triggers parsing routines. The well known fact that object dependencies are harder to comprehend for children than subject dependencies is coherent with this line of inquiry, since the comprehension of an object dependency involves a change in the canonical word order, as shown in the pair in (1)

(1) a. X_{Subj} __ $_{Subj}$ V Y_{Obj} (e.g. Show me **the boy** that ___ pushes **the father**)
b. Y_{Obj} X_{Subj} V __ $_{Obj}$ (e.g. Show me **the boy** that **the father** pushes ___)

In (1a), the SVO canonical word order is maintained, unlike what happens in (1b), which involves a OSV order.

This explanation in terms of canonicity is challenged by the proposal in Friedmann, Belletti and Rizzi (2009), who argue, in line with Grillo (2008), that problems with object dependencies are better explained in terms of minimality based intervention. According to this view, (1b) is harder than (1a) because the subject intervenes in between the displaced object and its trace, yielding a minimality problem. In this talk, we compare these two approaches, and argue in favor of the minimality based analysis on the basis of the following arguments:

A. We show, in line with Friedmann, Belletti and Rizzi (2009), that object dependencies are featural dependencies, and not just linear relations between constituents. This predicts that not all alternations of canonical word order induce comparable difficulties.
B. We show that intervention effects emerge even in the absence of changes of the canonical word order.
C. We show that c-command effects emerge in intervention configurations, favoring a hierarchical view of dependencies, and challenging approaches based on mere linearity.

We spell out each argument in the following sections.

2. Intervention as featural dependencies. Friedmann, Belletti and Rizzi (2009) show that there are differences between headed and free dependencies, with children exhibiting fewer difficulties in the comprehension of free dependencies. This can be explained because there is more feature sharing in headed dependencies than in free dependencies. We provide further evidence in favor of this view, by comparing the comprehension of free and headed wh-dependencies in Portuguese with free and headed wh-dependencies in the study by Friedmann et al. We show that children's performance in Portuguese is worse than what was found for other languages, which can be explained by the feature specification of relative pronouns in the language. Since the pronouns used in free dependencies in Portuguese are endowed with features codifying [human] and [animate], they are expected to trigger featural dependencies that are not found in languages in which the wh-word does not contain such features. This type of crosslinguistic variation is not expected to emerge in approaches that only take into account word order changes without paying any attention to the feature specification of the constituents involved.

3. Intervention in the absence of change in canonical word order. We report on two studies showing that intervention effects can be found in the absence of word order changes. The first relevant case comes from Friedmann and Costa's (2010) study of coordination with intervention constructions, as in (2):

(2) O Pedro viu o João e __ caiu.

The Pedro saw the João and __ fell

Cases like this are relevant, since the null subject in second conjunct is co-referent with the first DP, but the object intervenes in between the subject and the gap. The intervention configuration is similar to the one found in object relative clauses, as in (1b), but there the intervener is the object and not the subject. There is, therefore, no change in the canonical word order, since the SVO pattern is preserved. Crucially, it was found that there was a strong correlation between the comprehension of these sentences and the comprehension of headed object relative clauses. Children who fail in the comprehension of object relative clauses also fail in the comprehension of sentences like (2). In both cases, they are not able to assign the right antecedent to the gap, and hesitate.

A similar pattern is found in the comprehension of pronouns in sentences like (3):

(3) O Pedro disse ao João que **ele** caiu.
The Pedro told to João that he fell

In contexts in which the embedded pronoun is co-referent with the matrix subject, it was found that children experience difficulties in assigning it the right interpretation. Again, in this type of sentences, there is a dependency to be established between the pronoun and the matrix subject, but the object intervenes in between them. As in the previous case, there is no change in the canonical word order, and yet the difficulty is comparable to the one found in the comprehension of object relative clauses.

4. C-command effects in configurations with intervention. The crucial piece of evidence in favor of the minimality approach to the acquisition of dependencies, and against the usage-based views comes from the observation that there are c-command effects in comprehension. The minimality analysis by Friedmann et al. predicts that there is c-command between the intervener and the gap. We present the results of a picture-selection task run with 40 children aged between 4 and 5 speaking Portuguese, comprising the following conditions:

1. Subject relative clauses (c-command between antecedent and gap without intervention)
2. Object relative clauses (c-command and linear intervention between antecedent and gap)
3. Subject relative clause with complex object DP (3)
4. Object relative clause with complex DP intervening (4) (no c-command and linear intervention)

(3) Mostra-me a enfermeira que abraça a filha da rainha.
Show me the nurse that hugs the daughter of the queen

(4) Mostra-me a enfermeira$_{\mathbf{N1}}$ que a filha$_{\mathbf{N2}}$ da rainha$_{\mathbf{N3}}$ abraça.
Show me the nurse that the daughter of the queen hugs

The sentence in (4) is crucial: if children have difficulties due to change in the canonical word order, they may be just confused, and identify the gap in complement position with any of the DPs involved. If, alternatively, children are guided by linearity and proximity, whenever they fail to assign the right interpretation to the sentence, they may opt for the closest potential antecedent (N3). Note that N3 does not c-command the gap. If minimality is the right explanation, it is predicted that N2 counts as an intervener, but N3 should be irrelevant, since it does not c-command the gap. We found that children's wrong interpretations always involved N2, the c-commanding DP, and almost never N3. The results of this test are revealing because they show that there is a correlation between intervention with complex DPs and object relative clauses, and because there is very sound evidence for the hierarchical approach to the acquisition of dependencies.

5. Conclusions. The results reported in this talk provide very clear evidence for the claim that children's language development is guided by formal linguistic principles, and not by frequency of use or general parsing constraints.

Ellipsis, Parallelism, and Polarity

Luka Crnič, HUJI

We present novel data involving VP ellipsis whose antecedents contain polarity items (henceforth, PIs). The data can be explained on theories of PIs that assume a dependency relation between PIs and the licensing operators governing their distribution.

1. Background. Sequences like (1) have been treated as showing that PIs like *any* can be replaced with indefinites at the ellipsis site without disrupting the parallelism condition on ellipsis, henceforth Parallelism (e.g., Sag 1976, Johnson 2001, Merchant 2013).

(1) John didn't read any book. But Paul_{F} did_{F} $\triangle$.

Following Rooth (1992), Fox (2000), i.a., Parallelism can be stated as a requirement that the meaning of some constituent that reflexively dominates the antecedent VP, PD_{A}, is in the focus value of a constituent that reflexively dominates the elided VP, PD_{E}. Parallelism is satisfied in (1), that is, $[\![\text{PD}_{\text{A}}]\!] \in \text{F}(\text{PD}_{\text{E}})$:

(2) $[_{\text{PD}_{\text{A}}}$ [neg [John read any book]]]. $[_{\text{PD}_{\text{E}}}$ [did_{F} [Paul_{F} read a book]]].

2. Free choice puzzle. *Any* may occur in existential modal sentences in which it gives rise to, roughly, a reading paraphrasable with wide-scope *every*: if John is allowed to read any book, then every book is such that he is allowed to read it (see Menéndez-Benito 2010 for qualification). Such occurrences of *any* are acceptable in antecedents of VP ellipsis only if the elided VP occurs below an existential modal:

(3) John is allowed to read any book.
a. Paul_{F} may $\triangle$ too. b. #Paul_{F} has_{F} to $\triangle$. c. #Paul_{F} already did_{F} $\triangle$.

This pattern is *ceteris paribus* unexpected on the extant approaches to ellipsis and PIs. On the one hand, if free choice *any* is treated as an indefinite whose universal interpretation is generated by it being an associate of some external mechanism (e.g., Menéndez-Benito 2010, Chierchia 2013), represented with OP_{FC} in the following, Parallelism should be satisfied in (3b) and (3c) on the following construals, respectively:

(4) a. [OP_{FC} $[_{\text{PD}_{\text{A}}}$ [J. is allowed to read any book]]]. $[_{\text{PD}_{\text{E}}}$ [P._{F} has_{F} to read a book]].
b. [OP_{FC} [John is allowed $[_{\text{PD}_{\text{A}}}$ ~~John~~ to read any book]]]. $[_{\text{PD}_{\text{E}}}$ [Paul_{F} read a book]].

On the other hand, if free choice *any* is treated as a universal quantifier that must be interpreted above an appropriate operator (e.g., Dayal 1998, Sæbø 2001), Parallelism should be satisfied in (3b) on a construal with wide-scope *every* in PD_{E}:

(5) $[_{\text{PD}_{\text{A}}}$ [any book]$_{\text{x}}$ [J. is allowed to read x]]. $[_{\text{PD}_{\text{E}}}$ [every book]$_{\text{x}}$ [P._{F} has_{F} to read x]].

3. Proposal. We resolve the free choice puzzle by relying on Parallelism and a novel implementation of the so-called operator theories of PIs, which treat PIs as associates of covert alternative-sensitive operators (e.g., Krifka 1995, Lahiri 1998, Chierchia 2013). For concreteness, we adopt the *even* approach to PIs (e.g., Lahiri 1998). We cash out the approach by assuming that the domain of *any* induces subdomain alternatives and associates with *even* (cf. Krifka 1995); the domain of *any* moves to the complement position of *even* at Logical Form (cf. e.g. Chomsky 1976, Wagner 2006 on focus movement). *Even* effectively requires the sentence to be ranked above its alternatives on a salient scale.

(6) a. $[\![\text{even D}]\!]^g = \lambda \text{P}_{(\text{et})\text{t}}$: $\forall \text{D'} \subseteq \text{D}(\text{^P(D)} \prec_{\text{c}} \text{^P(D')})$. P(D).
b. $[\![\text{any}_{\text{D}}\ \text{books}]\!]^g = \lambda \text{P}_{\text{et}}$. $\exists \text{X} \in \text{D}([\![\text{books}]\!]^g(\text{X}) = \text{P(X)} = 1)$.

In order to avoid contradiction, the domain of *any* has to (and is thus licensed to) move to the complement of *even* that is above a non-upward-entailing operator at LF, say, negation:

(7) a. [even D] $\lambda 7$ [not [John read any$_{D7}$ books]]
b. Presup: $\forall$D'$\subseteq$D($\neg$J. read a$_D$ book $\prec_c$ $\neg$J. read a$_{D'}$ book) (trivial if $\prec_c$ entailment)

In case of free choice, the domain D must move above OP_{FC} that associates with the indefinite (its `et`-type trace, cf. Chierchia 2013) to induce free choice. The assertive meaning of the resulting structure is that, roughly, for any individual X in D, John can read X. Since this asymmetrically entails all the focus alternatives (for any individual X in D', where D'$\subset$D, John can read X), it is trivially ranked above them on the entailment scale.

(8) a. [even D] $\lambda 7$ [OP_{FC} [$\Diamond$ [John read any$_{D7}$ books]]]
b. Presup: $\forall$D'$\subset$D($\forall$X$\in$D$\Diamond$(John read X) $\prec_c$ $\forall$X$\in$D'$\Diamond$(John read X)) (trivial)

Now, to the ellipsis data. Parallelism is satisfied in (1) on the construal in (9): since the presupposition of *even* in PD_A is trivial (see (7) above), it holds that $[\![PD_A]\!] \in F(PD_E)$.

(9) [$_{PD_A}$[even D] $\lambda 7$ [neg [John read a$_{D7}$ book]]. [$_{PD_E}$[did$_F$ [Paul$_F$ read a$_D$ book]]].

But Parallelism is not satisfied in the examples (3bc). It is well-known that a free choice reading of *any* is unavailable under universal modals like *has to*. This is usually derived from OP_{FC} yielding a contradictory meaning in a configuration with the universal modal (see e.g. Menéndez-Benito 2010, §3, and Chierchia 2013, §6.3). Since Parallelism can only be satisfied if there is an OP_{FC} associating with the indefinite in PD_E, PD_E cannot have a licit meaning and also satisfy Parallelism, unless the elided VP occurs below an existential modal, (3a), as illustrated in (10). (Note that smaller constituents of (10a) cannot satisfy Parallelism due to No Meaningless Coindexation, see e.g. Heim 1996.)

(10) a. PD_A: [even D] $\lambda 7$ [OP_{FC} [$\Diamond$ [John read a$_{D7}$ book]]]
b. PD_E: [OP_{FC} [$\Box_F$ [Paul$_F$ read a$_D$ book]]] (illicit meaning, (3b))
c. PD_E: [Paul$_F$ read a$_D$ book] (parallelism violated, (3b)/(3c))
d. PD_E: [OP_{FC} [$\Diamond_F$ [Paul$_F$ read a$_D$ book]]] (parallelism satisfied, (3a))

4. Some predictions. Isomorphism. A correct prediction of the above proposal is that VP ellipsis whose antecedent contains an NPI will be acceptable only if there is structural isomorphism between the NPI licenser in PD_A and (focused) material in PD_E:

(11) a. I'm surprised that John read Anna Karenina. Paul$_F$ did $\triangle$ too.
b. #I'm surprised that John read any book. Paul$_F$ did $\triangle$ too.
c. I'm surprised that John read any book. I expect$_F$ that Paul$_F$ did $\triangle$ too.

(12) a. PD_A: [even D] λD7 [I am surprised [John read a$_{D7}$ book]]
b. PD_E: [#(I expect$_F$) [Paul$_F$ read a$_D$ book]] (parallelism ✓ with *'I expect'*)

Non-monotone licensers. If the NPI in the antecedent VP is in a non-monotone environment, the presupposition of *even* is not trivial in PD_A (cf. Crnič 2014). To satisfy Parallelism, accordingly, PD_E has to contain *even*. But then PD_E's presupposition will be illicit unless it contains an appropriate non-monotone operator:

(13) a. Exactly 1 girl read Anna Karenina. Paul$_F$ did $\triangle$ too.
b. Exactly 1 girl read anything. Exactly [2 boys]$_F$ did $\triangle$ too./#Paul$_F$ did $\triangle$ too.

(14) a. PD_A: [even D] $\lambda 7$ [exactly one girl read a$_{D7}$ books]].
b. PD_E: [even D] $\lambda 7$ [Paul$_F$ read a$_{D7}$book]]. (illicit meaning)

5. Further work. (i) There are several questions raised by our treatment of association with alternatives for theories of focus and ellipsis. We plan to address them as well as alternative implementations that might not raise them. (ii) There are several empirical predictions of the proposal that we did not discuss above for reasons of space, e.g., predictions pertaining to intervention, the size of deletion in ellipsis (MaxElide), and potential differences between different PIs (across languages).

Even though the sound of it is really quite atrocious:
Finiteness and well-defined probabilities in phonotactic learning

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Background

A key component of phonological acquisition is phonotactic learning, in which a learner acquires knowledge of which sound sequences are frequent, rare but permitted, or ungrammatical in their language (Hayes, 2004). Hayes & Wilson (2008) proposed a computational model of phonotactic acquisition, using the Maximum Entropy Harmonic Grammar framework (MaxEntHG: Goldwater & Johnson, 2003). There are several notable advantages of the Hayes/Wilson learner. ***First***, it is couched in constraint-based phonology, which is in agreement with mainstream generative theories of adult phonology. ***Second***, learning proceeds from surface forms alone (rather than requiring underlying-surface pairs). Although there is legitimate debate about the precise content of surface forms that is observable for learners (e.g. accenting and metrical structure), it is generally believed that at least the segmental content of a surface form *is* available, while underlying forms constitute part of what must be learned. ***Third***, the model can account for gradient well-formedness. That is, if trained appropriately, it assigns higher well-formedness scores to nonce items containing only frequent sub-parts than to items containing rarer but licit sub-parts (*bla* > *thra*), higher scores to items containing licit/rare subparts than items containing an illicit subpart (*thra* > *vra*), and higher scores to ungrammatical items which are comparatively more well-formed according to general markedness principles (*vra* > *lba*; Daland et al., 2011). ***Fourth***, the model has attractive learning properties. Given a fixed constraint set (and no hidden structure in the surface forms) and a finite set of candidates, there is guaranteed to be a unique optimal set of constraint weights which maximizes the likelihood of the learning data (Della Pietra et al., 1997). Thus, if the training data were generated by a grammar *G* in the hypothesis space, the learner is guaranteed to recover *G*; if the data were generated by a grammar outside the hypothesis space, the learner is guaranteed to recover a grammar *G'* in the hypothesis space which is 'closest' to *G* in a statistical sense. For these reasons, MaxEntHG is an extremely promising formalism to pursue for computational modeling of language acquisition.

A key technical ingredient of the Hayes/Wilson model was the incorporation of finite-state methods to represent the candidate space. In phonotactic learning, the candidate space is infinite, because a phonotactic grammar is formally defined as a function which assigns a well-formedness score to every form in $\sum^*$, where $\sum$ is the segmental alphabet and $\sum^*$ is the set of all finite sequences over $\sum$. Eisner (2002) showed that a finite set of regular constraints can be represented with a finite state automaton. Moreover, the expected number of violations of each constraint (given the current set of constraint weights **w**) can be computed over any regular candidate set, including $\sum^*$, *provided that the current grammar assigns a well-defined probability measure over the candidate set*. The expected number of violations is a necessary ingredient for setting the weights correctly. MaxEntHG is guaranteed to assign a well-defined probability measure when the candidate set is finite, because each well-formedness value is finite.

This study

However, it turns out that MaxEntHG is not guaranteed to assigned a well-defined probability measure in the general case. The contributions of this study are (i) to identify that there is an infinity problem in phonotactic learning with MaxEntHG, (ii) to formally prove *sufficient* conditions which will avoid the infinity problem in this framework, and (iii) to sketch an informal proof of *necessary* conditions to avoid the infinity problem.

A key example is the Wargamay grammar that is reported in Hayes & Wilson (2008). Careful inspection of the metrical constraints reported throughout that section of the paper demonstrate the following two facts: (i) the sequence [bamba] is perfectly well-formed according to this grammar, and (ii) the sequence *X*[bamba][bamba] is just as well-formed as the sequence *X*[bamba]. It follows that

every sequence of the form $(bamba)^n$ is perfect according to this grammar. Since there are an infinite number of such forms, it is impossible to assign equal, nonzero probability to all of them and have a well-defined probability measure. Hayes & Wilson's software implementation gets around this problem by assigning a hard upper limit of 10 segments. If this kind of hard upper limit is needed to obtain a working software implementation, then it is obviously justified in practice. However, it is theoretically undesirable for exactly the same reasons that Chomsky (1956) argued against finite limits on sentence length; empirically, the limit of 10 segments would prevent the word *supercalifragilisticexpialidocious* from ever having been invented, depriving generations of children of part of the joy of Mary Poppins' language play.

This work shows that in fact, such a hard upper limit is not required. The essential problem is unboundedly long, under-penalized sequences. The solution is to ensure that sequences are sufficiently penalized. An especially simple way to do this is to assign a brute-force penalty to every segment in a sequence. This is fully in keeping with the nature of the underlying constraint-based framework; it can be shown that exactly this effect is achieved by including the *STRUC constraint originally proposed in Prince & Smolensky (2002). The sufficiency proof shows that a well-defined probability measure is guaranteed so long as the weight of this constraint has a magnitude that is greater than $ln\ |\sum|$, where $|\sum|$ is the cardinality of the segmental alphabet.

This work also gives an informal demonstration of necessary conditions. The proof relies on the fact that the limit behavior of additive measures can be derived from the eigendecomposition of a matrix. (For instance, the limit distribution of a Markov process is simply the principal (unit) eigenvector.) The path through a machine represents the accumulation of ill-formedness. It turns out that there is a natural way to represent paths through finite-state automata using a matrix. If the principal eigenvalue of this matrix has a magnitude less than or equal to 1, there is a well-defined probability measure.

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Copular contrasts and the individual-level/stage-level distinction

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It has been suggested that the choice of copula in non-verbal predicational clauses in languages with multiple copular expressions is sensitive to a distinction between predicates — predicates that hold of spatio-temporal, perceptually accessible instantiations of individuals (stages) vs. predicates that hold of individuals. The question that arises from such observed sensitivity is whether this information should be lexically encoded in copular meanings. Using evidence from Spanish (the *ser-estar* distinction) and Indo-Aryan, I argue that the lexical content of copulas requires no reference to such information. Rather, the perceived connection between copular patterns and the stage-level/individual-level distinction is an effect of the contextual (rather than semantic) requirements of different copular expressions.

On the origin of features: Quantitative methods for comparing representations

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The basic representational hypothesis in phonology is that segments are coded using a universal set of discrete features. Where do these features come from? Most feature sets attempt to make the classes that are "natural" to a learner featurally simpler; but it is also assumed that features are phonetically grounded. To assess how well natural classes are grounded in the phonetics, Mielke (2012) constructed representations of segments based on articulation, acoustics, and tendency to group together crosslinguistically, and compared them qualitatively using visual inspection of a principal component analysis. We propose a method for assessing this quantitatively.

Segment representations. Starting with a set of segments, we define natural classes using a *classifying representation*; here, for ease of interpretation, we directly use the feature values taken from the table in Halle and Clements 1983. We then evaluate other representations of the same segments to see how well these natural classes are captured (*test representations*). We use four test representations for English: articulatory data from Mielke 2012 (Art: vocal tract shape, larynx position, oral and nasal airflow); a spectral representation of the TIMIT corpus (FBank: 11 mel filterbanks over 40 10ms frames); and two representations based on surface phone context, corresponding to the idea that features are emergent and learned from phonological patterns (weights from a 10-dimension log linear model, phone label as input and surrounding phone sequence as response, based on Mikolov et al., 2013: trained on phone transcriptions of read speech (Timit) and interview (Buckeye) corpora).

Method. Our method is based on distances in the classifying and test representation spaces. The idea is to construct vectors in the classifying representation space that can be seen as representations of particular features; to construct the equivalent vectors in the test representation space; and then to see whether pairs of representations of the same feature f are closer together than representations of two different features, f and g.

(1) Apply neighborhood component analysis (NCA: Goldberger et al., 2004) to the test representation, in order to maximize how informative the distances are. NCA finds a linear transformation that optimizes the performance of classification; in this case, the classification optimized is the phone label classification. Unlike PCA, NCA is supervised, enforcing the constraint that the derived representation be good at distinguishing segments. **(2)** Apply NCA to the classifying representation to reweight the features according to how discriminative they are for the set of segments provided. For each feature f in the classifying representation, find the set of all phoneme pairs for which the subtraction of the (weighted) classifying-space vectors is maximal on f. These difference vectors are representations of f. Pairs of feature representations are classified as to whether they represent the same feature or two different features. Further filtering is then done by placing a threshhold on the similarity ($\cos^2$) between the classifying-space vectors; the most restrictive is that the two representations must be in the same direction, i.e., $\cos^2 = 1$; we set our threshhold to 0.93. **(3)** For each feature-representation, construct the equivalent

representation by doing the vector subtraction on the same phoneme pair in the test space (see Figure 2). Compute ROC curves for the same-feature/different-feature $\cos^2$ similarity based classification task on the test-space representations, and compute the area under the curve.

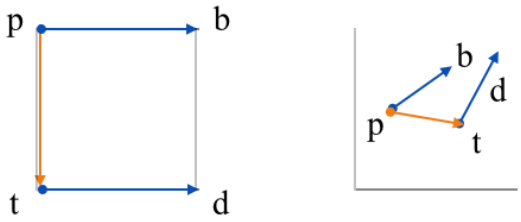

Figure 1: Two representations of the same feature (blue) and one representation of a different feature (orange) in a hypothetical classification space; the corresponding representations in a test space.

Results and discussion. Three features had at least four representation pairs at a sufficiently high cutoff.

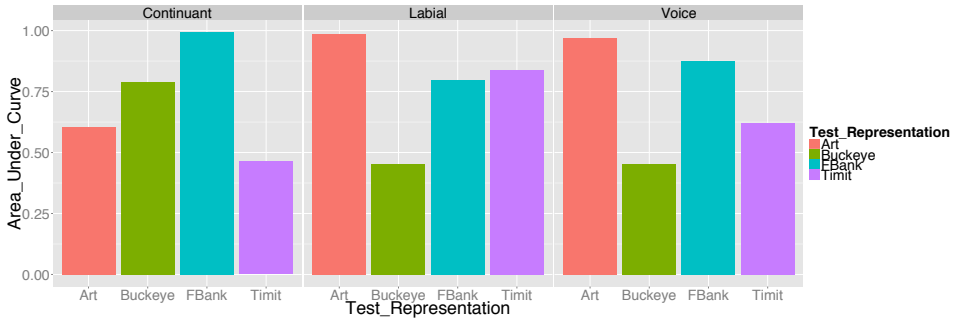

Figure 2: Area under ROC curve coding discriminability of the features **continuant**, **labial**, and **voice** for all four test representations (0.5 is chance).

From the figure, we see that ART (the articulatory measurements) capture the features **labial** and **voice**, but not **continuant**; FBANK (acoustic) captures the feature **continuant** better than **labial** or **voice**; and that the phonotactic-based representations vary widely in how well they capture the three features depending on the corpus, which suggests that these natural classes are only weakly represented in the surface phonotactics. This procedure, which allows us to construct a concrete representation of a feature in terms of the pairs it distinguishes, can be extended to any pair of representations to test the consistency of one with the individual dimensions of the other. Future work will compare phonological feature representations directly with representations of the typological facts in which they are grounded.

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Building on the observation that object>subject scope requires subject reconstruction, we propose that QR is subject to a strict locality constraint: it may not cross a c-commanding overt DP. We show how this constraint derives a wide range of hitherto puzzling restrictions on QR, and we propose an account of this generalization which builds on the intuition that what distinguishes QR from other forms of movement is that it is not feature-driven.

The reconstruction requirement: a number of authors have shown that object>subject scope in simple cases like (1) is subject to a *Reconstruction Requirement* (RR): the subject Qu(antificational)NP must reconstruct to scope below the (medium-distance) QRed object QuNP (Johnson & Tomioka 1997, Nevins & Anand 2003, a.o.). One source of evidence for this comes from the contrast in (1)-(2): in (1) but not (2) the subject may reconstruct (this is precluded in (2) by negation, since the subject is a PPI), and in (1) but not (2) the subject may scope below the object. The RR is mysterious on the view that QR is a covert form of A'-movement; the object ought to be able to QR to adjoin to TP or some other higher projection to obtain inverse scope. One way of explaining this is to say that QR to TP would be 'too long' (cf. Fox 2000), but this is difficult to maintain given that objects in infinitival clauses can scope over matrix subjects, (3) (Kennedy 1997). An alternative explanation, which we will pursue here, is that QR is subject to the constraint in (4): it cannot cross a c-commanding overt DP. This accounts for the RR: QR can cross the *covert* lower copy of the subject in Spec,*v*P, but cannot cross the *overt* copy in Spec,TP. In the next section of the paper we show that this condition predicts whether QR may invert scope in a wide array of configurations.

(1) Two students haven't answered many of the questions on the exam. *many* > ∃
(2) Some student or other hasn't answered many of the questions on the exam. **many* > ∃
(3) Some boy tried [PRO to kiss every girl]. ∀ > ∃
(4) *[QuNP_i … [DP_j … t_i …]], where DP_j is overt (DP_j precedes t_i).

QR out of infinitives: importantly, (4) predicts the availability of inverse scope in (3): the QRing object crosses a null PRO, and crossing null DPs is allowed. Tellingly, infinitives which place intervening non-null DPs in the same region are opaque for QR (Wurmbrand 2014): ECM clauses (5) and raising clauses with experiencers (6) do not allow embedded objects to scope over matrix subjects; again, this is predicted by (4), since they would require the QRing object to cross the overt ECM subject and experiencer respectively (we assume that PPs are invisible for c-command and that the DP experiencer c-commands the embedded object; see e.g. Bruening 2014a). In the paper, we argue that reconstruction of *someone* into the raising infinitive is not necessary for inverse scope in (7), whereas it is in (6); this tells us it is not the case raising infinitives are always opaque for QR (cf. Wurmbrand 2014), but rather that they are only opaque with an experiencer. Intriguingly, the intervention effect with QR out of infinitives is also observed with adjuncts: (8) shows adjunct PPs also intervene (similar effects are observed in Bruening 2014b for *tough* movement).

(5) Someone expected the best student to win every award. *?∀ > ∃
(6) Someone seemed to the photographer to be gazing at every model. *?∀ > ∃ > *seem*
(7) Someone seemed to be gazing at every model. ∀ > ∃ > *seem*
(8) Someone asked at the meeting to tutor every student. ?*∀ > ∃

Ascending and descending VPs: It is well known that scope is frozen between the direct and indirect objects in the English DOC, (9), but not in the prepositional dative construction, (10). Following Janke & Neeleman (2012), we assume that DOCs involve a descending structure (as in Larson 1988), where the GOAL DP precedes and c-commands the THEME DP, whereas prepositional datives are ambiguous between ascending and descending structures and in the ascending structure the THEME DP precedes but does not c-command the PP GOAL (the PP is in a right-branching position). Inverse scope in (9) would require *every novel* to QR over the c-commanding overt DP *some student*, therefore the constraint in (4) accurately predicts that inverse scope is unavailable (cf. Drummond 2013). On the other hand, the structural

ambiguity of dative structures ensures that both readings can be derived for (10) by base-generation, with no requirement for QR to invert scope. Importantly our account also predicts that the second object in a DOC is unable to QR to scope over the subject, while the indirect object is not so restricted; (11)-(12) shows that these predictions are borne out.

(9) Marie gave some student or other every novel by Tolstoy. *∀ > ∃
(10) Marie gave every novel by Tolstoy to some student or other. ∀ > ∃
(11) Some lecturer or other gave the best student every prestigious award. *?∀ > ∃
(12) Some lecturer or other gave every student the best possible grade. ∀ > ∃

Control asymmetries: we show that an asymmetry with control infinitives (Truswell & Neeleman 2006) further supports (4). Truswell (2013) states the generalization as follows: in control constructions, inverse scope between an embedded QuNP and a matrix QuNP is only possible if the matrix QuNP is the controller. According to our account, what makes inverse scope in (13) degraded is that it involves QR across an overt c-commanding DP *the best student*. Long QR out of the control infinitive is possible in (14) since it crosses no overt DP, only a covert PRO subject. We take issue with Truswell's generalization, showing that non-controllers also block QR out of control infinitives (8).

(13) Some lecturer or other asked the best student to tutor every fresher. ?*∀ > ∃
(14) Some lecturer or other asked to tutor every fresher. ∀ > ∃

Analysis: we develop a system where (4) falls out as a plausible consequence. Our analysis has several components: (i) we adopt Single Output Syntax (Bobaljik 2002), assuming that syntax manipulates bundles of sem(antic), phon(ological), and formal features. (ii) linearization (fixing ordering relations between phon features), is subject to the constraint in (15) (adapted from Nevins & Anand 2003). (iii) feature-driven movement is driven by a formal inadaquecy on the moving expression: an uninterpretable feature (uF) (Bošković 2007). QR is not feature-driven, but takes place for semantic reasons. Consequently, what distinguishes QR from other forms of A'-movement is the lack of a uF on the moving expression. When a head X merges with a QuNP, the resulting phrase is subject to *ASAP Linearization*: the ordering between X and QuNP's phon features is fixed, precluding subsequent movement of QuNP's phon features as this inevitably leads to contradictory ordering statements further down the line. Only feature-driven movement can be overt, since the presence of uF precludes *ASAP Linearization*. Movement of QuNP must therefore be *partial*, only targeting sem features. The constraint in (15) therefore derives the fact that QR does not feed pronunciation. We assume that movement involves copying, remerge and the operation FORM CHAIN (Chomsky & Lasnik, 1993, Takahashi 1994, Nunes 2004), and adopt a version of Aoun & Li's (2003) *Minimal Match Condition* on FORM CHAIN, given in (16). Every XP must be a member of a chain with a full complement of sem(antic), phon(ological) and formal features. With feature-driven movement, the moved element containing uF forms a chain with the nearest XP it c-commands containing a matching uF. With partial movement of a QuNP's sem features, the higher copy is deficient is formal (case) features, and therefore we conjecture that under these conditions the MMC is unselective: the higher copy must form a chain with the nearest YP it c-commands that contains (valued) case features: this distinguishes overt DPs from traces and PRO, which lack valued case features in our system. The conception of QR as movement of sem features, together with the assumption that the MMC is unselective in the absence of uF, goes some way towards explaining some of the most puzzling properties of QR.

(15) *ASAP Linearization*: If a phrase XP contains no uFs, linearize XP immediately.
(16) *Minimal Match Condition*: An XP must form a chain with the nearest YP it c-commands that contains the same relevant features.

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Between states and events

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Problem. In this paper we will explore the class of Spanish predicates illustrated in (1), and we will argue that they aspectually pattern with so-called D(avidsonian) states (Maienborn, 2005, Rothmayr, 2009) because they are instances of Process heads that take central coincidence prepositions as their complements.

(1) *gobernar* 'govern', *dirigir* 'direct', *presidir* 'head', *habitar* 'inhabit', *coordinar* 'coordinate', *controlar* 'control', *supervisar* 'supervise', *mantener* 'maintain'

As in the case of the D-states studied by Maienborn (*lie, stand, glow, wait, sleep*), it is not easy to assign an aspectual value to the group of verbs we have identified in (1), given that they also show a behavior placing them halfway between events and states.

Data. Like other D-states, *gobernar* verbs, (1), exhibit several state-like properties. First, they are strictly homogeneous predicates, i.e., they strictly fulfil the subinterval property (Rothstein, 2004). Thus, reusing Maienborn's formulation, if for a certain time interval *I* it is true that, for example, Fertuosa is ruling Spain, this is also true for every subinterval of *I*, down to instants. Second, *gobernar* verbs are not compatible with *parar* 'to stop': **Fertuosa ha parado de dirigir/ presidir la empresa* 'Fertuosa has stopped ruling/ heading the company'. Third, they do not accept modification by *lentamente* 'slowly' or *poco a poco* 'gradually': **Fertuosa ha dirigido/ presidido esta empresa lentamente* 'Fertuosa has ruled/ headed this company slowly'. Fourth, they do not receive a habitual reading in the present tense: *Fertuosa dirige/ preside esta empresa* 'Fertuosa rules/ heads this company (now)'.

On the other hand, *gobernar* verbs also show some eventive-like properties, like other D-states. First, they are compatible with manner adverbials (*Gerineldo gobierna España ordenadamente* 'Gerineldo rules Spain orderly') and locative adverbials (*Gerineldo dirige la empresa desde su casa* 'Gerineldo directs the company from his house'). Second, the modification of these verbs by *un poco* 'a little' is ambiguous between a time-span or a degree reading: *Gerineldo dirigió un poco las obras* 'Gerineldo supervised a little the working'. Third, *gobernar* verbs, although not so easily than other D-states, also show up as infinitival complements of perception verbs: *Lo vi dirigir las obras* 'I saw him supervising the working'. Fourth, unlike prototypical states, these verbs accept the progressive: *Gerineldo está dirigiendo las obras* 'Gerineldo is supervising the working'.

Finally, this class of verbs shows a final surprising property that singles them out in the set of atelic predicates: not being pure statives, they accept the construction *estar* 'to be' + participle, which is restricted to participles of telic verbs (Luján, 1981): *Este país está gobernado por un loco* 'This country is ruled by a madman'.

General proposal. According to the standard description, there is a strong tendency to claim that eventivity implies dynamicity and the other way around. Under this view, states are considered to be non eventive and non dynamic, while the rest of aspectual classes are considered to be eventive and dynamic. However, the data presented indicate that this is an oversimplification; under this view, it is not possible to satisfactorily account for predicates like *gobernar*.

In order to overcome this problem, we will propose a theory where eventivity is independent of dynamicity. More concretely, we will argue for a syntactic representation, adapting Ramchand's (2008) framework so as to treat eventivity and dynamicity as coming from different sources, with eventivity being possible to appear in the absence of dynamicity.

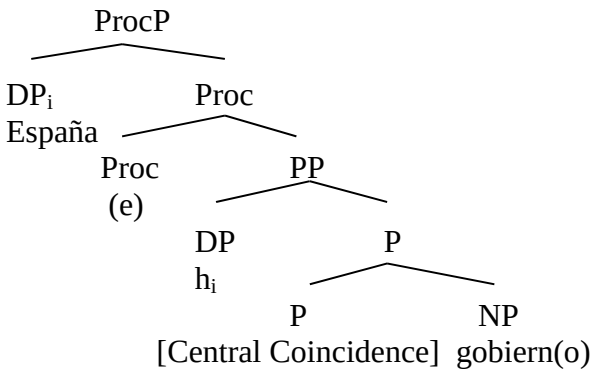
We will also argue that eventivity is dependent on the presence of a head Proc(ess) that provides the syntax with an event argument that can be taken by the progressive periphrasis and by time, manner and place modifiers, as it is usually the case in a Neo-Davidsonian approach.

Dynamicity is not introduced by any head: it is obtained (or not) from properties of the syntactic configuration, and more in particular of the kind of complement that the head denoting the event takes once the structure has been built. Three main possibilities can be distinguished: (i) if the complement of Proc is a Path, then the event is dynamic (and durative); (ii) if the complement of Proc is a Res(ult), then the event is also dynamic (but not durative); (iii) if the complement of Proc is any other element, then the event is not dynamic.

We will then argue that D-states correspond to trees with the Process head that, however, fail to define dynamicity because of the nature of the complement of that head, which is neither a Path nor a Result.

Analysis. Within this general proposal, we will provide an analysis for *gobernar* verbs, (2), by arguing that the absence of dynamicity is due to the presence of a prepositional structure as complement of Proc (the event head). In this structure we are profiting from Hale & Keyser's (2002) distinction between central coincidence and terminal coincidence prepositions; we do not represent that agentive head in (2), as its presence is not crucial for our analysis.

(2)



What our decomposition of *Juan gobierna España* expresses is that there is an event –Proc– that affects Spain –the specifier of ProcP–. The event is one of keeping Spain in a steady relation with government, that is, keeping Spain under government. This structure, as we see, compositionally accounts for the intuitive meaning of the verb *gobernar*.

This analysis also captures the absence of dynamicity. The complement of Proc, the event denoting head, denotes a stative relation between a figure (*Spain*) and a ground (*government*). There is no change involved because the relation is of inclusion; the event purely consists on keeping the two entities in that relationship. As a result of that, the event is not interpreted as dynamic, because there is no change. Proc, here, is interpreted in a form similar to the verb 'maintain' or 'keep' (see also Jackendoff 1983), but this does not need to be expressed by positing a different head from the one present with verbs that denote dynamic changes: it is obtained from the semantic contribution of its complement.

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Structuring adjectival passives cross-linguistically: an aspectual approach

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Goals: I provide a novel account of the cross-linguistic differences within adjectival passives (APass) with respect to the (un-)availability of agent-oriented and spatio-temporal event modification. I show that the classic target vs. resultant state distinction is not useful to explain the relevant data, and I recast the distinction in an alternative syntactic account that derives the empirical facts from just two factors: the aspectual structure of the VP (i.e. *Aktionsart*) and the parametrized attachment height of the adjectivizer.

Introduction: APass can be classified cross-linguistically in two types with respect to event-oriented modifiers (cf. (1a)) and spatio-temporal modification of the underlying event (cf. (1b)): i) *permissive* languages, which allow such modification freely (eg. Greek, Russian, Swedish), and ii) *restrictive* languages, in which event-oriented modifiers are highly restricted and spatio-temporal modifiers are impossible (eg. German, English, Spanish). Interestingly, when the VP-input is atelic, the aforementioned restrictions disappear in restrictive languages and all languages behave alike (cf. (2)).

(1) a. The glass is broken {*by Mary/ with a hammer/ deliberately}*. *Only OK in permissive languages*
b. The glass is broken {*two days ago/ in the kitchen*}. *Only OK in permissive languages*

(2) The garden is protected {*by three dogs/ with an alarm system/ zealously*} *OK in all languages*

Previous accounts: Focusing on telic VPs in German, Gehrke (2012) argues that APass denote an instantiated consequent state kind of an event kind. Her semantic representation is in (3b) (where kind=$_k$).

(3) a. Die Tür ist geschlossen. (from Gehrke: 2012)
the door is closed
b. $\exists e_k, s_k, s$ [BECOME(e_k, s_k) $\wedge$ THEME(e_k, door) $\wedge$ closed(s) $\wedge$ THEME(s, door) $\wedge$ R(s, s_k)]

The crucial consequences are that only kind-level event-modifiers that do not introduce a discourse referent will be acceptable, since the event is not a token (cf. (4) vs. (5)), and that spatio-temporal modification of the event will be out, since the underlying event is not spatio-temporally instantiated (cf. (6)). The German examples in (4)-(6) are from Gehrke (2012). I note that Spanish behaves the same way.

(4) a. Die Zeichnung ist *von einem Kind* angefertigt. b. Der Brief war *mit einem Bleistift* geschrieben
the drawing is by a child made the letter was with a pencil written

(5) Der Mülleimer ist (*von meiner Nichte / *langsam / *genüsslich / *mit der Heugabel) geleert.
the rubbish bin is by my niece / slowly pleasurably / with the hayfork emptied

(6) a. *Der Computer ist *vor drei Tagen* repariert. b. *Die Reifen sind *in der Garage* aufgepumpt.
The computer is before three days repaired the tires are in the garage inflated
'The computer is repaired three days ago.' 'The tires are inflated in the garage.'

Alexiadou et al. (2015) (henceforth AAS) address the crosslinguistic differences illustrated in (1) and (2) and they syntactize Gehrke's (2012) proposal, by stating that event kinds only get instantiated when verbal structure is directly embedded under Tense and Aspect. Thus, permissive languages like Greek contain an Asp head, since they involve event tokens (cf. (1)), but restrictive languages like German do not (cf. (7a-b)). They follow Kratzer's (2000) distinction between target and resultant state passives, and notice that the APass where event-modification is unrestricted in all languages (cf. (2)) accept *still* in presence of such modifiers, which is a test for target state passives (cf. (8a)), but APass where modification varies cross-linguistically do not accept *still* (cf. (8b)), and so they must be resultant state passives. To explain the crosslinguistic availability of modifiers in (2), they posit a stative Voice attaching above *a* that introduces the holder of the result subevent (cf. (7c)). Since in that structure Voice is directly embedded under T and Asp, we have an explanation for why only agent-oriented modifiers that are somehow "present" in the state or modify it directly, as descriptive grammars would have it, are licensed.

(7) a. [$_{aP}$ a [$_{AspP}$ Asp [$_{VoiceP}$ Voice$_{AGENT}$ [$_{vP}$ v [$_{RootP}$ $\sqrt{}$]]]]] *Greek-type resultant state passives*
b. [$_{aP}$ a [$_{VoiceP}$ Voice$_{AGENT}$ [$_{vP}$ v [$_{RootP}$ $\sqrt{}$]]]] *German-type resultant state passives*
c. [$_{VoiceP}$ Voice$_{HOLDER}$ [$_{aP}$ a [$_{vP}$ v [$_{RootP}$ $\sqrt{}$]]]] *Target state passives (all languages)*

(8) a. The garden is *still* protected {by three dogs/ with an alarm system/ zealously}.
b. The glass is *(*still)* broken {by Mary/ with a hammer/ deliberately}.

Problems: AAS's account runs into several problems. First, their account for target states in (7c) does not predict which verbal predicates will be able to form target state passives and, more problematically, does

not explain how agent-oriented adverbs are licensed, since their $\text{Voice}_{\text{HOLDER}}$ in (7c) introduces a result state, and not that of a causative sub-event. In general, it is unclear what we gain with the resultant vs. target state distinction to explain these phenomena (and note that (7b) cannot be a resultant state, since in Kratzer's story such type is derived by an Asp operator which is missing from AAS's structure).

Analysis: I propose an account that takes *Aktionsart* seriously and dispenses with the target vs. resultant state distinction, but reduces the cross-linguistic differences to the attachment height of the stativizer A.

i. Telic VPs, EV-T and the different attachment height of A: Building on the framework for tense and aspect put forth in Demirdache & Uribe-Etxebarría (2000, *et seq.*) (henceforth D&U-E), I propose that telic predicates are formed by two VPs, a higher causative one and a lower one denoting the result state. The lower result VP comes with a temporal argument, a state time ST-T that denotes its run-time. The higher causative VP, which denotes a dynamic sub-event, does not introduce its temporal argument EV-T directly, but is provided one via a higher functional projection I label Ev(ent)P. Note that this approach crucially posits that the run-time of the event (and the subsequent instantiation thereof) is not parasitic on an Aspect head, as in D&U-E and contra most of the current syntactic work on tense and aspect.

For APass with telic VPs in permissive languages, I propose that the adjectivizer A takes EvP as its complement, and thus an EV-T is introduced in the structure. AP attracts the lower ST-T to (Spec,AP), making the ST-T available for higher T and Asp operators (i.e. deriving a stative predication).

In restrictive-type languages, the stativizer A merges directly with the causative VP. The crucial consequence is that EV-T is not introduced since EvP does not project, and so the causing sub-event won't be spatio-temporally locatable and it will remain a kind: this is how I recast syntactically Gehrke's (2012) proposal. As in (9a), ST-T moves to (Spec,aP). The complete structure is given in (9b).

(9) a. $[_{AP}$ [ST-T] A $[_{EvP}$ [EV-T] Ev $[_{VP1}$ V $[_{VP2}$ [~~ST-T~~] V]]]] *APass in permissive languages*

b. $[_{AP}$ [ST-T] A $[_{VP1}$ V $[_{VP2}$ [~~ST-T~~] V]]] *APass in restrictive languages*

ii. Stative causative VPs: where languages meet: I mentioned at the beginning that it is precisely with atelic VPs that we find permissibility with event-oriented modification and spatio-temporal modification in every language under discussion. Following García-Pardo (2014), I argue that these atelic VPs belong to the aspectual class of causative states or stative causatives, i.e. they are complex stative structures with two states related causally (eg. *protect, govern*…). The two states in causative states are temporally co-extensive (eg. in (2), the result state of the garden being protected will hold for as long as the dogs participate in the causing state). This derives the descriptive observations regarding the "presence" or "relevance" of event-oriented modifiers in the result state for modification to be possible at all. Crucially, I propose that stative VPs introduce a ST-T within their projection universally. This means that, for stative causatives, the higher (stative) causative VP does not require a separate functional projection to have a temporal argument ST-T. Therefore, adjectivization will not be able to prevent the introduction of the higher ST-T in any language and thus event-related modifiers and spatio-temporal modifiers of the causing state will be predicted to apply freely, as in fact happens (cf. (2)). Finally, as with APass derived from telic VPs, the lower ST-T further moves to (Spec,AP). The structure at stake is provided in (10).

(10) $[_{AP}$ [ST-T] A $[_{VP1}$ [S~~T-T~~] V $[_{VP2}$ [~~ST-T~~] V]]]] *Causative state VPs – Universal structure*

Conclusions: This work has offered a syntactic explanation that accounts for the empirical facts observed in adjectival passives cross-linguistically regarding the (un-)acceptability of event-related modifiers and spatio-temporal modification. I have proposed that the aspectual structure of the underlying VP, and the parametrization of the attachment height of the adjectivizer A (i.e. whether it takes EvP or VP as its complement) is what is behind the data in (1) and (2). I have shown that this proposal has more predictive power and is in fact more simple than the existing accounts of the phenomena discussed in this paper.

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Commonality in Disparity: The Computational View of Syntax and Phonology

Keywords: syntax, phonology, computational linguistics, structural complexity, constraints, locality

Thomas Graf & Jeffrey Heinz

Overview Heinz and Idsardi (2013) draw attention to a computational difference between syntax and phonology established by earlier research: phonology only requires regular computations over strings (Johnson 1972; Kaplan and Kay 1994), whereas syntax involves non-regular computations over strings (Chomsky 1956; Shieber 1985). In the present work, the computational difference between these two domains is studied from a perspective which recognizes two dimensions of formal grammars: the nature of the model (the data structures) and the power of the computations that manipulate these structures. We argue that the differences between syntax and phonology can be recast entirely in terms of the differences in the data structures rather than the power of the computations. Both phonological and syntactic dependencies turn out to be local given a suitable domain of relativization, which we formalize in terms of tiers.

Tier-Local Phonology Many dependencies in phonology have an upper bound on the number of nodes they may cross. Such local dependencies can be regulated via n-grams, i.e. substrings that consist of n segments. If, say, underlying /nb/ is pronounced [mb], then this can be captured by the surface constraint *nb or the corresponding bigram *nb*. Dependencies that are not locally bounded do not fit this pattern — no matter what threshold n one picks, it will be exceeded by some long-distance dependencies. Heinz et al. (2011) argue that long-distance dependencies are nonetheless local in a more relaxed sense: they are *tier-based strictly local*. Suppose phonological structures also include tiers, which contain only certain parts of the pronounced string. Given a sibilant tier T, for example, a ban against s following ʃ is enforced by the T-bigram ʃs. Tiers thus render non-local dependencies local by increasing the complexity of the data structure.

Minimalist Grammars Every proof that syntactic dependencies are tier-local must build on a rigorous model of syntax. In an effort to stay close to the syntactic consensus, we pick Minimalist grammars (MGs; Stabler 1997) as a formalization of Minimalist syntax. MGs assemble trees from feature-annotated lexical items (LIs) via Merge and Move, which are triggered by the LIs' features. As phrase structure trees are the result of applying Merge and Move operations in a specific order, they can be equated with their *derivation trees*. A derivation tree looks almost exactly like the bare phrase structure tree that is built from it, except that I) interior nodes are labeled by the operation taking place, and II) phrases undergoing movement remain *in situ* (cf. Fig. 1). Note that Move nodes are unary branching because Move is a deterministic operation in MGs, so there is no need to explicitly indicate which phrase is moving (empirically mandated non-determinism is modeled as a non-deterministic choice between different LIs).

Building on the insight that every MG can be identified with its set of well-formed derivation trees, Graf (2012) shows that these derivations are fully characterized by a few tree-geometric constraints. We only focus on the much more complex constraints for Move here, and we assume for the sake of simplicity that every phrase moves at most once (which does not decrease the power of the formalism). Given an LI l that needs to undergo movement in order to check its feature f, the *occurrence of* l is the lowest Move node that dominates l and can check f. A derivation contains no illicit instances of Move iff it obeys the following two constraints:

Move1 If an LI has a feature that triggers its movement, then it also has a Move occurrence.
Move2 Every Move node is an occurrence of exactly one LI.

Tier-Local Syntax When viewed from the perspective of constraints on derivation trees, Merge dependencies are easily shown to be local thanks to the local nature of subcategorization. Move dependencies, on the other hand, are not locally bounded because there is no absolute limit on how many nodes a moving phrase may cross. They do incorporate a relative notion of locality,

though, as the definition of occurrence refers to the **closest** dominating Move node that can check the relevant feature. It is this restriction that makes Move local.

First, we generalize the notion of tiers from strings to trees. A string can be viewed as a 1-dimensional object that is obtained by ordering 0-dimensional objects, i.e. nodes, via precedence. A tree, in turn, is the result of ordering 1-dimensional objects — the strings of siblings — via dominance. A *tree-tier*, then, is a 2-dimensional tier: string tiers are ordered via dominance. In the case of MGs, this idea is implemented as follows. Given a derivation tree, every LI with movement feature f and every Move node that can check f is projected onto an f-tier. Note that the projection step preserves the dominance relations between these nodes. Within the f-tier, every string of siblings also projects a lexical tier, which lists only LIs (cf. Fig. 1). The Move configurations banned by **Move1** and **Move2** are expressed by four templates, where the daughter string references the lexical tier. This establishes that Move dependencies, just like long-distance dependencies in phonology, are local over an enriched data structure with tiers.

Move1		**Move2**	
"LIs need a mother"	"mother must be Move"	"at least one occurrence"	"at most one occurrence"
$ | LI	LI | LI	Move | $—$	Move | LI—LI

Conclusion Taking as our vantage point the linguistically plausible assumption that phonology operates over strings and syntax over trees, we unearthed a surprising similarity between the two: non-local dependencies between nodes/segments are local within some suitable relativization domain, formalized via tiers. This is not just a simple coding trick such that every non-local dependency is local over a suitable choice of tiers — tier-based formalisms are provably weaker than what can be done with some (empirically unattested) regular and supra-regular computations. A linguistically informed choice of data structure thus highlights profound parallels in the computational complexity of phonological and syntactic dependencies.

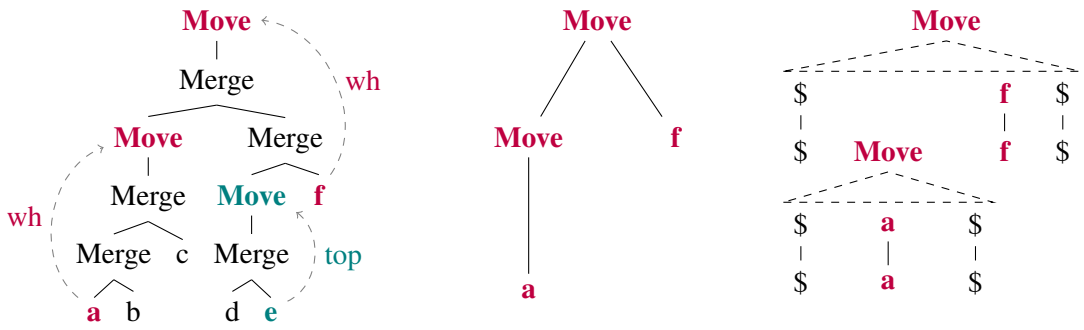

Figure 1: Left: derivation tree with expository Move arrows; Middle: nodes on wh-movement tier ordered by dominance; Right: wh-movement tier with lexical tiers above each sequence of siblings

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Mismatching Pseudo-Relatives describe event kinds

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Pseudo-relatives (PRs) are finite constructions found in many Romance languages (1) that look superficially like relative clauses, but are naturally translated as English gerundive constructions.

(1) a. Ho visto **Gianni /l'uomo che correva**.
I.have seen G. /the'man that run.IMPF
'I saw G. /the man running.'

b. Vedo **Gianni /l'uomo che corre**
I.see G. /the'man that run.PRES
'I see G. /the man running.'

The PRs in (1) match in tense with their matrix clauses, a fact commonly thought to be required of PRs (Radford 1977, Guasti 1988, Cinque 1995). There are, however, often-overlooked cases of tense mismatch (Casalicchio 2013, p.31). Here we are concerned with the previously unreported case of present under past illustrated in (2), that also deliver a direct perception interpretation.

(2) Ho visto Gianni che corre, e tante altre cose simili.
I.have seen G. that run.PRES, and many others things similar.
'I have seen G. running, and many other such things.'

We argue that there is a semantic difference between Tense-matching PRs (TM-PRs) and Tense-mismatched PRs (TMM-PRs), in that the former deliver an event-token interpretation whereas the latter deliver an event-kind interpretation (Carlson 1977, Barwise & Perry 1983, McNally 1992, Gehrke 2014). The exciting, broader implication is that kind interpretations are not limited to lexical items, or small projections thereof, but can arise from fully inflected clauses.

Background PRs are constituents that refer to events and naturally serve as complements in direct perception. This is shown by (3), where *Ciò que* 'that which' is inanimate; so the PR does not denote *Maria* in (3) but the event/situation described by the entire embedded clause. As (3) shows, both TM-PRs and TMM-PRs are event-denoting constituents.

(3) **Ciò che**$_1$ **/*Chi**$_2$ ho visto è **Maria**$_2$ **che piangeva**$_1$**/Maria che piange**
That which /Who I.have seen is Maria that cry-IMPF/Maria that cry.PRES
'What /(*Who) I saw was Maria crying'

Grillo and Moulton (2014) argue that PRs are referential descriptions of events. Their evidence includes the fact that PRs exhibit, in contrast to infinitives, scope-less behaviour with respect to higher operators (negation, conditionals). We show, however, that their analysis applies only to TM-PRs. TMM-PRs do not behave like TM-PRs in these respects or others. We propose that TMM-PRs describe event-kinds (see Gehrke 2014). This accounts for a number of previously unnoticed properties of TMM-PRs (ban on spatial/temporal modifiers, no uniqueness, sloppy identity under VP-ellipsis obligatory, narrow scope/distributive under quantified expressions).

Ban on Spatial/Temporal modifiers. Spatial and Temporal modifiers are banned with TMM-PRs. As with other types of event kinds, these can only be interpreted as creating event sub-kinds. This however is not possible when a specific date is mentioned (e.g. *last Thursday* in (4))

(4) Tutti abbiamo visto Maria che ballava /*che balla al parco giovedì scorso.
All we.have seen M. that dance.IMPF /that dance.PRES at.the park Thursday last.
'We all saw M. dancing at the park last Thursday'.

Sloppy reading in ellipsis TMM-PRs allow for sloppy reading under ellipsis but TM-PRs do not. This yields the facts in (5), in which the same event of dancing (at same beach) is seen by all of us and the director with TM-PR, but different events /different beaches are allowed with TMM-PR.

(5) Tutti abbiamo visto Maria che ballava /balla in spiaggia, anche il direttore.
All we.have seen M. that dance.IMPF /dance.PRES on beach, also the director.
'We all saw M. dancing on the beach, even the director.' STRICT /SLOPPY

Obligatory narrow scope/distributive reading. Moulton & Grillo (2014) show that TM-PRs under perception verbs, but not infinitives, exhibit wide scope behaviour in a variety of environments (e.g. negation, adjunct islands). TMM-PRs, on the other hand, readily allow narrow scope and distributive readings in the same environments. Notice also that reference to the bears with 'they were grizzly' is only allowed in the matching version:

(6) Tutti abbiamo visto 3 orsi$_1$ che scappavano /3 orsi$_2$ che scappano (pro$_{1/*2}$ erano grizzly).
All we.have seen 3 bears that run.away.IMPF /run.away.PRES (they were grizzly).
'We all saw 3 bears running away (they were grizzly)'. CUMULATIVE /DISTRIBUTIVE

TM(but not TMM)-PRs carry existential entailment under negation, e.g.: *Since Lea never danced...*

(7) Max non ha mai visto Lea che balla il tango /# L. che ballava il tango.
M. NEG has never seen L. that dance.PRES the tango / L. that dance.IMPF the tango.
'M. never saw L. dance the tango / dancing the tango.'

Limited capacity to establish a discourse referent Additionally to what shown in (6) for *bears*, while TM-PRs can establish a discourse referent for the event, (8a), TMM-PRs cannot (8b):

(8) a. Tutti hanno visto M. che ballava$_1$ /M. che balla$_2$, *pro*$_{1/*2}$ è stato uno spettacolo.
All have seen M. that dance.IMPF /M. that dance.PRES, it is been a sight.
'Everybody saw M. dancing, it was quite a sight.'

Kind Anaphora in Italian As Anderson & Morzycki (to appear) discovered of kind anaphora, Italian kind anaphora '*così*' (9a-c) is only allowed with TMM-PRs (9d):

(9) a. Un cane così. KIND b. Si comporta così. MANNER c. Alto così. DEGREE
'Such a dog'. 'He behaves in this way'. 'This tall'.
b. Una ragazza che corre /*correva, tutti abbiamo visto una cosa così.
A girl that run.PRES /run.IMPF, all we.have seen a thing so.
'A girl running, we all saw this kind of thing'.

Our analysis further explains 1. that **Frequency Adjectives** (Gehrke & McNally 2011) are only allowed with TMM-PRs (10a) and 2. why bare plural count nouns in internal argument position of TTM-PRs display properties of Pseudo-Incorporated nouns in **disallowing referential NP** (10b).

(10) a. Raramente ho visto Maria che balla /*che ballava.
Rarely I.have seen M. that dance.PRES /that dance.IMPF.
'I rarely saw M. dancing.'
b. Ho visto Gianni che mangiava / *mangia due caramelle che avevo messo sul tavolo.
I.have seen G. that eat.IMPF / eat.PRES two candies that I.had put on.the table.
'I saw G. eating two candies that I had put on the table'.

We build on the results of Moulton and Grillo (2014) which shows that TM-PRs are headed by an indefinite determiner. The TMM-PR cases, we contend, are accommodated by a determiner that selects for kind-denoting events. **References:Anderson** & **Morzycki**. To app. Degrees as kinds. *NLLT*. **Cinque** 1995. The Pseudo-Relative & Acc-*ing* construction. **Gehrke** 2014. Event kinds & abstract objects. **Guasti**. 1988. La pseudorelative & phénomes d'accord. *Riv. di Gramm. Gen.* 13. **Moulton** & **Grillo**. 2014. Pseudo Relatives: Big but Transparent. *NELS45*.

The temporal nature of the state/event distinction

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A concrete semantic characterization of the difference between stative and eventive predicates has proved elusive. The perennial intuition that states are "static" while events are "dynamic" is difficult to translate into a model theoretic analysis other than the sortal stipulation that states and events are different. Particularly unyielding is the contrast between states and activities, which are both subpart homogeneous. In this talk, I claim that the difference between stative and eventive predicates is fundamentally temporal. Stative predicates are interpreted only at moments of time, while eventive predicates are interpreted only at intervals. Since intervals arguably consist of moments, the difference between a moment description and an interval description is one of logical degree order, which goes some way toward explaining the very robust complementarity between stative and eventive predicates in certain syntactic contexts. I demonstrate that this view presents an explanation for why progressive predicates are (counterintuitively) stative, and discuss evidence that undermines the weaker claim that stative predicates can hold at intervals as well as moments. I also show that this view fits well with recent results in psychophysics on temporal perception and has some potential to explain the association between degree gradability and stativity.

Raising parameters

Claire Halpert (University of Minnesota)

In this talk, I investigate cross-linguistic variation in raising constructions, proposing a unified account for the derivation of hyperraising and standard raising. I argue that the presence or absence of these constructions in a given language can be determined by independent properties of CP and TP in the language, including: 1) whether CPs or infinitival phrases are phi-goals and 2) whether T shows an EPP effect (and if so, what elements can satisfy it). I show that variation in these factors can capture the different raising profiles found in Zulu, Makhuwa, and English, and Uyghur.

In *hyperraising* constructions, a subject undergoes A-movement out of an embedded finite CP (e.g. Harford Perez, 1985; Ura, 1994; Rodrigues, 2004; Diercks, 2012). Durban Zulu (Bantu) has optional raising out of finite CPs (1a-b), while raising out of a nonfinite clause is disallowed (1c):

(1) a. ku- bonakala [ukuthi **uZinhle** **u**- zo- xova ujeqe]
17S- seems that AUG.1Zinhle 1S- FUT- make AUG.1steamed.bread

b. **uZinhle**$_i$ **u**- bonakala [ukuthi t$_i$ **u**- zo- xova ujeqe]
AUG.1Zinhle$_i$ 1S- seem that t_i 1S- FUT- make AUG.1steamed.bread

c. * **uZinhle**$_i$ **u**- bonakala [t$_i$ uku- (zo-) xova ujeqe]
AUG.1Zinhle$_i$ 1S- seem t_i INF- (FUT-) make AUG.1steamed.bread
'It seems that Zinhle will make bread.' (Halpert, 2012)

This pattern contrasts with the familiar pattern of raising in languages like English, where a subject must raise out of a non-finite TP, but cannot raise out of a finite TP/CP:

(2) a. John$_i$ seems t$_i$ to eat pizza.
b. * It seems John to eat pizza.

(3) a. It seems that John eats pizza.
b. * John$_i$ seems that t$_i$ eats pizza.

While the English-type pattern has been analyzed in terms of case/Activity (non-finite subjects lack nominative) or the PIC (finite CPs are impenetrable by higher probes) (e.g. Chomsky, 2000, 2001), these solutions are not straightforwardly adaptable to hyperraising, where A-movement takes place out of an apparent full CP containing a finite/agreeing T. A common solution is to argue that the embedded clause, despite appearances, is defective, lacking a phase boundary and nominative case (e.g., Rodrigues, 2004; Zeller, 2006; Ferreira, 2009).

I propose instead that these PIC effects arise due to an A-over-A configuration: the embedded CP is a closer goal for the matrix T than the embedded subject. Zulu permits hyperraising because matrix T *sequentially* Agrees: first with the embedded CP, which independently displays phi-goal behavior, rendering it invisible for future probing by T (Rackowski and Richards, 2005); and then with the embedded subject. Evidence for multiple Agree relations appears in the subject agreement morphology of hyperraising predicates, which tracks *either* the raised DP *or* embedded CP.

I further argue that the *lack* of raising out of Zulu *nonfinite* clauses is also an A-over-A effect. Nonfinite clauses in Zulu behave like nominals on a variety of measures (e.g. phi-agreement, associative constructions), so an embedded infinitive will always be a closer phi-goal to matrix T than the subject it contains. If embedded CPs and embedded infinitives both involve an A-over-A configuration in Zulu, why is the second Agree operation only available for CP? I propose that this difference is due to the fact that the Zulu EPP is satisfied by DPs but not CPs: both are potential phi-goals, but CPs never surface in Spec,TP. Outside of hyperraising, agreement with T *requires*

movement to Spec,TPso phi-agreement and the EPP are typically satisfied via one operation; when T finds a goal that *cannot move* (a CP) it can Agree a second time to satisfy the EPP.

The ingredients that derive hyperraising in Zulu can also yield an extremely restricted pattern: no raising. Makhuwa (Bantu) also has rich phi-agreement and treats nonfinite clauses as nominals. Unlike Zulu, Makhuwa lacks EPP: agreeing subjects may stay in *v*P (van der Wal, 2009).

(4) a. O-hoó-khwá ńtthu
1S-PERF.DJ-die 1person
'Someone died.'

b. E-náá-rúpá epúla!
9S-PRES.DJ-rain 9.rain
'It is raining!' (van der Wal 2009: 613, 618)

In addition to the lack of EPP, Makhuwa differs from Zulu in another major respect: it apparently completely lacks raising predicates (van der Wal, 2014). From my analysis of Zulu, this absence of raising in Makhuwa is expected: CPs and nonfinite clauses are both potential goals for T and are always closer than the embedded subject. Without an EPP, nothing in Makhuwa impels the second Agree operation that yields hyperraising in Zulu.

English, like Zulu, has a strong EPP requirement. Unlike Zulu or Makhuwa, it does not nominalize *in situ* nonfinite clauses (though as Bresnan, 2001, notes, moved nonfinite TPs in English show different properties, behaving as though they project DP structure), so I propose that no A-over-A configuration arises, allowing the raising pattern in (2). What rules out the hyper-raising construction in English? In contrast to Zulu, English CPs can satisfy the EPP, so T never probes a second time. Since CPs don't need case, the EPP can also be satisfied by an expletive, just as in Zulu. This approach is potentially compatible with a number of different accounts of preverbal CPs, including ones in which sentential subjects are in fact DPs (e.g. Davies and Dubinsky, 2009; Hartman, 2012) and those in which preverbal CPs are topics, and not in Spec,TP (e.g. Alrenga, 2005): on all of these accounts, the CP can raise to satisfy the EPP as the result a single operation.

Finally, Asarina (2011) argues that Uyghur (Turkic), a language with nominalized embedded clauses, exhibits EPP-driven raising. When an adjectival predicate embeds a nominalized NP complement, the *subject* of the nominalized clause raises to matrix Spec,TP; when it embeds a nominalized DP complement, the *entire embedded clause* raises. Independent evidence suggests that Uyghur DPs can satisfy the EPP while NPs cannot. My account predicts this pattern: like Zulu, Uyghur allows hyperraising when the containing category (NP) cannot satisfy the EPP.

This account unifies disparate patterns of raising and makes predictions about possible variation by proposing independent parameters that conspire to yield different raising profiles. In particular, I argue that the status of CP and TP as potential goals for the matrix clause, combined with the type of EPP effects present, determines whether a language permits raising out of a particular clause. A promising avenue for future research is raising out of subjunctive clauses, a relatively common phenomenon; while previous research has focused on finiteness as the relevant factor for raising, I suggest that status as a goal for phi- and/or EPP may be more relevant. This analysis also adds to a growing body of work showing evidence that PIC effects can be obviated by multiple Agree relations (e.g. Rackowski and Richards, 2005; Halpert, 2012; Van Urk and Richards, to appear).

Selected References: **Asarina 2011**: Case in Uyghur and Beyond, PhD, MIT. **Van Urk & Richards to appear**: Two components of long-distance extraction: Successive cyclicity in Dinka, LI. **Rodrigues 2004**: Impoverished morphology and A-movement out of case domains, PhD, Maryland. **Van der Wal 2009**: Word order and information structure in Makhuwa-Enahara. LOT.

Feature Inheritance in clausal and verbal domains: Evidence from Mi'gmaq

Michael David Hamilton (McGill University)

PROPOSAL: In this paper I provide evidence from Mi'gmaq (Eastern Algonquian) to: 1) present empirical arguments for Feature Inheritance (Chomsky, 2007; Richards, 2007; Chomsky, 2008) in both the clausal and verbal domain; 2) argue for the necessity of SHARE (Ouali, 2008), a form of Feature Inheritance where a phase head passes uninterpretable features to the next lowest non-phase head, and also keeps an independent copy; and 3) show that multiple probing heads in the same phase probe independently and simultaneously, thus diffusing an apparent argument against Feature Inheritance in Haegeman and Van Koppen 2012.

VOICE^0 PHASE: I begin by showing that there is a dependency between the Voice^0 phase head and the next lowest non-phase head which is Feature Inheritance. The three characteristics of this dependency are that: a) Voice^0 is base generated with uninterpretable features (*u*F), b) passes a copy of uFs downwards to the next adjacent non-phase head but also keeps a copy, and c) passing is subject to locality as *u*Fs cannot be passed to non-adjacent heads. Evidence comes from the parasitic nature of ϕ (gender/animacy) agreement on v^0 when adjacent to Voice^0, which also typically displays ϕ (person and number) agreement. In transitive clauses with an animate internal argument, v^0 displays animate agreement, e.g., *al* in (1a). However, when the internal argument is inanimate (1b) or a complement clause, v^0 displays default agreement, e.g., *at(m)* in (1b), since neither have ϕ-features. In ditransitive causes, surprisingly v^0 also displays default agreement, e.g., *atm* in (2), even though both internal arguments are animate.

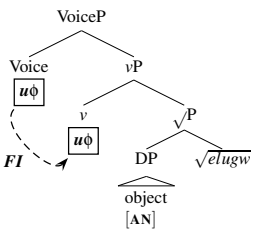
(1) a. elugw-**al**-**a**-t-l a'pi-l
fix-**VTA**-**3.OBJ**-3-OBV net(AN)-OBV
'S/he fixes a/the net(AN)'

b. elugw-**at(m)**-g tuop'ti'
fix-**DFLT**-3 window(IN)
'S/he fixes a/the window(IN)'

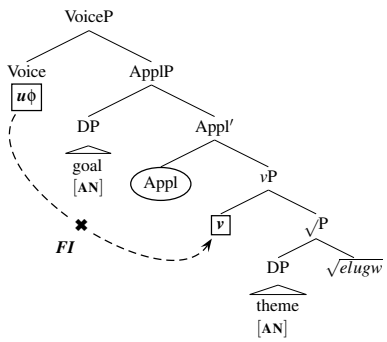
(2) elugw-**atm**-**u**-**a**-t-l a'pi-l
fix-**DFLT**-**APPL**-**3.OBJ**-3-OBV net(AN)-OBV
'S/he fixes a/the net(AN) **for her/him**'

In transitive clauses, Voice^0 and v^0 are adjacent, thus Voice^0 can pass *u*ϕ to v^0, as in (3a). Ditransitive clauses, on the other hand, have "high" Applicative phrases (Pylkkänen, 2008) based on morpheme order, e.g., the Mirror Principle (Baker, 1985), as well as the ability for both intransitive and static verbs to applicativize. Since Appl^0 intervenes between Voice^0 and v^0, they are not in a local relationship and it is not possible for v^0 to receive ϕ-features from Voice^0, as in (3b). As a result, v^0 does not probe and appears with default morphology. If v^0 were base generated with ϕ-features, it would probe the internal argument and display animate agreement as in transitive clauses, as v^0 is in the same structural relationship with the internal argument in both (3a) and (3b). Thus the lack of agreement in (3b) shows that v^0 is not base generated with ϕ-features, thus must receive them from Voice^0 in (3a). As expected, Voice^0 displays agreement in transitives, e.g., *-a* in (1a), and ditransitives, e.g., *-a* in (2), showing that it is base-generated with ϕ-features in both, thus the source of the features received by v^0 in (3a). The passing of *u*Fs here attributed to SHARE (Ouali, 2008), a form of Feature Inheritance where the phase head and adjacent non-phase head both have the same *u*Fs, ϕ-features in this case. Additional evidence from possessor raising constructions is presented to show that Appl^0 receives *u*-discourse (δ) features from Voice^0 when adjacent, thus Appl^0 also receives *u*ϕ in ditransitives, such as in (3b).

(3) a.



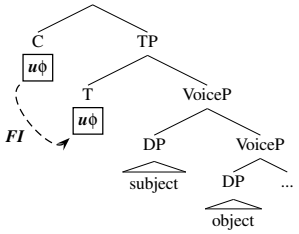
b.



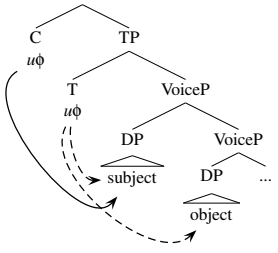
C^0 PHASE: Evidence for the independence of probes on the phase and non-phase heads as a result of *share*, although not directly visible in the verbal domain, is clearly present in the clausal domain, as C^0 and T^0 both have ϕ-features and probe independently. While such evidence has been used to argue against Feature Inheritance, i.e., Haegeman and Van Koppen 2012, with the combination of SHARE and simultaneity in phases, this evidence actually supports Feature Inheritance. In all finite clauses in Mi'gmaq, T^0 displays omnivorous number (Nevins, 2011) agreement with either the external or internal argument (Coon and Bale, 2013). In embedded finite declarative clauses in which Long-Distance Agreement (LDA) occurs, embedded C^0 has ϕ-features, probes, and attracts the structurally highest embedded argument: the subject in the direct/active voice and the object in the inverse voice. Although C^0 does not show overt agreement, support for embedded C^0 having ϕ-features, also comes from the fact that this movement to embedded Spec-CP can feed passives and reflexives in the matrix clause. This crucially contrasts with LDA in embedded interrogatives, as C^0 has a question (Q) feature, can attract the *wh*-phrase in any structural position, and matrix passives and reflexives can not be fed.

In these embedded finite declarative clauses, both C^0 and T^0 have ϕ-features and probe independently. Embedded T^0 will probe both arguments and AGREE with the argument which has plural ϕ-features, i.e., Multiple Agree (Nevins, 2011), e.g., the dashed lines in (4b). However, embedded C^0 will probe, AGREE and attract the structurally highest argument, e.g., the subject, with the solid line in (4b). Importantly, C^0 and T^0 may, but do not necessarily AGREE with same argument, such as in cases where the embedded subject is attracted to embedded Spec-CP and feeds LDA, e.g., Mary in (5), but embedded T^0 AGREEs with the embedded object, e.g., *-eg* 2nd person plural in (5). The independence of the ϕ-probes on embedded C^0 and T^0 can be understood if we assume that embedded C^0 is base-generated with ϕ-features and SHAREs them with embedded T^0, as in (4a). In addition, if we assume that the ϕ-probe on T^0 attracts the argument it AGREEs with to Spec-TP (Coon and Bale, 2013), then we have an argument that both C^0 and T^0 probe simultaneously. This is because movement to Spec-TP should feed movement to Spec-CP if C^0 has ϕ-features, since it only attracts the structurally highest argument. The fact that such a feeding relationship does not occur, supports the simultaneity, thus independence, of the probes on C^0 and T^0. Additional evidence from subordinate clauses in object control constructions is presented where the absence of tense features on embedded T^0, but the presence of ϕ-feature agreement on embedded C^0 supports: a) the dependency of ϕ-features on T^0 on Feature Inheritance from C^0, and b) the link between ϕ-features on embedded C^0 and movement into the matrix clause, i.e. the movement theory of control (Hornstein, 1999).

(4) a.



b.



(5) geji-**'g** **Mali** ges-al-ugsi-eg
know.VTA-**3** **Mali** like/love-VTA-3>2PL-2PL
'I know **Mary** loves you-all' (≈ I know about Mary, that she loves you-all)

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Predication, Specification and Information Structure in Kinande

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There are currently two competing accounts in the literature for the distinction made by Higgins 1973 between predicational and specificational copular sentences. The 'inverse analysis' (e.g. Moro 1997, den Dikken 2006) posits that specificational sentences are generated from predicational ones via inversion of the predicate to initial position. Mikkelsen 2005 points out that inverse sentences, such as (1A1), have a fixed topic+focus information structure; while non-inverse sentences, such as (1A2) and (2A4) have flexible information structure. On this account, sentence (1A2) is a predicational sentence with subject focus.

(1) Q: Who is the winner?
A1: The winner is JOHN.
A2: JOHN is the winner.

(2) Q: What is John?
A3: #The WINNER is John.
A4: John is the WINNER.

By contrast, the competing 'equative analysis' (e.g. Heycock & Kroch 1999) posits that both phrases in specificational sentences such as (1A1) are referential. Following Kuno & Wongkhomthong 1981, Hedberg & Potter 2010 show that specificational sentences such as (1A1) and predicational sentences such as (2A4) surface with different copulas in Thai. Crucially, sentences such as (1A2), which they term 'reverse specificational,' occur with the same copula as (1A1). They argue that such reversibility is evidence for the **equative** nature of specificational sentences in Thai.

In this paper, we argue that facts from the Bantu language Kinande support the **inverse** analysis of specificational sentences in that language. Like Thai, Kinande exhibits two different morphemes for connecting two nominals in copular sentences; and reverse-specificational as well as specificational sentences exhibit one morpheme while predicational sentences exhibit the other morpheme. However, just as in predicational sentences, the second nominal in reverse-specificational sentences is marked as a syntactic predicate. The difference is only that the subject is focused. We argue that den Dikken's 2006 inverse-analysis theory of relators and linkers successfully explains all of the Kinande data under the assumption that those categories can be realized as topic and focus heads in the left periphery.

The sentence in (4) answers the question, 'What about the war?' and is an ordinary subject-predicate sentence with a copula connecting the two nominals. We claim that NI is a (non-agreeing) copulative RELATOR in the sense of den Dikken 2006, which serves to mediate the predication of 'being a problem' to 'the war', as shown in the analysis in (5). Kinande doesn't have definite or indefinite articles. Although in-situ referential objects can take prefixed augments, complements of NI cannot take augments. Lack of an augment indicates that they are syntactic predicates.

(4) olúhi **ni** mbúga
aug.11war COP 9.problem
'The war is a problem.'

(5) [$_{RP}$ oluhi [$_{R'}$ [**RELATOR=COP NI**] [mbuga]]]

The specificational sentence in (6) and its reverse-specificational counterpart in (7) both constitute ways of answering the question, 'What is the problem?'. Note that specificational sentences involve a different copular element: LO.

(6) émbugá **lô** lúhi (Augment realized tonally on preceding syllable.)
aug.9problem 11FOC aug.11war
'The problem is the WAR.'

(7) olúhi **ló** mbúga
aug.11war 11FOC 9.problem
'The WAR is the problem.'

In both cases, 'war' is focused, and the mediating element, LO, agrees with the focus in noun class. The final nominal in (6) has an augment, which indicates it is referential. However, the final nominal in (7) lacks an augment, indicating that it is syntactically predicative despite its definite translation into English and its pragmatic status as topical by virtue of repeating material from the eliciting question. This nominal is clearly marked as a syntactic predicate, consistent with the inverse analysis.

We propose that (7) receives the analysis in (8), following den Dikken's claim that predication can be mediated by RELATORS instantiated by a variety of functional heads, here FOCUS (FOC). FOC agrees with the nominal occurring in its specifier.

(8) $[_{RP}$ oluhi $[_{R'}$ [**RELATOR=FOC LO**] [mbuga]]]

Finally, we analyze (6) as an instance of predicate inversion, where the RELATOR (here again FOC) agrees with the nominal in its specifier and then raises to an external functional head, here TOPIC (TOP), and merges with it, thereby licensing the non-minimal movement of the predicate across the subject. The initial predicative nominal obligatorily contains an augment, indicating that it is a reduced relative clause of the type found also in headed relative clauses, as shown in (9).

(9) a. e-netbook e-nyihyaka
aug-9.netbook aug-9.new
'a netbook which is new'

b. a-ba-lume a-ba-genda
aug-2-man aug-2-left
'the men who left'

A more accurate translation of (6) then is 'That which is a problem is the war.' We note that inversion, as proposed by den Dikken, is motivated as a means of licensing the reduced relative in its headless state. Our analysis of (6), shown in (10), thus instantiates den Dikken's LINKER schema shown in (11).

(10) $[_{TopP}$ embuga$_j$ $[_{Top'}$ [**LINKER=TOP+RELATOR=FOC LO**]$_i$ $[_{RP}$ luhi $[_{R'}$ t_i $t_j]]]]$

(11) $[_{FP}$ PREDICATE$_j$ [**F+R$_i$** $[_{RP}$ SUBJECT $[_{R'}$ t_i $t_j]]]]$

Topic and focus structure is independently motivated in Kisnande. It has been argued (e.g., Baker 2003) that in a typical SVO sentence in Kinande, the subject must be dislocated. Schneider-Zioga 2001, 2007 identifies this dislocated position as specifier of topic position. This view accounts for the fact that a focused expression is ungrammatical as a simple preverbal subject (data is ours here):

(12) *[Kutse Kambale kutse Marya] agenda
[or Kambale or Mary] 3sg.left
'Either Kambale or Mary left.' (I'm not sure who.)

In order for the preverbal subject to receive a focus interpretation, it must be immediately followed by a focus marker. We take this to indicate it occupies a specifier of focus position:

(13) [Kutse Kambale kutse Marya] **yo** wagenda
[or 1Kambale or 1Mary] **1FOC** anti-agr.left
'Either Kambale or Mary left.' (I'm not sure who.)

When both topic and focus occur in the left periphery in Kinande, the order is fixed: focus is subordinate to topic. This follows if the left periphery of Kinande is structured according to Rizzi's 1997, 2004 cartographic approach to topic and focus.

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Syntactic effects of allocutive agreement

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Issue. Current studies in formal syntax provide evidence for the syntactization of conversational pragmatics. For example, Miyagawa (2012) shows evidence that the verb ending encoding the addressee in Basque (i.e., allocutive agreement) involves the narrow syntax because it occurs in complementary distribution with the verb ending for subject-verb agreement in 2nd person. In this paper, I show that allocutive agreement marking does not necessarily entail a complementary distribution in relation to the subject-agreement marking, but that complementarity versus co-occurrence of the two types of marking are the effects of two types of movement in the clause (i.e., head-to-head movement of V for the former versus CP movement for the latter). The data come from Romanian (R) imperative clauses.

Key data. In R, the order between the personal ending *–ţi* (2PL) and the clitic pronoun can be reversed in imperative clauses (1); (1a) is the default, whereas (1b) is the marked word order.

(1) a. Duceţi-***vă*** la lucrul vostru cel fămeiescu
go.IMP.2PL=REFL to work.the your the womanly
'Go to your housekeeping tasks' (C. Pop 2 III Bertoldo {196})

b. Duce-***vă*-ţi** de la mine, blestemaţilor, în focul cel veacinic
go.IMP=REFL=2PL from of me cursed.the.VOC in fire.the the eternal
'Cursed sinners, get away from me and burn in the eternal fire.' (Antim {354}).

Objectives. First, I argue that *–ţi* encodes the subject-verb agreement in (1a) but the allocutive agreement in (1b). Second, I show that (1b) involves the movement of V to the head where the allocutive agreement is checked. Alternatively, CP movement to the respective Spec may also fulfil the checking of the allocutive agreement feature, while also allowing for the presence of the subject-verb agreement marker *–ţi* on the verb within CP.

Previous studies. The alternation in (1a, b) was signalled for other Balkan languages (Albanian, Southern Italian dialects, Serbian; Joseph 2010). For Romanian, historical linguists argued for prosodic metathesis due to analogy with other morpho-phonetic units, the term of comparison being different for each analysis (e.g., Byck 1935; Mării 1969). These accounts are language internal and cannot explain the Balkan Sprachbund property of this construction. Kallulli (1995) discusses Albanian equivalents and proposes a verb excorporation analysis, which is inadequate for Romanian data.

Framework. Instead, I adopt the proposal in Miyagawa (2012 et seq), where an addressee feature is mapped to the Speech Act head that selects the CP, and which is lexicalized morphologically on the verb form. His data come from Basque, where the biological gender and status of the addressee are encoded through verb endings. Thus, the addressee is mapped as an interpretable [2nd person] (see also Zanuttini 2008; Isac 2013) which, cross-linguistically, may or may not be further associated with uninterpretable phi-features (i.e., [*u*phi] in SA (distinct from the [*u*phi] on T). The reason for adopting this analysis is that gender and/or age distinctions were also noticed in the speaker's option for (1b) versus (1a), in addition to an obligatory number marking, for plural versus singular (Mării 1969). Furthermore, I assume that the imperative verb moves to C (Rivero & Terzi 1995; Han 1998 a.o.), above the TP field, where clitics (ClP) are merged in Romanian (Alboiu 2002; Giurgea 2011 a.o.), and this movement is in complementary distribution with the negation *nu* 'not' (Isac 2013). Hence, the underlying structure in (2):

(2) $[_{SAP}$ SA $[_{CP}$ $C_{T+v/V}$ $[_{TP}$ $[_{ClP}$ Cl] $<T_{<v/V>}>$ $[_{vP}$ <v/V>…]]]]

Hypothesis. In (2), the imperative V moves to C to derive (1a), but to SA to derive (1b). The latter is triggered by the presence of [*u*phi] clustered with [2nd p] in SA. Number in Romanian is the key [*u*phi]/SA feature because it is associated with politeness when it comes to the inter-personal relation between speaker and addressee (Hill 2014).

Analysis. Frâncu (1981) points out that, chronologically (18th c.), (3) precedes (1b).

(3) ***Întoarce-vă*** cătră mine
turn.IMP=REFL towards me
'Return towards me' (NB 10,211/10 apud Frâncu 1981: 84)

The imperative in (3) is interpreted as [2nd] plural, although the ending *-ţi* is absent. This is possible only with reflexives; verbs with other voice value have obligatory *-ţi* for [2nd] plural. I take this as an indication that the reflexive pronoun, which is normally a mixed XP/X category in Romanian (Dobrovie-Sorin 1994), is reanalyzed as X in (3), by being merged in T. Crucially, this is facilitated by the post-verbal position, where the clitic is reanalyzed as a suffix. Thus, *vă* spells out the [*u*phi]/T instead of *-ţi*, so *-ţi* is available to spell out the allocutive agreement, i.e., it is reanalyzed in SA, deriving (1b), which is, predictably, generated by a reflexive verb. Thus, in (3), the string <V+refl> moves to C; while in (1b), *-ţi* in SA triggers further C-to-SA, deriving the morpheme ordering by Baker's (1985) Mirror Principle, through head-to-head movement.

Support for *-ţi* as allocutive agreement comes from its double spell-out in (4), by the 19th c.[1]

(1) Împle**ţi-vă-ţi** muzeul de săpături, inscripţii
fill.IMP.2PL-REFL.2PL-2PL museum.the of diggings inscriptions
'Fill your museum with diggings and inscriptions' (Bolliac apud Frâncu 1981: 87)

In (4) the reflexive preserves its mixed XP/X status, so head-to-head movement is excluded. Indeed, this is the configuration in which other clitics (rarely) surface in alternation with the reflexive *vă* (see 5).

(5) **Crede-mă-ţi** că nu se poate.
believe.IMP-CL.me-2PL that not SE_{ARB} can
'Believe me (plural addressee), that is not possible.' (CPV 251 apud Frâncu 1981: 84)

(4) and (5) arise from V-to-C (above ClP), followed by Remnant CP movement to Spec,SAP. Table 1 summarizes the spell out of [*u*phi]/T and [*u*phi]/SA in Romanian imperatives.

	*u*phi/T ([2nd p] plural)	*u*phi/SA ([2nd p] plural)	movement
Default (any verb)	+	-	V-to-C
reflexive verbs	-	+	V-to-C-to-SA
reflexive verbs	+	+	CP-to-Spec, SAP
active voice	-	+	CP-to-Spec, SAP

Conclusion. Allocutive agreement arises from feature identity between the reflexive pronoun *vă* and the *u*phi/T mark *–ţi* when they are both post-verbal. Variations follow from options w.r.t. the type of XP or X movement, and from whether the X reanalysis of *vă* applies or not. Prediction: allocutive agreement arises only when *vă* is post-verbal; hence, it is out in V-to-T structures (e.g., with indicatives) but possible with V-to-C (e.g., regionally attested on gerunds, which have no *u*phi/T; *bucurându-vă-ţi* 'enjoying=REFL=2^{ND}PL' in Frâncu 1981: 89).

Implications. This analysis can cover the variation in the computation of the addressee in Balkan languages. E.g., in Old Romanian texts, the free morpheme *ni* (a PIE mark for 2nd p plural; Rasmussen 1985) was used for direct addresses; this morpheme vanished just before the forms in (3) start to appear. This signals a switch in the type of allocutive agreement marking, from *ni* to *–ţi*. Moreover, *ni* is the Albanian suffix for 2nd p. plural and it is involved in morpheme alternations similar to those in (1a, b) (Kallulli 1995). A closer look at the Albanian data reveals two types of *ni* in the language: a suffix that spells out *u*phi/T; and a clitic that spells out *u*phi/SA. The clitic (vs suffix) status of the allocutive agreement morpheme accounts for the exclusive CP-to-Spec, SAP in Albanian, and for the lack of restrictions w.r.t. to voice values on verbs (i.e., versus high preference for reflexives in R).

[1] There is double spell out, but no adjacency *–ţiţi*, due to haplology. This rules out subjunctive surrogates, where adjacency is unavoidable after the CP is emptied, and X-to-X movement is unavailable.

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Grammatical agent-based modeling of typology

Motivation, overview. What effect does learning have on the typological predictions of a theory of grammar? One way to answer this question is to examine the output of agent-based models (ABMs), in which learning can shape the distribution over languages that result from agent interaction. Prior research on ABMs and language has tended to assume relatively simple agent-internal representations of language, with the goal of showing how linguistic structure can emerge without being postulated *a priori* (e.g. Kirby and Hurford 2002, Wedel 2007). In this paper we show that when agents operate with more articulated grammatical representations, typological skews emerge in the output of the models that are not directly encoded in the grammatical system itself. This of course has deep consequences for grammatical theory construction, which often makes fairly direct inferences from typology to properties of UG. *We argue that abstracting from learning may lead to* ***missed opportunities*** *in typological explanation, as well as to* ***faulty inferences*** *about the nature of UG.*

Model structure. We generate languages using a very simple agent network, which we take as an initial idealization; we will also present some comparisons with alternative types of network. Two agents repeatedly learn from one another, with one being randomly selected as the teacher on each learning trial. The result of multiple runs of this model yields a distribution over the languages that the grammatical model can represent. This approach to language generation could be instantiated with a range of grammar and learning theories; our work to date has focused on Maximum Entropy grammars (MaxEnt; Goldwater and Johnson 2003) learned with a sampling version of stochastic gradient ascent (Jäger 2007). As in Optimality Theory, candidates compete as the output for a given input. On each trial, an input is randomly chosen, and the teacher and learner each sample from the distribution over outputs defined by its MaxEnt grammar. If these outputs differ, the learner updates its constraint weights using the delta rule, thus moving probability onto the teacher's output. All simulations reported here started with weights at zero, and had a learning rate of 0.1.

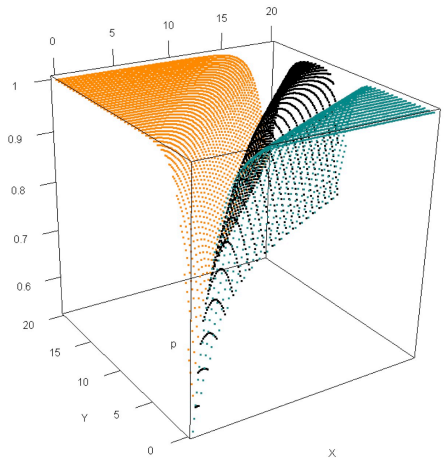
Missed opportunities? Because the output of our ABMs yields a gradient frequency distribution over languages, typological predictions are generated that go beyond the categorical possible *vs*. impossible distinction of grammatical models operating on their own. As an illustration, we take a case of typological gradience that has been claimed to follow from grammatical models having a particular structure. We show that it does, once learning is incorporated into typological explanation.

The postulation of feature geometric nodes (Clements 1985, McCarthy 1988, Sagey 1990) or of feature classes (Padgett 2002) has been claimed to account for the greater prevalence of processes that target multiple features within a class than those that target unrelated features. For example, the existence of a consonantal [place] node or class is meant to explain the relative prevalence of processes that target labials, coronals, dorsals and pharyngeals, as opposed to ones that would target unrelated features, for example labials along with consonants that are either [+voice], [–continuant] or [+sonorant]. This explanation does not go through without some auxiliary assumptions – in classic feature geometry a preference for simple linking or delinking rules was often cited, though without any specific proposal about the form or location of that bias.

Taking the case of feature classes (Padgett 2002), adding a constraint that refers to an entire class does not change the set of languages that the grammatical theory can generate. For example, adding general NoCoda[Place] and Ident[Place] to a constraint set that already has specific NoCoda and Ident constraints for each of the individual features (e.g. NoCoda[Labial] and Ident[Labial]) does not affect the ability of the theory to generate coda neutralization or non-neutralization for any subset of the features, for both place features and any others. It does, however, affect the outcome in our ABM incorporating these constraints.

We ran a simulation with 4 tableaux, representing four places of articulation in final position, with either preservation of place or delinking as candidates. Preservation violated both the specific and general NoCoda constraints and delinking violated the specific and general Ident constraints. In 40/50 runs of 10,000 trials each, neutralization occurred as the highest probability candidate in all tableaux, or none. When we repeated the simulation leaving out the general NoCoda[Place] and Ident[Place] constraints, the count for uniform application of neutralization across places of articulation was lowered to 10/50, close to the 0.125 expected by chance. This second simulation can be taken to represent the outcome for a set of unrelated features, thus showing that this grammatical ABM does capture the desired general typological skew. A notable feature of this explanation is that it does not require a stipulated learning bias – generalization comes from the fact that weight updates affect both the specific and the general constraints.

Faulty inferences? The grammatical framework we adopt has two properties that set it apart from those that are typically used in the modeling of typology in generative linguistics: it is probabilistic, and it can represent cumulative constraint interactions, or gang effects. The output of the full ABMs that we have studied to date, however, tend toward categoricity and non-cumulative interactions. Both of these can be seen in the output of a simulation that used the two tableaux below. The indicated candidates show a cumulative interaction – these candidates have highest probability in their tableaux if the weight of Con-X is greater than that of Con-Y, but still less than twice the weight of Con-Y. The zero initial weights give both candidates in each tableaux equal probability, and we stopped the simulations when the probability of one of the candidates in each tableau, averaged across the agents, was at least 0.95 (mean *n* trials = 2709). When we let simulations run longer, we find that once they reach this level of categoricity, it tends not to decrease. A tendency towards categoricity emerges in these simulations because as the probability of one of the candidates approaches 1, updates are less frequent (since the agents more often choose the same candidate), and weight changes have less of an effect (due to the use of exponentiation in the calculation of MaxEnt probability). The output of this ABM also displays a strong tendency away from the cumulative interaction shown in the tableaux. There are three pairs of candidates that can be jointly given greater probability than their competitors: (A, C), (B, D), and the one shown, (A, D). Over 1000 runs, 312 produced (A, C), 688 produced (B, D), and none produced (A, D). Randomly sampling weights from a uniform positive bounded distribution yields 0.5 (B, D), 0.25 (A, C), and 0.25 (A, D). The absence of cumulative patterns in the output of the ABM is likely in part due to the overlap in the weight space between non-cumulative and relatively categorical patterns. This can be seen in a graph that plots weights of X and Y from 0 to 20 against average candidate probability, for the three patterns. Relatively little of the high probability space is occupied by (A, D), in black.



This result, along with the others that we will present, raises the possibility that it may not be safe to infer that UG must be categorical and non-cumulative to account for observed typological tendencies in those directions.

Tableau 1	Con-X	Con-Y
→ Can-A		*
Can-B	*	

Tableau 2	Con-X	Con-Y
Can-C		**
→ Can-D	*	

Conditionals in Turkish and their absence

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If one looks up conditionals in Turkish grammars, one is invariably presented with the affix –sA, or the "copular" variant (y)sA, which are glossed as "conditional" and appear in the conditional protasis. The following is from Goksel and Kerslake 2005 (G&K) (p. 420):

1. [Yorgun-lar-**sa**] yarin-a birak-abil-ir-iz
   [tired -3PL-**COND**.COP] tomorrow-DAT leave PSB-AOR-1PL
   'If they are tired, we can leave [it] till tomorrow'

In this paper I argue that the description of –sA as the locus of conditional semantics is wrong. I will propose instead that –sA is a marker of correlative syntax, and that it appears in conditionals because conditionals are correlatives syntactically (Geis 1970). If this conclusion is correct, it follows that (1) receives a conditional semantics without any overt morphological marker of conditionality. The significance of this conclusion is discussed in the second part of the paper.

I. –sA does not introduce conditional semantics.

In addition to light-headed relatives (Citko 2004, Kornfilt 2005), Turkish has **F**ree **R**elatives:

2. [Sen ne pişir –di **-yse** -n] yi-yeceğ-im.
   [you what cook-past –**SA** -2.sg.] eat-fut.-1.sg.
   'I'll eat what(ever) you cooked.'

FRs contain –sA, which is still glossed in such sentences as 'conditional' by G&K and others. However, there are reasons to conclude that in FRs, there is no conditional semantics, including:

A. One might be tempted to call (2) a conditional, given its close paraphrase of *If you cook something, I will eat it*. However, this is only because (2) is generic. FRs can contain actualized events, which do not permit a conditional paraphrase, yet -sA is still there:

3. [Ne pişir -di **-yse** -n] ye-di -m.
   [what cook-past-**SA**-2.sg.] eat-past-1.sg.
   'I ate what you cooked.' (**If you cooked something, I ate it*)

B. The FR can be the answer to a question about an individual, which would have been impossible if it was a conditional antecedent:

4. A: Kim-i iş-e al-dı-n?
   who-acc. work-dat. take-past-2.sg.
   'Who did you hire?
   B: Kim-i tavsiye et-ti **-yse**-n.
   who-acc. recommendation do-past-**SA**-2.sg
   'Who you recommended.' (**If you recommended him*)

C. A conditional consequent does not need to contain an argument coreferent with an argument in the antecedent (*If he comes, we will go to the park*). But with FRs, it is not possible to have a "consequent" without an argument corresponding to the wh-word in the "antecedent":

5. *Kim gel-ir-**se** ben-i uyan-dır!
   who come-aor.-**SA** I-acc. wake-caus(-imp)
   Lit: "who comes-**SA**, wake me up". Intent: 'If everyone/a/the person comes, wake me!'

I conclude then, that despite the presence of –sA, FRs do not have conditional semantics. Furthermore, **I show that (2) has the full gamut of syntactic and semantic properties of Hindi correlatives** (Srivastav 1991, Bhatt 2003), including the use of correlative proforms:

6. Prenses [yarış-ı kim kazan-ır-**sa**] **on-u** iş-e al-acak.
   princess [race-acc. who win-aor.-**sA**] **he-acc.** work-dat. take-fut.
   'The princess will hire whoever wins the race.'

In short, Turkish has correlatives, contra Liptak 2009, p.10, who argues that rigid verb-final languages like Turkish lack correlatives (see also Kornfilt 1997).
Moreover, -sA appears in a type of comparatives (not conditionals!) which den Dikken 2005 argues always appear as correlatives, even in languages without productive correlatives:

7. Ne kadar fazla iç -ti **-yse** o kadar fazla bağır-dı.
what much more drink-past.- **SA** that much more scream-past.
'The more he drank the more he screamed.'

Thus: –sA is present in (1, 2, 3, 4B, 6, 7) because these constructions have undergone the syntactic strategy of correlativization. In short: Conditionals (1) contain –sA because they are syntactically correlatives, not because –sA has conditional semantics.
(The homophonous contrastive topic marker –sA will also be discussed in this context, and it will be shown, among other, that Turkish conditionals are not topics, contra Haiman 1978.)

II. Conditional semantics without conditional morphological markers

If Part I is correct, we are inevitably led to the conclusion that there is no overt morphological marker for conditional semantics in Turkish (*eğer* "in case" is at most optional, and sometimes impossible). I argue that the absence of a dedicated conditional marker is not a problem and that moreover, one should in general not expect a uniformity (of presence or of form) of conditional markers. Even in English, one does not need *if p,q* morphosyntax to make a conditional:

8a. Study harder or you will fail
b. She looks at him and he shies away in fear (**C**ullicover&**J**ackendoff 1999)
c. One more mistake and you are fired
d. To walk in the park would be great
e. Standing on a chair, he can reach the ceiling (Stump 1985)

If we assume Kratzer 2012's semantics for conditionals, where one clause restricts a quantifier over worlds and another clause is its scope, what we need from the morphosyntax is an indication as to which clause is the restrictor and which clause the scope. One such indication can be seen in the syntax of *if p, q*, but also, for example, in the incommutability of the conjuncts in (8b,c) (the other cases will be discussed as well). If this argumentation is correct, then it is not a worry that sentences like (1) yield a conditional semantics without a dedicated morphological marker. It will be shown that the bracketed clause in (1) provides a description of worlds and that the correlative syntax results in the correlative itself being the restrictor of a quantifier, just as it is in correlatives that restrict a quantifier over individuals. In other words, I show that the syntax of (1) suffices for the mapping to conditional semantics and no morphological marker is needed.

I will discuss the significance of this conclusion by highlighting how widespread the misguided assumption is that one needs a *particular* morphosyntax to achieve a conditional interpretation. For example, C&J treat (8b, c) as a case of a syntax/semantics mismatch. Their argument: there is no syntactic derivation that can change a coordination into a subordination (p *and* q ≠> *if* p, q). Therefore, they argue, the basic tenet of a syntactic level like LF which interfaces with semantics is wrong. I argue against this rationale: C&J compare the **syntax** of coordination to the **syntax** of *if p, q*, which is indeed an impossible derivation. But the **syntax** of *if p, q* is not the same as **conditional semantics**. It is just one of several syntactic structures that can receive a conditional interpretation. To prove a syntax-semantics mismatch, one needs a semantics for the semantic side of the "mismatch" and to show that it cannot be derived compositionally from a certain syntax. Instead, C&J give syntactic structures for both sides, because they wrongly identify **conditional semantics** with the **syntactic structure *if p, q***.

Restructuring and adjectival small clauses

Monica Alexandrina Irimia

The puzzle. Recent contributions to the debate on the structural architecture of small clauses (SCs) have provided new insights into Williams's (1983) puzzle – a dilemma arising when SCs are compared to embedded infinitives. As seen in Williams's (1983) original examples in (1), a lowered (narrow scope) interpretation (via reconstruction below the intensional embedding predicate, see May 1977, 1985, etc.) is absent for the indefinite DP (called here *shared argument*) in a small clause, but not in an infinitive:

(1) a) A student seems sick. b) A student seems to be sick. (ENGLISH)
a student > seems; # seems > a student a student > seems; seems > a student

Williams (1983) attributed the lack of narrow scope readings with SCs to the inexistence of a subject position inside the small clause. More recently, Sportiche (2005), as well as Moulton (2013) have challenged this conclusion. Under the assumption that the quantificational force of noun phrases is dependent on heads situated in the extended projection of the clause (Hallman 2000, Beghelli and Stowell 1997, etc.), the two accounts solve the puzzle by assuming that adjectival (Adj) SCs are too small to contain the heads relevant for nominal quantification licensing, while still housing a subject position (*clausal analysis* - CA). This talk has a two-fold organization. First, it evaluates CA predictions against some previously unaddressed SC data (among other tests); it shows that the CA cannot derive them, hence reinstating Williams's puzzle. Second, it proposes that a *mono-clausal restructuring* analysis (Cinque 2006, Wurmbrand 2006, etc.) gives adequate results. The proposal also assumes phase-based syntactic computation (Chomsky 2000 et subseq.), taking the merge of non-thematic shared arguments as driving labeling (Chomsky 2013, 2014). **Small clauses as clausal.** Moulton's (2013) crucial insight is that lowered, narrow scope readings are possible in SCs when the predicate is a *modal adjective* (MA), like *necessary, obligatory*, etc. This is illustrated in (2):

(2) a) A new solution seems necessary. But none presently exists. (ENGLISH)
b) A new solution seems available. # But none presently exists.

For Moulton (2013) MAs are like intensional intransitive verbs that embed covert clausal material; the covert clause contains some of the functional structure that licenses quantification. This allows the subject to be interpreted narrowly with respect to the embedded predicate, and hence take narrow scope under the matrix predicate (while non-MAs do not contain the relevant clausal structure and hence cannot license quantification). However, this assumption creates a tension with other well attested properties of AdjSCs. Some of these properties are listed below in i-vi: **i**) non-modal adjectives do permit narrow scope readings for their complements (as initially noted by Williams 1983). See the examples below from Finnish (language selected to avoid overt adpositions that might introduce independent domains of quantification; similar facts are seen in German, Russian, etc.):

(3) Miehet pitävät oppilaita ilois-i-na talo-a. (FINNISH)
Man.PL.NOM. consider.PRES.3.PL. student.PART.PL. happy-PL-ESS. house-PART.
'The men consider the students happy with a house.' (specific house/some house or other)

ii) previously unaddressed data indicate that the 'quantification picture' is more complex. As an example, languages that allow differential object marking (DOM) show the typical schema illustrated by Romanian in (4): a) non-differentially marked objects (whose position is nevertheless diagnosable as high in the domain of the embedding predicate – that is they pass tests in Lasnik and Saito 1991, and Postal 1974, etc.) allow scopal lowering; b) DOM blocks scope narrowing with all adjectives in SCs (4c), while permitting it with infinitives (4d):

(4) a) Consideră o studentă inteligentă. b) Consideră o studentă necesară.
Consider a student.F.SG. intelligent.F.SG. Consider a student.F.SG. necessary.F.SG.
a student > consider; # consider > a student // a student > consider; consider > a student
c) (O) consideră ***pe*** o studentă necesară.
CLT.3.SG.F.ACC. considers DOM a student.F.SG. necessary.F.SG.
a student › consider; #consider › a student
d) (O) consideră ***pe*** o studentă a fi necesară.
CLT.3.SG.F.ACC. considers DOM a student.F.SG. to be necessary.F.SG.
a student > consider; consider > a student (ROMANIAN)

As lowered interpretations are connected to movement under theories of scope reconstruction (either syntactic – Fox 1999, Heycock 1995, or semantic – Cresti 1995), the absence of the lowered readings in (4c) cannot be explained under the CA and taking MAs as containing covert clausal material. Before raising, both DOM and non-DOM arguments should have the same status below the intensional predicate (as shown by 4d). Also note that the DOM argument and the adjective must be in the same phase (at least) at some point in the derivation as otherwise φ (γ and #) and case agreement cannot be captured in a non-stipulative way; **iii**) for the CA to go through, MAs must be seen as being exceptional among adjectives; **iv**) a more detailed cross-linguistic examination reveals that AdjSCs, although deficient in relevant respects, can exhibit rich structure (negation, adverbials, etc. – see Starke 1995); **v**) adjectives (both MA and regular ones) allow degree quantification, which has been shown to scopally interact with DPs (e.g., Matushansky 2001); **vi**) the observation that lowering feeds Condition C does not force a clausal account; data from Icelandic (6) show that a possible position for the shared argument is immediately above V, but below the dative argument and *v* (adverb placement delineates the object in the domain of V and verb raising across it):

(5) # Papers about Quine$_1$'s philosophy seem necessary to him$_1$. (Moulton 2013, ex. 10)

(6) Það virðist einhverjum manni hestarnir (Adv) (vera) seinir.
There seems some man.Dat. horses.the.Nom (be) slow.

Two types of restructuring with small clauses. It is proposed here that this tension can be solved by assuming that embedding intensional verbs with AdjSCs are in fact true *restructuring* predicates in a mono-clausal configuration; following Cinque (2004, 2006), such restructuring material is inserted directly in the head position of a corresponding functional element whose semantics it matches (7):

(7) $[_{CP}\ldots[_{FP}\ldots[_{FP}\ V_{restr}\ [_{FP}\ldots[_{AP}\ A]]]]]$ (8) $\ldots.[_{VP}\ V_{Lex\ Restr}\ [_{AP}\ A]]$

Empirically, predicates that can embed APs are a subclass of the better studied infinitival and VP embedding ones: *modal*, *mental ability*, etc. And cross-linguistically they pass strict restructuring tests, such as clitic climbing (Rizzi 1976, 1978, Stowell 1991), quantifier climbing, or even overt 'incorporation' of the adjective (as illustrated by the various contributions in Himmelmann and Shultze – Berndt 2004). However, Cinque's *functional* restructuring analysis in (7) predicts that such heads cannot have any arguments of their own or thematic roles to assign (the thematic roles are assigned by the embedded lexical category – the adjective). This assumption might make the right prediction for *seem*, but is clearly not sufficient for the *consider*-types ('declare', 'announce', etc.). Even if *consider* does not introduce a *thematic* object (DP internal argument), as expected under restructuring, its subject appears to behave like a true external argument cross-linguistically. These facts suggests that Adj embeddings employ a second source of restructuring which is *lexical* (as in 8 – Wurmbrand 2004). *Consider* classes pass relevant tests confirming lexical restructuring: passivization of the non-thematic raised object (facilitated by the existence of an external argument), non-rigid ordering restrictions, etc. What both classes have in common nevertheless is that the shared argument is merged immediately above the restructuring head (as illustrated by the Icelandic example for *seem*), but below *v* (for the high object of *consider* classes, with further head raising of the embedding lexical restructuring head). Following Chomsky (2013, 2014) the merger of the DP in this precise position is required for labeling – restructuring predicates are too weak to label. The restructuring account derives the major properties of these constructions (among which the data in (4) without postulating a subject position inside a putative Adj SC. What still needs to be explained are the scopal interactions with MAs in non-DOM objects. The interactions in (2) can be derived from two assumptions: a) there are (at least) two sources for the wide-scope readings of high objects (López 2012, de Hoop 1996, etc.) – some objects (especially non DOM ones) have (default) strong interpretations due to their position (above V), but interactions with other local quantifiers can provide weak readings; other objects (strict DOM) can only have wide scope and show insensitivity to further quantificational material; b) adjectives (covertly) raise into the domain of embedding V (see Stowell 1991), allowing the MA operator to provide scope narrowing for those objects that are not insensitive to further quantification.

Phonotactic Probability and Sonority Sequencing in Polish Initial Clusters

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The Sonority Sequencing Principle (SSP) states that syllables with a sonority rise in the transition from the onset to the nucleus are preferred cross-linguistically. Experimental evidence indicates that English speakers exhibit gradient sensitivity to the SSP even for onset clusters that are not attested in English (Davidson 2006, 2007; Berent et al. 2007; Daland et al. 2011). Berent et al (2007) argue that there is no direct lexical evidence for these preferences and suggest that the principle may therefore be innate. However, Daland et al. (2011) show that computational models that are able to form generalizations on the basis of phonological features can detect SSP preferences on the basis of English lexical statistics. This paper explores this controversy using computational and developmental approaches in a language (Polish) with very different sonority sequencing patterns from English. There are two main contributions: 1) using computational modeling, we show that the basic lexical statistics of Polish contradict the SSP, favoring onset clusters with sonority plateaus, and 2) we show that children nonetheless exhibit sensitivity to the SSP, favoring onset clusters with a sonority rise.

The data for all analyses comes from the Weist-Jarosz Polish Corpus available via CHILDES (Weist and Witkowska-Stadnik 1986; Weist et al. 1984; Jarosz 2010). The corpus includes transcriptions of child-directed speech, which were used to estimate the phonotactic probabilities of initial clusters with various sonority profiles in the language input. Following Daland et al., we use Clement's (1988) coarse-grained sonority scale: Obstruent (0) < Nasal (1) < Liquid (2) < Glide (3) < Vowel (4). Table 1 shows the relative frequencies of clusters C_1C_2 varying in the degree of sonority rise from C_1 to C_2. Regardless of whether input statistics are computed based on the lexicon (type frequency) as in Daland et al. or based on word tokens (token frequency), the input provides strong evidence in favor of sonority plateaus (sonority rise of 0), contrary to the SSP. The situation is not improved by considering the relative frequencies of individual sonority profiles (Table 2) or by splitting fricatives and plosives into separate sonority classes (not shown) because roughly half of all onset clusters in the input are composed of two obstruents, and fricative-plosive clusters are the most frequent among these. Thus, if speakers of Polish are using these statistics to construct preferences about the relative well-formedness of onset clusters, a preference in favor of sonority plateaus is expected.

We further examine these predictions by performing several computational analyses with the developmental data. Numerous previous studies have used developmental data to demonstrate children's sensitivity to phonological principles like the SSP (Gnanadesikan 2004; Pater 1997; Pater and Barlow 2003) and other principles of syllable well-formedness (Fikkert 1994; Demuth 1995; Fee and Ingram 1982; Vihman 1992; Levelt et al 2000; Lleó and Prinz 1996). Although such sensitivity has been demonstrated in phonological acquisition across many languages and domains, the debate regarding the source of such knowledge (whether it can be learned, and, if so, from what information) continues. Part of the challenge in disentangling competing hypotheses regarding the origin of principles such as the SSP is due to the fact that cross-linguistic generalizations are often mirrored by language-internal statistics. For example, English complex codas are less frequent than simple codas, and therefore predictions based on phonotactic probability and innate principles align. Polish therefore provides an important test case because several straightforward ways of calculating phonotactic probability for onset clusters (as described above) make predictions for acquisition that are contradictory to the SSP.

In the first developmental analysis we test whether Polish children are sensitive to the SSP. We fit logistic regression models to analyze the children's production accuracy on initial

clusters varying in sonority profile while statistically controlling for other factors that may influence accuracy. We considered control predictors for phonological context (stress, identity of the adjacent vowel), subject, age, and word frequency. The predictor of interest, SSP, assigns a numerical value to each cluster (n=1334) based on the degree of sonority rise, as in Table 1. After inclusion of all five control predictors, SSP was significantly predictive of children's production accuracy ($\beta = 0.367$, $z = 6.9$; $p < 0.0001$). The direction of the effect was positive, indicating that children were significantly more accurate on clusters with a higher sonority rise. Therefore, the developmental data from this corpus of child Polish is consistent with the SSP.

In the second set of analyses, we considered several measures of phonotactic probability as predictors of accuracy in the regression models. Log token frequencies of sonority rises (Table 1) and sonority profiles (Table 2) were significantly predictive of production accuracy. However, crucially, the predictions were in the wrong direction: *higher* log frequency of rises ($\beta = -0.89$, $z = -6.2$; $p < 0.0001$) and of profiles ($\beta = -0.38$, $z = -2.9$; $p < 0.005$) was associated with significantly *lower* accuracy. Under the usual assumption that higher probability or frequency predicts greater well-formedness, this confirms the observation made above that these input statistics make predictions for acquisition that conflict with the SSP. Results for type frequency were similar although type frequencies were in general less predictive of accuracy.

In sum, this talk identifies a critical test case in Polish where basic input statics make predictions that are contrary to the SSP. We also demonstrate that children acquiring Polish show sensitivity to the SSP and behave inconsistently with these input statistics. The paper also presents results exploring alternative formulations of phonotactic probability. We find that some phonotactic probability formulations (those that make sonority sequencing generalizations on the basis of simple onsets and those that rely on segmental phonotactics) are more successful at predicting the developmental patterns, and we discuss the properties of these alternative models. However, none of these models fully capture the SSP effect. We discuss the implications of these findings for models of phonotactics and for phonological theory more generally.

Rise	Token Frequency (n = 5215)	Type Frequency (n = 1456)	Examples
-2	0.04%	0.07%	[lvɨ] 'lions'
0	51.3%	47.9%	[ptak] 'bird', [mɲɛ] 'me'
1	3.8%	7.3%	[mlɛkɔ] 'milk', [dmuxa] 'blows'
2	23.5%	22.5%	[klɔtsɛk] 'block', [mjastɔ] 'town'
3	21.3%	22.3%	[pjɛs] 'dog'

Table 1 - Relative Frequency of Sonority Rise Profiles

Sonority Profile	LF	OO	NN	ON	NL	OL	NG	OG
Token Frequency	0.04%	50.90%	0.50%	3.60%	0.20%	20.40%	3.00%	21.30%
Type Frequency	0.10%	47.70%	0.20%	6.70%	0.60%	19.60%	2.90%	22.30%

Table 2 - Relative Frequency of Sonority Profiles (O=obstruent, N=nasal, L=liquid, G=glide)

Select References

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A number of cases of pronominal suppletion

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Overview: We present evidence from suppletion patterns that support the view that morphological case and number are complex. For both case and number: if a pronoun (A) has a suppletive stem (B) in a dependent case or plural number, then oblique cases or other numbers (such as dual) are also suppletive. Based on Bobaljik (2012)'s proposal that such *ABA patterns involve containment among features, we propose that oblique cases always contain dependent cases (cf. Caha 2009) and that for pronouns, the representation of the DUAL contains that of the PLURAL. This paper thus provides further evidence that suppletion obeys abstract patterns of regularity, which may be modeled as containment relations among morphological feature sets.

Background: Recent work on suppletion has shown that suppletion follows strict regularities across languages. Bobaljik (2012) shows for adjectival suppletion that if either the comparative or superlative degree is suppletive, then so is the other: in positive–comparative–superlative triples, attested patterns are AAA, ABB (*bad-worse-worst*) and ABC (Latin: *bonus-melior-optimus*). Crucially, ABA and AAB patterns are not found, leading Bobaljik to conclude that the superlative universally properly contains the comparative, and that suppletion is constrained by structure and locality (see also Moskal to appear and Bobaljik & Harley 2013).

Research questions: Caha (2009) argues from syncretic patterns and affix order that case categories are internally complex: the case markedness hierarchy (1a) is represented as featural containment (1b).

(1a) NOM < ACC < DAT / OBLIQUE (1b) [[[[[√ROOT NOM] ACC] DAT / OBLIQUE]

With respect to number, Noyer (1992), Harbour (2007), *i.a.*, argue that plural, dual etc are not simplex values like [plural], [dual] etc, but rather are more complex, composed of the features [±atomic] and [±augmented]. Number also shows similar typological hierarchies to case, as known from Corbett's (2000) number hierarchy. Dual morphology is at times transparently built upon plural morphology, suggesting containment, such as is the case from Manam (2).

(2)

áine	ŋára	áine	ŋára-di	áine	ŋara-dí-a-ru
woman	that.SG	woman	that-PL	woman	that-PL-LINKER-DL

Given that both number and case are argued to be complex categories, since they show the containment patterns, we expect suppletion to show similar effects to degree morphology. We present the results of surveys of 160 languages (case) and 70 languages (number) that confirm this for pronouns. Specifically, we show: (i) pronouns that show suppletive paradigms for case never show an ABA pattern (where NOM/ABS = A, ACC/ERG = B and DAT/OBL = A); (ii) pronouns that show suppletive paradigms for number always have the dual form patterning with the plural (again, no ABA in singular–plural–dual triples). This is predicted under the hypothesis that case and number each are internally complex categories.

Case suppletion: Regarding suppletion for case, we find numerous instances of ABB, such as:

(3)

	Nominative	Accusative	Dative	PATTERN
Icelandic 1.SG	ég	mig	mér	ABB
Brahui 1.SG	ı	kane	kanki	ABB
Khakass 3.SG	ol	anɨö	aɣa	ABB

All these patterns are in accordance with the generalization of Bobaljik (2012) where it is shown that within complex categories, if an element shows a suppletive stem in some category, then it does not revert back to its base stem in more complex forms. We also find two types of AAB: German (4) and Wardaman (5). The German type AAB patterns crucially do not merely share a stem, but are totally syncretic. This is part of a broader neutralization (NOM and ACC are

distinguished only in the masculine singular), which thus bleeds the investigation of suppletion and may be formally modeled via impoverishment (cf. McFadden 2014 on stem alternations). In Wardaman (5), however, there is a case marker showing that this is not a case of syncretism but appears to be a genuine AAB pattern. This has implications for locality domains: while oblique case contains dependent case, oblique is close enough to a pronominal root to trigger suppletion.

(4)

	NOM	ACC	DAT
3.SG.M	er	ihn	ihm
3.SG.F	sie	sie	ihr

(5)

	ABS	ERG	DAT
3.SG	narnaj	narnaj-**(j)i**	gunga
3.PL	narnaj-bulu	narnaj-bulu-**yi**	wurrugu

ABA is essentially unattested (in the paper we discuss a prima facie ABA example in Archi and suggest an AAA analysis), as predicted. (Lexical nouns do not supplete for case, so do not provide additional data; see Moskal to appear.)

Number suppletion: Number suppletion in pronouns shows exactly the patterns we expect if the dual always properly contains the plural: we find AAA, ABB and ABC but no ABA (nor AAB):

(6)

	Singular	Plural	Dual	PATTERN
Kayardild 2nd person	nyingka	ki-l-da	ki-rr-a	ABB
Kham 2nd person	nɨ	je:	ji-n	ABB

We note however an interesting asymmetry between pronouns and lexical nouns; whereas pronouns suggest the containment [[[singular] plural] dual], data from lexical nouns suggests [[[singular] dual] plural]. Though data on suppletion for dual is scant, a few nouns in Yimas, Lavukaleve, Slovenian, and Hopi show the dual patterning with the singular form.

(7)

	Singular	Dual	Plural	gloss
Hopi	wùuti	wùutit	momoyam	'woman'
Lavukaleve	vo'vou	vo'voul	tulav	'boy'
Yimas	panmal	panmalc-rm	pay-um	'man'

In Hopi and Lavukaleve, the pattern in (7) converges with other morphological evidence that the dual is contained within the plural, not vice versa. E.g., in Hopi, the suppletive plural *momoyam* patterns with a class of nouns in which the plural (marked by partial reduplication) is formed from (thus properly contains) the dual (suffix *-m* or *-t*), Hill & Black (1998). Thus, while nouns and pronouns appear to differ in how number is structured, this difference appears to be systematic across both suppletion and transparent morphological embedding.

Analysis: Our results for case converge with other recent work positing that markedness hierarchies in case reflect proper containment relations among features, though with differences in the details. As to number, the structures motivated by suppletion patterns do not fit neatly with current assumptions about the semantics of number. However, we note that containment relations may re-emerge when only marked values are considered, even in a system like that of Harbour (2011). Extending ideas of Calabrese (2005), Nevins (2011), we suggest that suppletion can be sensitive to either (i) marked values, or (ii) both unmarked and marked values; but crucially not exclusively unmarked values (*cf.* Moskal 2014). For the pronouns, marked [-singular/-atomic] can be a suppletion trigger, grouping dual and plural, and [-augmented], which is marked in the context of [-singular] (Nevins 2011), can be a trigger, singling out the dual.

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An Autosegmental Account of Tundra Nenets Glottal Stop

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The process of final debuccalization in Tundra Nenets presents both a famous descriptive problem (Tereshchenko, 1956; Janhunen, 1986; Salminen, 1997; Nikolaeva, 2014) and a serious theoretical challenge, because of its transparent and opaque interactions with final vowel deletion (Kavitskaya & Staroverov, 2010). This paper proposes a new autosegmental account of Tundra Nenets glottal stop, framed within Stratal OT and building in particular on the ideas in Bermúdez-Otero (2001, 2012). We argue that both nasals and obstruents lose their place finally at the word level, but nasals may regain place specification due to postlexical assimilation. The proposed analysis captures the interactions between debuccalization and vowel deletion. Our account thus solves a problem for Stratal OT by postulating a relatively abstract intermediate step representation.

Problem. The Tundra Nenets data in this talk come from the authors' original fieldwork. In Nenets, phrase-final /t d s n ŋ/ change to a glottal stop (1a). Phrase and word-medially, the obstruents /t d s/ are deleted before another obstruent (with concomitant fortition of a following fricative) while nasals undergo place assimilation, with concomitant voicing of a following obstruent (1b,c).

(1) Alternations of Tundra Nenets underlying obstruents

a. Debuccalization phrase-finally (words in isolation)
   /mʲat/ [mʲaʔ] 'tent'; /sʲin/ [sʲiʔ] 'lid'

b. Deletion and assimilation word-medially
   /mʲat-ta/ [mʲata] 'his tent'; /sʲin-ta/ [sʲinda] 'his tent'

c. Deletion and assimilation across word boundary
   /nʲe-ʔ xʌnʌ/ woman-GEN.PL sledge [nʲe kʌn] 'a women's sledge'
   /nʲe-n xʌnʌ/ woman-GEN.SG sledge [nʲeŋ gʌn] 'a woman's sledge'

Phrase-finally, the vowel /ʌ/ is deleted, and final /ʌ/-deletion counterfeeds debuccalization (2a). Interestingly, a final-syllable /ʌ/ is also deleted before [ʔ], thus debuccalization triggers (or feeds) pre-final vowel loss.

(2) Final syllable vowel deletion in Tundra Nenets

a. Phrase-finally (words in isolation)
   /xʌnʌ/ [xʌn], *[xʌʔ] 'sledge'; /nʲenzʌtʌ/ [nʲenzʌd], *[nʲenzʌʔ] 'otter'

b. Before a final glottal stop
   /mʲelʌd/ [mʲelʔ] 'master'; /ŋebtobertsʲʌn/ [ŋebtobertsʲʔ] 'scissors'

These data present several problems for Stratal OT and in fact for any OT framework. For one thing, debuccalization must be post-lexical since it only applies phrase-finally (1), but at the same time debuccalization must preceed final /ʌ/-deletion (2a). In current versions of Stratal OT there is only one post-lexical level (Bermúdez-Otero, forthc.; Kiparsky, forthc.), and therefore both conditions cannot be met at the same time. More importantly, the two /ʌ/-deletion processes are clearly related, yet they have to be assigned to different derivational stages because debuccalization triggers pre-final /ʌ/-deletion (2b) but fails to be triggered by final /ʌ/-deletion (2a). An important generalization is thus lost.

Analysis. We propose that Tundra Nenets debuccalization should be analyzed as a two-step process. Final glottal stop is placeless, but the loss of place features derives [ʔ] only from obstruents, while nasals also have to lose nasality to yield [ʔ] (McCarthy, 2008). At the lexical level, both word-final obstruents and nasals lose their C-Place specification, but nasals /n ŋ/ retain nasality, thus: /t d s/ → [ʔ]; /n ŋ/ → [N]. /ʌ/-deletion is not applicable at the lexical level.

Post-lexically, the place loss is no longer operative: the constraint against word-final C-Place is demoted below MAX. At this level, a previously created placeless nasal /N/ may either lose its nasality (phrase-finally, as in [sʲiʔ] 'lid') or assimilate to a first consonant of a following word (phrase-medially, as in [nʲeŋ gʌn] 'a woman's sledge'). All words begin in a consonant, so /N/ never ends up before a vowel.

/ʌ/-deletion is active only post-lexically. The two environments for /ʌ/-deletion are unified by assuming that final /ʌ/ is penalized if its place features are adjacent to a word edge, i.e. if it is followed maximally by a placeless glottal stop. This is encoded in the constraint *ʌ-Place]$_{word}$ which dominates MAX only post-lexically.

Post-lexical final /ʌ/-deletion exposes new place-bearing consonants to word-final position (as in [xʌn] 'sledge'), but this cannot trigger debuccalization since the place loss no longer happens post-lexically. On the other hand, the final consonants which lost their place at the word level now expose a preceeding /ʌ/ to a deletion environment, and pre-final /ʌ/ indeed deletes in these cases, e.g. [mʲelʔ] 'master' (2b). Crucially, /ʌ/-deletion does not happen before a placeless nasal when it regains place due to post-lexical assimilation. For example the phrase /nʲenʲetsʲʌN sawa/ 'the man is good' escapes both processes, surfacing as [nʲenʲetsʲʌn zawa].

Alternatives. Kavitskaya & Staroverov (2010) argue that the Tundra Nenets process interaction presents a serious challenge for Harmonic Serialism and propose a technical solution within OT with Candidate Chains (McCarthy, 2007). Unlike their proposal, the present account does not involve additional machinery, which is motivated solely by opaque interactions of a particular type. Our account is closer in spirit to the existing descriptions that postulate an abstract 'nasalizeable glottal stop' entity which is not phonetically different from [ʔ] but differs solely in alternating with a nasal (Tereshchenko, 1956; Janhunen, 1986; Salminen, 1997). We make precise formal sense of the two different 'glottal stops', while showing that the contrast between /N/ and /ʔ/ is neutralized on the surface.

Conclusion. The proposed account captures the peculiar properties of Tundra Nenets debuccalizaiton, as well as its interaction with final syllable /ʌ/-deletion. Debuccalization is treated as a unified and non-arbitrary phenomenon, while the special behavior of nasals follows from their featural specification. /ʌ/-deletion is treated as a uniform process in its both environments. The interaction between the two processes follows entirely from the independent assumptions of Stratal OT. Our account relies on the partially specified autosegmental representations and predicts that both nasals and obstruents may end up placeless on the surface (Keating, 1988; Cohn, 1990, 1993; Bermúdez-Otero, 2001). Tundra Nenets thus shows that a comprehensive treatment of opacity within Stratal OT has to make use of partially specified representations (Bermúdez-Otero, 2012).

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Intervention in *tough*-constructions

Background: Defective intervention, whereby an element with inactive syntactic features blocks agreement across it with a lower active element (Chomsky 2000), has been taken to underlie blocking effects in, e.g., Romance A-raising constructions (McGinnis 2003) and agreement in Icelandic DAT–NOM constructions (Chomsky 2000). Such effects are notably absent from English A-raising constructions, e.g. *John seems [to Mary] to like Bill*. However, Hartman (2012) argues that defective intervention does occur in English *tough*-constructions (TCs) based on the observation that an experiencer PP between the *tough*-predicate and the infinitival clause yields ungrammaticality in the expletive construction (1a), but not in the TC (1b). He proposes that the subject first Ā-moves inside the embedded clause, followed by subsequent A-movement to the matrix subject position (1b). This A-raising step is blocked by defective intervention of the PP.

(1)a. It is important **(to Mary)** to avoid cholesterol

b. Cholesterol is important *[PP **to Mary**] [TP t_{DP} to avoid t_{DP}]
(A: Cholesterol … t_{DP}; Ā: t_{DP} … t_{DP}; ✗ at *[PP **to Mary**])

We argue that the contrast in (1) is not due to defective intervention and hence is not evidence for a raising analysis of English TCs. The crucial observation is that PPs have identical blocking effects in superficially similar constructions in which *no* movement takes place. We instead propose that the blocking effect follows from a semantic-type mismatch between the PP and the abstraction created by an embedded null operator.

Evidence: *Pretty*-predicates and gapped degree phrases (GDPs) can occur in structures similar to TCs but they lack the expletive counterpart and the infinitival clause is optional. These facts make it clear that the matrix subject is base-generated and not derived (see e.g. Chomsky 1977).

(2)a. Mary is **pretty** (to look at) (*cf.* *It is pretty to look at Mary)

b. This table is **too heavy** (to lift) (*cf.* *It is too heavy to lift this table)

Like *tough*-predicates, these adjectives can be modified by an experiencer PP (*The table is too heavy for me; Mary is pretty to John*), but this PP may not occur between the adjective and the infinitival clause. This is evident for *pretty*-predicates (3). For GDPs, the attachment of a *for*-PP is in principle ambiguous, but scope can be used to disambiguate, following the argumentation in Hartman (2012). While (4a) shows that a *for*-phrase can modify the matrix predicate, scope reveals that it cannot do so when it is between the predicate and the embedded clause (4b). Therefore, (4b) only has an irrelevant structure in which the *for*-phrase is the embedded subject.

(3)a. **To John**, Mary is pretty to look at. b.* Mary is pretty **to John** to look at.

(4)a. [PP **For only one worker**] the table is too heavy to lift. (*high, *low*)

b. The table is too heavy **for only one worker** to lift. (**high, low*)

These constraints (3–4) mirror the ones that Hartman observes for TCs. However, because no A-movement over the experiencer PP takes place in these cases just discussed, defective intervention and movement in general cannot be the source of the restriction in these examples.

Analysis: Following Nissenbaum & Schwarz's (2011) analysis for GDPs, we argue that TCs, *pretty*-predicates, and GDPs are null-operator structures (NOSs) wherein a null operator Ā-moves to the clause edge triggering abstraction over an individual variable (Chomsky 1977):

(5) XP is { tough / pretty / too heavy } [$\mathbf{Op}_i$ [to PRO_{arb} { please / look at / lift } t_i]]

NOSs are interpreted via COMPOSE, a semantic operation that exhaustively applies function application and predicate modification to its two arguments (Nissenbaum 2000). When applied to an adjectival predicate and a NOS, COMPOSE yields an $\langle e, st\rangle$-function which then applies to the base-generated matrix subject. To illustrate, consider the derivation of *The table is too heavy to lift* in (6–8), following the semantics that Nissenbaum & Schwarz (2011) propose for GDPs.

(6) The table is too heavy [Op_i [to lift t_i]] $\rightsquigarrow$ LF: The table is [heavy] [λx [too [to lift x]]]

(7) $[\![\text{heavy}]\!] = \lambda x_e\, \lambda d_d\, \lambda w_s\, .\, \textsc{heavy}_w(x) \geq d$
$[\![\text{Op}_i \text{ too to lift } t_i]\!] = \lambda x_e\, \lambda f_{\langle d,st\rangle}\, \lambda w_s\, .\, \exists d\,[f(d)(w) \wedge \neg\exists w' \in \text{Acc}_w[f(d)(w') \wedge \textsc{lift}(x)(w')]]$

(8) $\textsc{compose}\,(\underbrace{[\![\lambda x\,[\,\text{too}\,[\,\text{to lift } x\,]]]\!]}_{\langle \underline{e}, \langle\langle d, st\rangle, st\rangle\rangle})\,(\underbrace{[\![\text{heavy}]\!]}_{\langle \underline{e}, \langle d, st\rangle\rangle}) =$ *(by Predicate Modification)*
(first argument of both functions of type e)
$\lambda y\, .\, \textsc{compose}\,(\underbrace{[\![\lambda x\,[\,\text{too}\,[\,\text{to lift } x\,]]]\!]\,(y)}_{\langle\langle \underline{d}, st\rangle, st\rangle})\,(\underbrace{[\![\text{heavy}]\!]\,(y)}_{\langle \underline{d}, st\rangle}) =$ *(by Function Application)*
(second function in the domain of first)
$\lambda y\, .\, [\![\lambda x\,[\,\text{too}\,[\,\text{to lift } x\,]]]\!]\,(y)\,([\![\text{heavy}]\!]\,(y))$

We claim that the ungrammaticality of an experiencer PP in TCs, *pretty*-predicates, and GDPs is caused by an *irresolvable semantic-type mismatch* between the PP and the embedded clause. This follows directly from the constructions' independently motivated null-operator semantics (6–8). As an experiencer PP denotes a function of type $\langle st, st\rangle$, e.g. (9), a NOS creates an abstraction of type $\langle e, st\rangle$, as shown in (8), which cannot combine with this PP of type $\langle st, st\rangle$.

(9) $[\![\text{for Mary}]\!] = \lambda p_{st}\, \lambda w_s\, .\, \forall w' \in \text{Acc}_{w,\,\text{Mary}}\,[\,p(w') = 1\,]$

Adjectival predicates are of two types: *Tough*-predicates have a proposition-taking version (10a), corresponding to the expletive construction, and a property-taking version (10b), corresponding to the *tough*-construction. *Pretty*-predicates only have a property-taking version (10b).

(10)a. $[\![\text{tough}_1]\!] = \lambda p_{st}\, \lambda d_d\, \lambda w_s\, .\, \forall w' \in \text{Acc}_w\,[\,p(w') \text{ is tough to deg-}d\,]$
b. $[\![\text{tough}_2/\text{pretty}]\!] = \lambda p_{\langle e,st\rangle}\, \lambda x_e\, \lambda d_d\, \lambda w_s\, .\, \forall w' \in \text{Acc}_w\,[\,p(x)(w') \text{ is tough/pretty to deg-}d\,]$

When the predicate takes a property (10b), introducing an experiencer PP creates an irresolvable type mismatch because the embedded clause of type $\langle e, st\rangle$ cannot combine with the PP of type $\langle st, st\rangle$ (11a), even via COMPOSE because neither function application nor predicate modification can apply. However, when the predicate takes a proposition, no such type mismatch occurs because an st-function can combine with an $\langle st, st\rangle$-function (11b). Consequently, an experiencer PP is ungrammatical in a TC, where the predicate takes a property, but grammatical in the corresponding expletive construction, where it takes a proposition.

(11)a. John is [$\text{tough}_{\langle\langle e,\,st\rangle,\,\langle e,\,\langle d,\,st\rangle\rangle\rangle}$ [(*for Mary)$_{\langle st,\,st\rangle}$ [$_{\langle e,\,st\rangle}$ Op_i to PRO_{arb} please t_i]]] ✗ EXP PP
b. It is [$\text{tough}_{\langle st,\,\langle d,\,st\rangle\rangle}$ [(for Mary)$_{\langle st,\,st\rangle}$ [$_{st}$ to PRO_{arb} please John]]] ✓ EXP PP

Consequences: No resort to either A-movement or defective intervention is required to account for Hartman's generalization. Furthermore, the two accounts make different predictions for structures containing A-raising out of a clause *lacking* a null operator. The defective intervention account predicts the addition of an experiencer to lead to ungrammaticality. The null operator account predicts no such effect as the embedded clause is of type st. The latter prediction is borne out (*John seems (to Bill) to be smart*). Parallel facts hold for other instances of A-raising out of clauses not containing a null operator (Bruening 2014). Second, because there is no A-movement in TCs, the account straightforwardly derives why the matrix subject cannot have an embedded reading (12a) while structures involving A-raising can (12b) (Postal 1974).

(12)a. Someone is difficult to please. (*someone* ≫ *difficult; *difficult* ≫ *someone*)
b. Someone seems to be sick. (*someone* ≫ *seems; seems* ≫ *someone*)

Third, the ban on improper movement can be maintained in full generality. Fourth, this analysis shifts the focus away from the exceptionality of English A-raising under a movement account of TCs, where intervention does not occur, to Romance A-raising, where intervention purportedly does occur (though see Rouveret & Vergnaud 1980, who consider these grammatical).

Scope ambiguity in Broca's aphasia: Evidence for a grammar-specific impairment

Lynda Kennedy, Jacopo Romoli, Lyn Tieu and Raffaella Folli

Summary: The current study provides novel evidence concerning the interpretation of scope ambiguity in Broca's aphasia (BA). We tested a group of individuals diagnosed with Broca's aphasia (IWBAs) on scopally ambiguous sentences involving negation and the quantifier *every*, and compared their performance with that of a group of typical adults (TAs). Our results showed that IWBAs had a lower rate of acceptance than TAs on both surface (SS) and inverse scope (IS) conditions. More importantly, IWBAs, unlike TAs, performed significantly worse on the IS and SS conditions, which differ only in the grammatical (i.e. syntactic or semantic) operations involved. This result indicates that the observed grammatical impairment in IWBA extends to operations at the syntax-semantics interface, and appears more consistent with accounts assuming a specific impairment to grammatical operations in BA (e.g. Grodzinsky 2000, 2006; Friedmann and Shapiro 2003) than with pure processing-based accounts (e.g. The Weak Syntax Hypothesis, Avrutin 2004a, 2006).

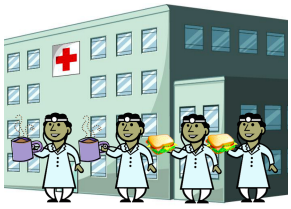
Background: It is a well-observed finding that IWBAs exhibit impaired comprehension performance on constructions involving specific grammatical operations. Most research to date has focused on constructions involving *overt movement* (cf. Grodzinsky 2000; Grillo 2005; Santi and Grodzinsky 2012). Despite the apparent centrality of *movement* to the impairment in IWBA, still little is known about how these individuals perform with respect to *covert movement* operations such as those involved in deriving different scope readings (but see Saddy 1995 and Varkanitsa et al. 2012). Crucially, scope ambiguity phenomena provide us with a unique opportunity to test the status of the grammar in BA; they involve a single surface structure that can be associated with more than one meaning, with the only difference being that one interpretation (the IS reading) involves an additional grammatical operation (e.g. Reinhart 1997, 2006). A further motivation for this study comes from the long-standing comparison between the linguistic performance of children acquiring language and that of IWBAs (e.g. Caramazza and Zurif 1976, Grodzinsky 1990, Avrutin 2000), with some research indicating interesting parallels between the two populations. However, while there is a large and growing body of literature on children's interpretation of scopally ambiguous sentences (e.g. Musolino 1998, Moscati et al 2014), work in this domain involving IWBAs has been limited (Saddy 1995, Varkanitsa et al 2012). Investigating scope ambiguity can help us further explore the apparent impairment in grammatical operations in BA, and laterally, allow us to further investigate the linguistic/processing similarities and differences in language acquisition and aphasia.

Experiment: We tested a group of IWBAs (n=9) (crucially, all IWBAs displayed the typical pattern of performance on sentences involving overt movement) and a group of TAs (n=22), and compared their performance on ambiguous sentences involving a universal quantifier and negation, such as *Every doctor didn't drink coffee*. Using a TVJT (Crain and Thornton 1998), participants were tested in two conditions, involving: (i) contexts only consistent with an IS interpretation (IS condition), as in Fig. 1, and (ii) contexts that were also consistent with the SS interpretation (SS condition), as in Fig. 2. The target sentences were uttered in response to an explicit Question Under Discussion (QUD) which could be answered by both readings of the target sentences (e.g. *Did every doctor drink coffee?*). The QUD has been shown to be an important factor influencing the interpretation of scopally ambiguous sentences, and evidence suggests that 4- and 5-year-old children appear adult-like once the 'correct' QUD is provided explicitly (Gualmini et al. 2008, Moscati et al 2014). The QUD also provides us with a model for controlling the discourse context, which has been proposed to play an important role in deriving the comprehension pattern observed in IWBAs (e.g. the Weak Syntax Hypothesis, Avrutin 2006).

Materials & Procedure: Participants watched short stories on a laptop computer. The context stories began with four individuals considering two possible activities to undertake. The end of the story differed across conditions: in the IS condition, two of the four individuals decided to carry out the activity mentioned in the target sentence. In the SS condition, instead, none of the four individuals decided to do so.

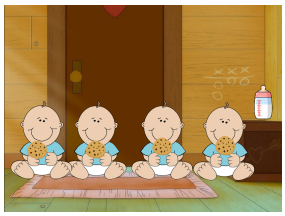
At the end of the story, the researcher explicitly asked a question (the QUD) about the story, e.g., *Did every doctor drink coffee?* and a recorded individual then responded with a target sentence, which was crucially both true in the context and a good answer to the QUD. The participant's task was to judge whether the sentence was a true description of the story or not. The stimuli consisted of 20 test trials: 10 stories compatible with the IS interpretation and 10 stories (also) compatible with the SS interpretation.

Fig. 1: IS condition



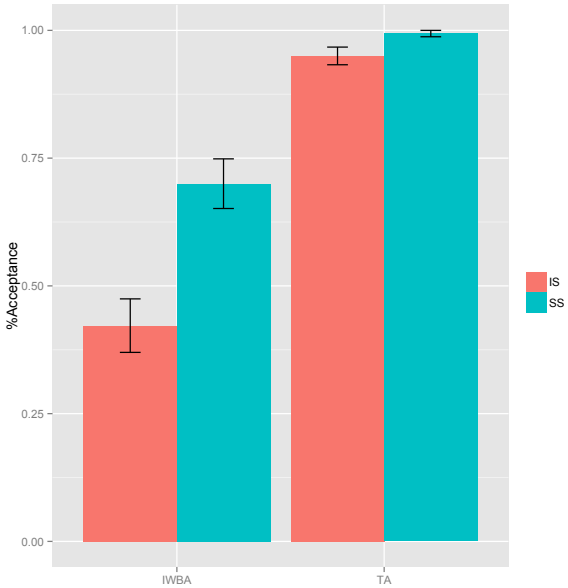
Every doctor didn't drink coffee

Fig. 2: SS condition



Every baby didn't drink milk

Results & Discussion: A 2x2 mixed-effect logistic regression model with *group* (IWBAs vs. TAs) and *condition* (IS vs. SS) as factors revealed a main effect of group (p<.001), a main effect of condition (p<.001), and no significant interaction (p=0.56). Simple effects analysis, however, revealed a significant difference between the IS and SS conditions for the BA group but no difference for the TAs. In sum, the simple effects indicate that IWBAs performed significantly worse on the IS condition, whereas there was no difference found between the two conditions for TAs. This result indicates the IWBA had specific difficulty with the IS condition. Given that the latter differs from the SS condition only with regards to the grammatical operations involved, this result, on the face of it, appears to be more consistent with accounts which assume that BA involves a specific impairment in grammatical (syntactic or semantic) operations (e.g. Friedmann and Shapiro 2003, Grodzinsky 2006). In sum, the findings of the current study contribute novel evidence from scope ambiguity resolution that the grammatical impairment in this population appears to extend to covert grammatical operations at the syntax-semantics interface. Finally, on the comparison between BA and acquisition, while it has been reported that children perform adult-like when provided with the 'correct' QUD (Gualmini et al 2008 among others), this does not appear to be a factor affecting the performance of IWBAs.



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The Person–Case Constraint and the Inverse Agreement Constraint are manifestations the same information-structural restriction

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1. Goal

The talk first claims that the Person–Case Constraint and the Inverse Agreement Constraint attested in overlapping sets of Uralic languages are manifestations of the same Inverse Topicality Constraint, requiring that in a topic domain, the hierarchy of arguments correspond to their ranking in the animacy (i.e., topicality) hierarchy. Then it argues that it is the hypothesized Inverse Topicality Constraint that also underlies the Person–Case Constraint restricting the cooccurrence of clitics in ditransitive constructions across languages.

2. The Inverse Agreement Constraint

The Inverse Agreement Constraint was first observed by Comrie (1980) in Chukchee, Koryak, and Kamchadal, where the verb can agree with both the subject and the object, but if the O is higher ranked in the animacy hierarchy than the S, O–V agreement is blocked. (The animacy hierarchy is the person hierarchy '1 > 2 > animate 3 > inanimate 3', some grades of which may be collapsed, or further divided into singular and plural.) The motivation underlying the Inverse Agreement Constraint has become clear after Nikolaeva (2001) clarified the role of differential O–V agreement in the Ugric and Samoyedic languages of the Uralic family. In the SOV sentences of these languages, where the subject is also topic, and the object is secondary topic or focus, O–V agreement encodes the secondary topic role of the object. The Inverse Agreement Constraint is evoked if the secondary topic (or its possessor) is higher ranked in the animacy hierarchy (also called topicality hierarchy) than the primary topic (É. Kiss 2013). The Samoyedic languages display both topical-object–V agreement and the Inverse Agreement Constraint. Khanty has preserved topical-object–V agreement but has lost the Inverse Agreement Constraint. In Hungarian, a Ugric language, topical-object–V agreement has been reanalyzed as definite-object–V agreement, but the Inverse Agreement Constraint has survived: 1st and 2nd person objects do not elicit agreement if the subject is 3rd person: (1)a. *Mari lát-**ja**-Ø őt.* b. *Mari lát-Ø engem/téged.*
Mary see-**OBJ**-3.SG him Mary see-3.SG me /you

3. The Person-Case Constraint (PCC) in Ugric

In Eastern Mansi, a Ugric sister of Hungarian and Khanty, differential object marking (DOM) plays the same role that differential object–verb agreement plays in Khanty. As shown by Skribnik (2001) and Virtanen (2013), in the SOV Mansi sentence the subject is topic, and the object is either focus (2) or secondary topic (3). The object is case-marked iff it is topic:

(2) *toonøtäätøl såjrøng påly-låpsyøx sågrøp-øs* (3) *õõw-**mø** ööt kont-iiløm*
then white wood-chip split-PST.3SG door-**ACC** NEG find-OBJ.1SG
'Then he split a white chip of wood.' 'I can't find the door.'

1st and 2nd person objects (4), and objects anchored to a 1st or 2nd person possessor are always caseless. (The possessive suffix on the pronoun is a definiteness marker in Uralic.)

(4) *näg nän pøl ööän-øm tow keet-øs-løn?*
you why PRT I-POSS.1SG there send-PST-OBJ.2SG
'Why did you send me there?'

Thus in Eastern Mansi, a case-marked object can only be 3rd person, i.e., the language observes a strong Person–Case Constraint (cf. Bonet 1999). Eastern Mansi also has differential O–V agreement, but without the Inverse Agreement Constraint.

Hungarian, which has lost both differential O–V agreement and DOM, has preserved not only the Inverse Agreement Constraint but also the PCC: though object-marking by a *-t* suffix is obligatory, the 1st and 2nd person singular pronouns bear no *-t* (cf.: *engem* 'me', *téged*

’you.ACC’ versus *ő-**t*** ’(s)he-ACC’, *mink-e**t*** ’we-ACC’, *tit-ek-e**t*** ’you-PL-ACC’, *ő-k-e**t*** ’they-PL-ACC’). The accusative *-t* is absent optionally if the object has a 1SG or 2SG possessor:

(5) *Összetörték az autó-m**(at)** /autó-d**(at)***.
broke-3PL the car-POSS1SG**(ACC)**/car-POSS2SG**(ACC)** ’They broke my car/your car.’

The facts that Eastern Mansi has both DOM and differential O–V agreement, and Hungarian has preserved both the PCC constraining DOM, and the Inverse Agreement Constraint constraining differential O–V agreement suggest that DOM and differential O–V agreement coexisted in the Ugric languages: they represented two aspects of the the same phenomenon, and the PCC and the Inverse Agreement Constraint represented two aspects of the same Inverse Topicality Constraint. This constraint does not allow that in a topic domain, the functional hierarchy of topics (with S preceding O) contradict their ranking in the animacy hierarchy. In Ugric, it caused the O outranking the S in topicality to be construed as a focus.

4. The Person-Case Constraint across languages

The phenomenon called PCC has been observed mostly in ditransitive constructions of languages that have weak or clitic pronouns, or rich agreement (Bonet 1991, 2007, Albizu 1997, Béjar & Rezac 2003, Nevins 2007, 2011, Anagnostopoulou 2007, etc.). It requires that the direct object should not be higher ranked in the animacy hierarchy than the indirect object. The strong version of the PCC only allows a 3rd person direct object. Current explanations of the PCC share the view that the PCC is elicited either because the dative and accusative pronouns compete for the same case; they attempt feature-checking with the same functional head (Anagnostopoulou 2003, Béjar & Rezac 2003, Adger & Harbour 2007), or the accusative argument and a head enter feature checking with the dative argument intervening (Rezac 2008). However, these approaches cannot account for all the relevant data. The problem is that both the feature combinations and the case combinations eliciting the PCC can change from language to language. E.g., the most widely accepted explanation is built on the assumption that 3rd person clitics are exempt from the PCC because they are not specified for person; however, in some languages the PCC is controlled by the feature ’animate’; in others, also the 1st vs. 2nd person distinction is relevant.

It will be argued that the contexts eliciting the PCC are the same that elicit the Inverse Topicality Constraint in the Ugric languages. The pronouns subject to the PCC represent topical arguments competing for dominance in the same (external or internal) topic domain. The fact that in languages distinguishing strong and weak/clitic pronouns, the pronouns affected by the PCC are weak pronouns or clitics is evidence of their topicality/givenness.

The languages displaying the PCC do not allow that in a topic domain, the thematic /functional hierarchy of topics (with the dative-applicative preceding the object) contradict their ranking in the animacy/topicality hierarchy (where the 1st or 2nd person object precedes the 3rd person dative). A PCC violation can be avoided by construing the dative as a focus:

(6) a. **Me le recomendó* b. *Me recomendó a él*
1SG-ACC 3SG.DAT recommended 1SG-ACC recommended to him
‘(S)he recommended me to him’ ‘(S)he recommended me to him’

Another repair strategy is to replace the dative pronoun with a locative having no person feature, i.e., not participating in the topicality hierarchy:

(7) ***Al president, me li /*hi ha recomanat en Miquel***
to-the president, 1SG-ACC there/3SG.DAT has recommended the Miguel
‘As for the president, Miquel has recommended me to him’

The fact that the articulated topicality hierarchy is usually segmented into various 2-step or 3-step scales in the different languages explains why some languages treat 1st and 2nd persons identically; why other languages distinguish between animate and inanimate 3rd person clitics, etc. The fact that the PCC constrains both pronominal elements and verbal agreement corresponds to the duality of the PCC and the Inverse Agreement Constraint attested in Ugric.

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A derivational approach to the typology of resumptive patterns

1. Introduction: In this talk I propose a novel crosslinguistic approach to grammatical resumption and its distributional patterns in relativization contexts like the direct object resumptive in (1):

(1) ha-ʔiš še- raʔiti ʔoto
the-man that-(I) saw him
'the man that I saw him' *(Hebrew, Shlonsky 1992:444)*

The bulk of distributional variation of resumptive pronouns (RPs) occurs in four extraction positions: subject (S), embedded subject (eS), object (O) and embedded object (eO). This talk will focus on these.

2. Resumptive pronoun patterns and locality: With four extraction positions and a choice between RP (R) and gap (G) for each of them, one ends up with 16 logically possible patterns (e.g. GGGG, GRRG etc.) for languages exhibiting grammatical resumption. However, only 5 are attested. The following table summarizes many of the resumptive languages in the literature and their RP patterns.Some languages occur in more than one attested pattern to capture R/G optionality in some of their extraction positions:

	S	eS	O	eO	
Pattern 1	G	R	R	R	Bulgarian, Hausa, Hebrew, Irish, P. Arabic, Polish, Czech, Tuki, Uk., ...
Pattern 2	G	G	G	G	Spanish, Irish, Hebrew, ...
Pattern 3	G	R	G	G	Welsh, Swedish, ...
Pattern 4	R	R	R	R	Lebanese Arabic, Spanish, Yiddish, ...
Pattern 5	R	R	G	G	Vata , ...

(Prince (1990), Suñer (1998), Shlonsky (1992), McCloskey (2002, 2006), Merchant (2004), Willis (2000, 2011), Borer (1984), Adger (2008), Aoun (2000, 2001), Biloa (1990); Engdahl (1985), Boeckx (2003); Lavine (2003); Toman (1998), Crysmann (2012), Krapova (2010))

The foot of a relativization dependency (RP or gap) needs to be connected to its head (the relative operator). In order to derive this non-local dependency in a local, phase-based, minimalist framework, I argue that only the operation Move relates the two positions. RP and gap cases are not analyzed in different ways, by e.g. also using base generation for the former (cf. Salzmann 2009, Rouveret 2011, among others). This approach is the only one available under strict locality (see also Boeckx 2003).

3. Realization of the resumptive / gap: Nominal arguments are ϕPs which embed DPs (cf. Sauerland 2008). Phase heads are assumed to be C, v and ϕ. A RP is created if DP moves and strands ϕ (cf. Abels 2005). Due to the PIC (Chomsky 2001), movement must take place via phase specifiers. However, phase heads can also not be stranded by their complements (Abels 2003, 2012, Grohmann 2003). In order to strand ϕ material, DP_{REL} needs to move through its phase's specifier, even though it is in its complement: this configuration gives rise to anti-locality effects and needs to be changed. To do that, ϕ's phasal domain must be extended to the next phase head (v or C); this is achieved by Agree with ϕP (see den Dikken 2006 for the notion of phase extension by head movement, Roberts 2010 for head movement as an instance of Agree).

4. Orders of operations and analysis: Timing is crucial. If Agree is triggered before Move, ϕ's domain gets extended, DP_{REL} can move on its own and strand ϕ, whose features are computed into a RP at the level of PF later. If, however, Move is triggered before Agree, DP_{REL} cannot move to SpecϕP but instead pied-pipes ϕP along, not stranding anything (with a gap as result). In a strictly derivational system, two operations triggered by the same phase head cannot simply apply simultaneously but need to be ordered (cf. Georgi 2013, 2014). Agree, ordered before Move, results in ϕ material (= RP) in the extraction site (2+3). If Move applies first, the entire ϕP moves and leaves behind a gap (4+5). Agree can still apply, but moved phrases are islands for extraction on independent grounds (cf. Wexler and Culicover 1980). Subsequently, ϕP / DP cyclically moves to its final SpecCP operator position. (Non-phases omitted.)

(2) $[_{vP}\ v_{\phi,REL} \dots [_{\phi P}\ \phi\ DP_{REL}\ ]]$ — AGR

(3) $[_{vP}\ DP_{REL}\ [_{vP}\ v_{\phi,REL} \dots [_{\phi P}\ \phi_{(RP)}\ ]]]$ — MOVE

(4) $[_{vP}\ v_{\phi,REL} \ldots [_{\phi P}\ \phi\ DP_{REL}\ ]]$ (MOVE)

(5) $[_{vP}\ \lceil_{\phi P}\ \phi\ DP_{REL}\ ]\ [_{vP}\ v_{\phi}\ REL \ldots [\ (GAP)\ ]]]$ (AGR)

Thus, the occurrence of a RP / gap is based on the relative order of Agree and Move. This follows from the interaction of anti-locality and phase extension. The analysis also derives and is thus supportd by two crosslinguistic resumption phenomena. First: RPs do not occur together with overt relative operators. There simply is no ϕ material in SpecCP, because it is stranded in the extraction position. Only the ϕ-less DP ends up in operator position. Second: there are no intermediate RPs. DP cannot be extracted after ϕP has been moved out of its base position, regardless of later Agree.

6. Refinement of operations: Ordering Agree and Move only yields two patterns: RPs or gaps in every position (RRRR / GGGG). In order to account for all attested patterns one needs to refine the taxonomy of the necessary operations a bit further, because the timing of operations influences RP patterns. First, there appears to be an independently justified distinction between final movement operations and intermediate ones (cf. Georgi 2013, 2014). Second, a spec-head bias is assumed (cf. Assmann et al. 2012), so that the external merger of a subject in the vP domain can induce an intervention effect for an object in the same domain. External merge thus needs to be ordered, too, at least for subjects. There are now four relevant operations for the derivation of resumptive pronouns and their distributional patterns: Final Move (FM), intermediate Move (IM), Agree (AGR), and External Merge (EM). Again, 16 logically possible orders on the phase heads arise (e.g. FM > AGR > IM > EM). Interestingly, these orders do not simply map onto the 16 logically possible RP patterns, thereby overgenerating, but converge on only 6 - all the attested patterns 1-5 plus pattern 6: RRGG, that is, a resumptive in all subjects but no objects.

7. The functions of operations: This is because each of the four independently available operations fulfills a clearly defined function wrt resumption. Each influences the occurence or position of a RP:

- FM / IM separate the highest subject (one movement step from the operator) from the others.
- AGR feeds RP occurence if it is triggered before Move. It can also be bled by Move (= gap).
- EM can intervene in Agree relations and thus separate subject from object positions wrt to RPs / gaps.
- AGR before IM generally yields RPs in object and embedded positions (XRRR).
- AGR before IM with intervening EM yields gaps in objects but a RP in the e. subject position (XRGG).
- Thus, EM cannot intervene to yield object RPs but embedded subject gaps (*XGRR).

These functions interact, depending on their order on the phase heads. For example, the operational order FM > AGR > EM > IM on the phase heads v and C results in the RP pattern GRRR - depending on where the [REL] feature starts out: subject, embedded subject, object, or embedded object. The assumption is that an order holds for a given language without the need for re-ordering on individual phase heads. If the underlying order of operations for e.g. Welsh is FM > EM > AGR > IM, the prediction is that RPs are only possible in embedded subject positions in this language; this is borne out. The following patterns are both ruled out by this approach and also not attested: GGRR, RGRR, RGRG, RGGR, GRRG, GRGR, RRRG, RRGR, GGRG, GGGR. The remaining six are ruled in and attested (except one).

8. Conclusion: This proposal derives the crosslinguistic typology of resumptive pronoun patterns (subjects and objects) in relativization contexts using only independently motivated operations and conditions. Move, Agree, and external Merge, plus anti-locality and phase extension. The interactions of these operations ordered on phase heads yield existing RP/gap patterns (with one further pattern yet to be discovered: RRGG). Work in progress will try to integrate island contexts into this approach.

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Intervention everywhere!

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Background: *Wh*-interrogatives are among the most popular topics in the recent literature. While the semantics of a *wh*-question is more or less constant across languages, its syntax exhibits many cross-linguistic variations. *Intervention effects* are believed to induce a constraint on question LFs, reflecting the underlying mechanisms by which a question can be constructed and interpreted. An example of an intervention effect in Korean is shown in (1)-(2): an intervener (here, **Minsu-man** = 'only Minsu') cannot c-command an in-situ *wh*-word. Intervention is avoided by scrambling the *wh* above the intervener. The general intervention configuration is given in (3).

(1) ?* **Minsu-man** *nwukwu*-lul manna-ss-ni?
Minsu-only who-acc meet-past-Q
'Who did only Minsu meet?'

(2) ✓ *nwukwu*-lul$_i$ **Minsu-man** t$_i$ manna-ss-ni?
who-acc Minsu-only meet-past-Q
'Who did only Minsu meet?'

(3) a. *[$_{CP}$ C ... **intervener** ... *wh*]

b. ✓[$_{CP}$ C ... wh$_i$ **intervener** ... t$_i$]

Intervention in English multiple questions: English exhibits an apparent counterexample to the intervention generalization: the presence of a c-commanding intervener does not cause an intervention effect in (4a). However, intervention—*diagnosed by the loss of the pair-list reading*—re-emerges in *superiority-violating* questions, (4b). This is argued to show that the surface in-situ *wh*-phrase in sup.-obeying questions is able to covertly move above the intervener, leading to an LF like in (3b), but in sup.-violating questions it must remain LF-in-situ to allow the base-generated lower *wh* to be attracted over it, leading to an LF like in (3a) (Pesetsky, 2000; Cable, 2007, 2010).

(4) a. ✓ *Which* linguist did **only Mary** introduce *t* to *which* philosopher? superiority-obeying

b. * *Which* philosopher did **only Mary** introduce *which* linguist to *t*? superiority-violating

The contributions of this abstract: I provide new data on intervention effects in English questions: (**a**) intervention correlates with covert movement possibilities but not with superiority (contra Pesetsky, 2000; Cable, 2007, 2010), (**b**) definite descriptions and existential quantifiers act as interveners (contra Beck, 1996, 2006; Haida, 2007; Tomioka, 2007; Mayr, 2010; Li and Law, 2014, a.o.), (**c**) not only operator-driven A-bar movement, but also A-movement, causes intervention, (**d**) although quantification over individuals causes intervention, quantification over worlds does not. This wide range of novel data forces us to rethink the nature of intervention. I will argue that the true source of intervention is intervening λ-abstraction over individuals (Shan, 2004). Below I give sample data for each type of novel claim made here, and discuss the conclusions drawn from the data.

Intervention in superiority-obeying questions if movement is restricted: Superiority-obeying questions are believed to be immune from intervention effects. However, such effects re-emerge if covert *wh*-movement is restricted in some way. Kotek (2014) shows this in questions with islands: intervention occurs if *wh* is trapped inside an island and an intervener is introduced above it. However, this phenomenon is more general and also occurs e.g. if a *wh* is forced to stay below an intervener via binding into the *wh*-phrase or because the *wh* hosts an NPI. (5) shows this with focus: an F-marked item cannot move out of the scope of its associating operator (Tancredi, 1990, a.o.). Hence, although covert movement is generally possible (4c), movement above **only** is not possible in (5b), leading to an intervention effect (loss of the pair-list reading, cf Erlewine 2014).

(5) a. I can tell you [*which* linguist introduced Mary to *which* philosopher]. baseline

b. * I can tell you [*which* linguist **only** introduced Mary to *which* philosopher$_F$].

No intervention in superiority-violating questions if movement is possible: Intervention can be avoided in sup.-violating questions if one of two conditions are met: (a) the intervener can reconstruct below *wh*, or (b) the *wh* can be given wide scope above the intervener via non-interrogative movement, e.g. through extraposition or Right Node Raising (cf Bachrach and Katzir, 2009):

(6) a. * *Which* book did **only John** allow *which* student to read *t*?
b. ✓ *Which* book did [**only John** allow], and [**only Mary** prohibit], *which* student to read *t*?

'Non-interveners' act as interveners: A signature property of intervention effects is that definite descriptions and existential quantifiers are not interveners. However, I show that non-interveners can be *turned into* interveners in some cases, e.g. if they host Argument Contained Ellipsis, (7); intervention is avoided if no ellipsis is present e.g. when replacing "shouldn't have" with "shouldn't be here." Data from parallel (grammatical) sup.-obeying questions is omitted for space reasons.

(7) a. I told {the, a, some} teacher who (really) shouldn't have to introduce John to Mary.
b. * *Which* boy did you tell [**{the, a, some} teacher** who (really) shouldn't have △] to introduce *which* girl to *t*?

Intervention with A-movement chains: A-movement chains cause intervention effects whenever reconstruction is blocked, e.g. using binding. Similarly, generic sentences require the subject to vacate *v*P (Diesing, 1992), and hence cannot involve reconstruction. In such cases, we observe intervention. Again, intervention is caused by items traditionally believed not to be interveners:

(8) a. ✓ *Which* person are **counselors** available to discuss *which* issue with *t*?
b. * *Which* person are **counselors** careful to discuss *which* issue with *t*?

Modals are not interveners: All known interveners, as well as the new ones shown here, quantify over individuals. I show systematically that quantification over worlds does not lead to intervention. One example of this, with *should*, is shown here:

(9) a. ✓ *Which* abstract **should** John assign *t* to *which* reviewer? superiority obeying
b. ✓ *Which* reviewer **should** John assign *which* abstract to *t*? superiority violating

Discussion and proposal: The above data give rise to a clear generalization, that intervention effects happen in a structural configuration in which a *quantificational element* occurs between an LF-in-situ *wh* and C, in the spirit of Beck (1996). I adopt from Beck (2006) and others the idea that *wh*-in-situ are interpreted using Rooth-Hamblin alternatives, and from Shan (2004) the idea that a λ-binder cannot occur inside a region of focus-alternatives, because in such a configuration, the alternatives cannot be correctly identified. Thus, intervention happens whenever focus-alternatives and λ-binding are intertwined in a structure, and avoided when intervening material can be interpreted without λ-binding, as in the case of reconstruction and in the case of modals.

(10) **Intervention configuration**: *C ... λ ... *wh*

Rooth (1985); Novel and Romero (2009) propose a repair for the problem Shan (2004) identifies, involving higher-order basic types and a different semantics for *wh*-words. If this proposal is on the right track, intervention effects provide an empirical argument against this kind of repair. The data illustrated here constitute a significant contribution to the discussion surrounding the correct characterization of intervention effects, as they pose a problem for all current theories of intervention, cited above. The proposal has far-reaching implications for a wide array of linguistic phenomena, including the nature of movement, focus, intensionality, and binding.

Functional reference in American Sign Language

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Overview. Functional reference in natural language can be seen in a variety of phenomena. These include functional uses of pronouns ("Three boys each saw a girl. They each waved to her.") (Nouwen 2003, Brasoveanu 2006), functional questions, functional readings of indefinites, and "internal" readings of certain adjectives (e.g. *same*, *different*).

In American Sign Language, discourse referents can be established in space: singulars may be indexed at points; plurals may be indexed over areas. Plurals can be indicated in two ways: either by a sweeping "arc" movement over the area or with a reduplicated motion across the area. Plural morphology appears cross-categorially, including on pronouns, numerals, and adjectives. In this talk, I show that functional reference can be established in ASL by indexing two plurals over spatially related areas: one plural provides the domain of the function and the other the range. This spatial representation of functions allows dependencies to be overtly realized. Here, I focus on two case studies: dependent numerals and the adjective SAME.

Dependent numerals. First, in the case of **dependent numerals**, I show that ASL patterns with a wide range of other languages (for overview, see Henderson 2014) in allowing plural morphology on a numeral to express dependence on a higher distributive operator. ASL, however, goes further: when there are multiple distributive operators in a sentence, ASL can use co-location to overtly specify which one the numeral depends on (below, spatial indexing is marked with 'a' and 'b').

(1) ALL-a BOY-a GAVE ALL-b GIRL-b ONE-redup-b BOOK.
'Every boy gave every girl one book (each).'
$\rightarrow$ books must be scopally dependent on girls.

Dependent numerals are licensed by bare plurals (IX-arc BOY), and by distributive operators (EACH-EACH BOY). Like Telugu (Balasu 2006), ASL allows 'weak licensing,' variation on some other contextually salient plural key in the discourse.

I follow Henderson 2014 in formulating an analysis in terms of a **post-supposition**: essentially a semantic condition that must be checked after evaluation of the sentence. Also following Henderson, I claim that a dependent numeral requires that an evaluation-level plural be introduced into the discourse context; in ASL, though, there is the added stipulation that this plural vary with respect to some prior variable.

(2) "ONE-redup-i BOOK" imposes the post-supposition that there is an evaluation-level plurality of events that differ across the plural indexed at i and that each have one book.

SAME. Bumford 2014 draws compelling connections between functional uses of indefinites and 'internal' uses of the adjectives *same* and *different*. The use of space in ASL provides new evidence for this connection: like numerals, SAME may move in space to show what the 'sameness' is distributed over.

(3) a. JOHN-a GAVE ALL-b GIRL-b SAME-arc-b BOOK.
'John gave all the girls the same book.'

b. * JOHN-a GAVE ALL-b GIRL-b SAME-arc-a BOOK.

The presence of agreement (shown above as '-arc-i') is contingent on the presence of a functional witness; in particular, SAME cannot agree in space under the quantifier NONE.

(4) a. NONE STUDENT-a READ SAME-nonagreeing BOOK.
'None of the students read the same book.'

b. * NONE STUDENT-a READ SAME-arc-a BOOK.

An explanation for both facts follows from an analysis parallel to the one given for dependent numerals above. Regarding (3b), the plurality of events cannot differ with respect to the entity indexed at a, because this is a singular individual. Regarding (4b), there must be a plurality of events that involve the same book; but the lexical semantics of SAME under NONE (parallel to the English gloss) entail that there is no such set of events.

(5) "SAME-arc-i BOOK" imposes the post-supposition that there is an evaluation-level plurality of events that differ across the plural indexed at i and that each have the same book.

Two kinds of plurals. Finally, I discuss the interaction of these patterns with the two types of plural morphology (reduplication and arc-movement). I argue that reduplication allows individuated reference to the pairs in the function, but that arc-movement collapses the individuals into a collective plural. The result is that certain functional pair-list readings are available for reduplication that are not available with arc-movement.

(6) a. STUDENT, WHO IX-redup SEE?
'The students, who did they see?'
i. President Obama.
ii. Their mothers.
iii. John—Mary, Bill—Sue, ...

b. STUDENT, WHO IX-arc SEE?
'The students, who did they see?'
i. President Obama.
ii. Their mothers.
iii. * John—Mary, Bill—Sue, ...

An analogous result holds for pronouns: essentially, IX-redup allows plural discourse reference (à la Brasoveanu 2006), but IX-arc only allows plural (entity) reference.

(7) a. EACH-a-back PROFESSOR NOMINATE ONE-rep-a-front STUDENT. NONE PROFESSOR IX-arc-a-back WANT IX-{redup/arc}-a-front LOSE.
'No professor wants the group of nominees to lose.' redup: ✓ arc: ✓
'No professor wants his own nominee to lose.' redup: ✓ arc: *

Discussion. The use of space in ASL provides new evidence for the cognitive reality of functions in natural language, drawing morphological parallels between diverse phenomena. The patterns discussed here largely replicate patterns known from spoken language, but go further in allowing dependencies to be overtly realized.

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Towards a unified representation of the right edge of words

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Introduction. The phonological theory has to deal with the representation of the edges of words and morphemes. As for the left edge, Lowenstamm (1999) proposed, within Government Phonology and CV approach (KLV 1985, Lowenstamm 1996), that words begin with an empty CV unit, which is activated under specific circumstances. The right edge, in turn, has attracted discussions as to whether empty final nuclei govern or not (Kaye 1990 and subsequent work).

Assuming a syntactic approach to word-formation (Embick 2010), in this paper we focus on the right edge of the word of three unrelated languages: Italian, Bosnian and Mandarin Chinese (MC). More precisely, we claim that minimal words in these languages end in a CV unit. The final CV is a phonological object spelling out a morphological property of words, e.g. a requirement for a phonological string to become a well-formed word. On the one side, the final CV is the locus of overt inflection (Italian, Bosnian); on the other, in MC, the final CV hosts the propagation of segmental and supra-segmental material as well as the suffixation of some grammatical morphemes, such as perfective *lə* (see Li & Thompson 1989:184ff).

Italian. The overwhelming majority of Italian native words end in a vowel. Nouns, adjectives and verbs, in particular, are characterized by overt vocalic inflection. We focus on nouns: these display overt inflection if and only if (i) they end in a vowel; (ii) the final vowel is unstressed; (iii) the final vowel in the sg. is *-o* (*top-o* M.sg/*top-i* M.pl 'mouse'), *-a* (*ros-a* F.sg/*ros-e* F.pl 'rose') or *-e* (*can-e* M.sg/*can-i* M.pl 'dog' and *nav-e* F.sg/*nav-i* F.pl 'boat'). In contrast, nouns ending in a stressed vowel (*città* F.sg 'city'), those ending in a consonant (*top* M.sg 'top/bra of a bikini') and those truncated (*moto-~~cicletta~~* F.sg 'moto') do not show overt inflection, i.e. sg. and pl. forms are identical.[1] At first glance, one would suggest that the final vowel enforces a phonological well-formedness requirement (e.g. no final empty nuclei) to the effect that no noun remains consonant-final. But this is not true: (a) consonant-final nouns exist, cf. *top, film, etc.*.; (b) if the final vowel were an epenthetic vowel, we'd expect only one and not four different ones; (c) some final-hiatus words exist (*mare-a* 'tide', *nucle-o* 'nucleus'), there'd be no need for an extra V.

Following Afuta (2002) and Charette (2006), we propose that the final vowel is associated to a root-external final CV unit (CV_{FIN}). Thus, the majority of roots are consonant-final and the final consonant is floating (1a/b, but roots such as 1d also exist). These roots are uncategorized, e.g. they merge with *n* to become nouns. Loans, in turn, are associated to a fully syllabified CV-sequence because they are the spell-out of the functional head *n* (1c).

(1) t o p o [M.sg] t o p i [M.pl] t o p n u c l e o [M.sg]

a. $CV+CV_{FIN}$ b. $CV+CV_{FIN}$ c. CVCV d. $CVCVCV+CV_{FIN}$

The different representation of nouns in (1a) and (1c) predicts that *topo* and *top* behave differently when suffixed. For instance, in the case of DIM *-in(o)*, *top* displays the gemination of radical /p/, whereas *topo* does not:

(2) t o p i n o [M.sg] t o p i n o [M.sg]

a. $CV+CV[CV_{FIN}]$ 'small mouse' b. $CVCV+CV[CV_{FIN}]$ 'small bra'

Bosnian. In Bosnian nouns are organized in three main inflectional groups (M, F and NEU) and inflected according to six distinct syntactic cases. Only M sg. NOM nouns end in a consonant:[2] *okvir* 'frame'. Interestingly, stress-final loans such as *tabure* 'stool' are M and take the vocalic endings corresponding to the M declension: *okvir-i* M pl. NOM 'frames' vs.

[1] We leave aside a few nouns ending in an unstressed vowel and lacking overt inflection (*specie* F.sg 'species', *crisi* 'crisis').

[2] Instrumental sg ends in a consonant, too: *-om/-em*.

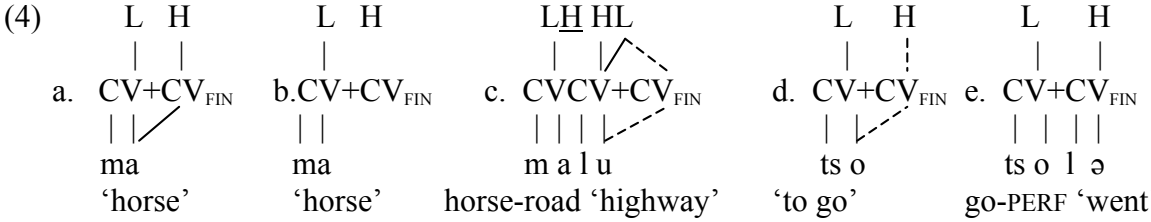
tabure-i M pl NOM ‘stools’. In other words, a noun is well-formed if and only if it displays overt case inflection. We submit that this well-formedness condition is satisfied by the insertion of a final CV unit:[3]

(3)

o k v i r i	t a b u r e i	k u ć e
a. CVCVCVC<u>V</u>+CV_{FIN}	b. CVCVC<u>V</u>+CV_{FIN}	c. CVCV+CV_{FIN}
‘frames’ M pl NOM	‘stools’ M pl NOM	‘houses’ F pl NOM

Mandarin Chinese. MC tonal patterns also suggest the presence of a final CV. This unit is the site of the propagation of T3 [L.H]. The behavior of T3 reveals the presence of the final CV: in monosyllabic words or in the final syllable of plurisyllabic words, T3 has two possible realizations (complete or incomplete), shown, respectively, in (4a) and (4b). In contrast, in non-final positions, the T3 is truncated and can only be incomplete (4c). In other words, in (4c) the floating H (underlined) cannot be realized. Finally, the comparison between (4d) and (4e) shows that the perfective morpheme *lə* suffixed to a T3 lexical unit (cf. 4e) receives the floating H tone of the T3. In (4d), the realization of the floating H tone is optional:

(4)



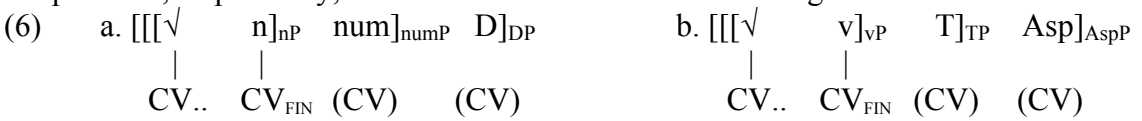
The extra CV unit at the right edge of the word hosts both prosodic and segmental material. In MC, a few more suffixes display the same behavior when following a T3 lexical unit: this is the case, for instance, of the plural *men* and the progressive *zhe* (Li & Thompson 1989: 40, 184ff.).

Unified representation. The minimal template of a well-formed noun or verb in Italian, Bosnian and MC includes the root √ and the unit CV_{FIN} (seeFathi & Lowenstamm 2014 for a similar approach to French gender):

(5) Nouns and verbs: $[CV..._{\surd} + CV_{FIN}]_{n,v}$

We propose that CV_{FIN} spells out the category-defining head, e.g. *n*, *v* (and *a*). The minimal templates of, respectively, a noun and a verb have the following structures:

(6)



The realization of CV_{FIN} depends on language-specific parameters on the exponence of each functional morpheme.

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[3] Vowel-final loanwords can be stressed on the last syllable (*taburé* M sg NOM, *tabure-a* M sg GEN, etc. ‘stool’) or on the penultimate (*víski* M sg NOM, *viski-(j)a* M sg GEN, etc. ‘snack bar’).

On deriving the typology of repetition and restitution

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Languages use expressions of different types to convey repetition and restitution of eventualities. Those can vary in a number of ways, most notably in the readings they license. We present a typology of such expressions and derive it based on (i) a *structural analysis* of repetitive-restitutive ambiguities, and (ii) the *syntactic category* of individual expressions (adverb vs. aspectual head). In doing so, we provide further evidence for (i) syntactic event decomposition, and (ii) dissociating the functional heads *v* and *Voice*.

The ambiguity. Sentences with free adverbials like English *again*, German *wieder*, Greek *ksana* give rise to presuppositions such that the existence of some previous eventuality must be entailed by the context. At least three distinct readings have been associated with examples like (1). All three share their assertion (2), but convey different presuppositions, (3).

(1) O Janis anikse ksana to parathiro.
the John opened again the window

(4) O Janis ksana anikse to parathiro.
the John again opened the window

(2) John opened the window in e.

(3) a. ∃e'.John opened the window in e' and e' < e ***Repetitive (Rep)***
b. ∃s.the window was open in s and s < e ***Restitutive (Res)***
c. ∃e'∃s.the window was open in s & CAUSE(s)(e') & e' < e ***Intermediate (Int)***

A fact that has not been sufficiently discussed in the literature is that the readings in (3) stand in entailment relations that cast the existence of *Rep* and *Int* in doubt; every situation that verifies *Rep* also verifies *Int* and *Res* and every situation that verifies *Int* also verifies *Res*. (1), then, could be felicitous in a 'repetitive scenario' because the presupposition of *Res* (or *Int*) is satisfied in that scenario and not due to the existence of a separate *Rep* reading. In many cases, this methodological difficulty is overcome by syntax; word-order can disambiguate between *Rep* and *Res* (von Stechow 1996, Beck & Johnson 2004). While (1) is e.g. true in 'repetitive', 'restitutive' and 'intermediate' scenarios, (4) is satisfied by 'repetitive' situations only. Thus, the felicity of (4) in repetitive scenarios cannot be due to *Res* or *Int*, and has to be attributed to the existence of an independent representation for *Rep*. The contrast (1) vs. (4) also provides evidence for dissociating *Int* from *Rep*. Finally, in order to establish the independence of *Int*, we provide new evidence from non-monotonic quantifiers that distinguishes between *Int* and *Res*, as in (5). Stress on *ksana* forces the presupposition of the element to be interpreted as part of the asserted content. If so, *Res* in the specified context is false, while *Int* is true. Since the sentence can be judged true, we conclude that *Int* is an independent reading. (Similar examples distinguish between all three readings.)

(5) *Context*: In a dorm, the doors of all the rooms stand open. At 9, every student closes the door of his own room. At 10, a gust of wind opens John's room and he immediately closes it. At 11, every student opens the door of his own room.
Target: ?At 11, akrivos ENAS fititis anikse KSANA tin porta tu.
at 11 exactly one student opened again the door his
a. Exactly one student opened his door and his door had opened before. ***Int***
b. Exactly one student opened his door and his door was open before. ***Res***

Account of ambiguity. We assume a structural account as in Stechow (1996) and subsequent work, according to which *again* has the meaning in (6). Its different readings are determined by its attachment site. *Rep* requires that the subject is part of the presupposition, so $again_{Rep}$ must attach at least as high as VoiceP, where the agent argument is introduced. $again_{Int}$ must attach lower than Voice. Bale (2007) accounts for his 'subjectless' reading by attaching *again* on the bare eventuality. In this case, however, it is not possible to distinguish between *Int*

from *Res*. A suitable attachment site for $again_{Int}$ is available if we dissociate the functional head introducing the external argument, *Voice*, from *v*, the functional head that introduces an event variable (and CAUSE in the case of achievements and accomplishments) (Alexiadou, Anagnostopoulou, and Schäfer 2006, a.o.). *again* attaching to *vP* gives rise to *Int*. *Res* arises when *again* attaches to *ResultP*. The contrast between (1) and (4) is a function of the height of the attachment site. The Greek verb moves up to T so that preverbal *ksana* in (4) is attached at a site that necessarily includes the subject. Post-verbal *ksana* in (1) is compatible with *ksana* attaching to all three sites in (7). Notice that since V-to-T is obligatory, there is no word order that allows *Rep/Int* to the exclusion of *Res*.

(6) [[again]] = λPλe.∃e'. P(e') & e' < e: P(e)

(7) ... [$again_{Rep}$ [$_{VoiceP}$ ... [$again_{Int}$ [$_{vP}$ .... [$again_{Res}$ [$_{ResultP}$ ...]]]]]]

Aspectual heads. Stressed *re-* admits *Res* only (Wechsler 1989, Marantz 2007, a.o.). Furthermore, it has been observed that *re-* selects for accomplishments (8), and only attaches to verbs for which the direct object is the sole obligatory constituent within the VP (9).

(8) a. *John re-laughed.
b. John re-sang the aria.

(9) a. John re-positioned the display (on the table).
b. *John re-put the display on the table

Additional evidence that *re-* only licenses *Res* comes from scope. Unlike *again*, *re-* obligatorily takes scope below indefinite objects (Williams 2011). Consider, e.g., an example with an irreversible result state, as in (10). (10a) is felicitous, since on its repetitive reading, the indefinite takes scope below *again.* Hence, the situations described by (10a) may include two dead kittens. (10b), on the other hand, induces the paradoxical presupposition that the deceased pet had been dead before. This indicates that repetitive *re-* is incompatible with the scope order *re->∃.*

(10) a. John killed a kitten again.
b. #John re-killed a kitten.

We propose that the aspectual head *re-* is a lexical exponent of v° which bears an unvalued accusative Case feature triggering overt movement of the DP object from *ResultP* to *Spec,vP* (cf. Kratzer 2002; i.a.). This derives the DP-object requirement and wide scope of indefinites. (As predicted, $again_{Int}$ patterns with $again_{Rep}$ in terms of scope, as it attaches above *Spec,vP.*) The root incorporates into *re*. Semantically, *re-* applies to the root meaning and an individual and introduces accomplishment semantics (CAUSE) as well as the *again* presupposition (see (10)). We show that the Greek prefix *ana* displays all characteristic properties of English *re-* and should be given a similar analysis.

(10) [[re-]] = λPλxλeλs.∃e'. P(e') & e' < e: P(x)(s) & CAUSE(s)(e)

(11) … [$_{vP}$ DP_1 [$_{v'}$ [$_{v}$ v+root] [$_{ResultP}$ ~~root~~ t_1]]]

Incorporating adverbs. A third class of elements consists of adverbs that either incorporate optionally (Greek *ksana*, German *wieder*) or obligatorily(Italian *ri-* and French *re-*). These expressions pattern with free adverbs and not with heads: they support all three readings, show no selection restrictions, and allow narrow scope of indefinite objects. To illustrate the last point consider the felicity of (12) in Greek and Italian.

(12) a. O Janis ksana-skotose mia jata.
the John again-killed a cat
b. Gianni ha riucciso un gattino
John has again-killed a little-cat

A difference between free and incorporated adverbials is that the latter feed readings that are unavailable for the former. E.g., while (4) only allows *Rep*, the variant with incorporation in (13) is three ways ambiguous. We propose that the ambiguity of incorporated *ksana* is the by product of reconstruction. The verb moves up to T°. $ksana_{Res}$ can incorporate to v°, $ksana_{Int}$ to Voice° and $ksana_{Rep}$ to T°. The verb freely reconstructs, together with incorporated *ksana*, into lower positions.

(13) O Janis ksananikse to parathiro.
the John again-opened the window

Some free adverbials (Italian *di nuovo*, Greek *pali*) that show no aspectual restrictions and

license narrow object scope allow *Rep* but do not sponsor *Int* and *Res* readings. We propose that these adverbs impose strict c-selectional requirements on the phrases they attach to: they obligatorily attach to VoiceP (cf. Voice Adjuncts in Bruening 2012).

The role of universal markedness in Hungarian gemination processes

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Gemination in loanwords is a cross-linguistically widespread phenomenon attested in languages like Japanese (Kubozono et al. 2008), Finnish (Karvonen 2009), Italian (Passino 2004), Telugu (Krishnamurti & Gwynn 1985) and Hungarian (Nádasdy 1989; Törkenczy 1989 and Kertész 2006), amongst many others. The process involves lengthening of a singleton consonant which is preceded by a short (stressed) vowel in the source word, even when gemination does not have an orthographic reflex in the source word. None of the source languages allow phonetic geminates and all of the borrowing languages do. Furthermore, none of the borrowing languages require geminates phonotactically in the positions where lengthening happens in loanwords.

In Hungarian, borrowings from English and German (and occasionally, from French) participate in this process. The propensity of loanwords to undergo gemination depends on the position of the consonant. Gemination is most predictable in monosyllables (e.g. *fitt* [fit:] 'fit' (Eng. *fit* [fɪt])). In other contexts, it primarily applies when the consonant in question is spelt with a double consonant letter in the source word (e.g. *koffer* [kofːɛr] (German *Koffer* 'suitcase')) or when the word ends with *-er* (e.g. *szvetter* [svɛtːɛr] (Eng. *sweater*)).

Apart from position, consonant class also determines whether a consonant is likely to be geminated or not. Even though practically all consonants can be geminated in the native Hungarian phonology, not all consonants can undergo gemination in loanwords, and even those which can, do so in different degrees. The ranking of consonants undergoing gemination in monosyllabic loanwords (when the consonant in question is not spelt with a double letter in the source word) is: voiceless stops, voiceless affricates >> voiceless fricatives >> nasals, voiced stops >> liquids >> voiced fricatives. This order lines up with universal hierarchies of gemination: voiceless consonants are less marked geminates than voiced ones, obstruents generally tend to undergo gemination more often than sonorants (see Podesva 2002 and Steriade 2004), which potentially supports the hypothesis that Hungarian speakers are drawing on their knowledge of this universal hierarchy. However, before we can conclude this, we must ask whether a less direct mechanism could be at play: phonetic pressures shape the native lexicon, and learners learn the preference from that.

The goal of the present study is to test the following hypotheses: (1) Universally observed hierarchies of geminate markedness are reflected by the native Hungarian lexicon; (2) Speakers have some awareness of these hierarchies - at least, those tendencies will show up in their preferences and judgements; (3) Such universally observed tendencies and native speakers' preferences based on those patterns are learnable from the native lexicon.

To test Hypothesis 1, we extracted all monosyllabic words ending with a short vowel + short consonant and short vowel + geminate sequences from the Hungarian Webcorpus on the Szószablya Project Website (Halácsy et al. 2004), counted type frequencies and established geminate-to-singleton ratios by consonant class. The hierarchy of consonant classes by geminate-to-singleton ratio is as follows: voiceless affricates (0.65) >> voiceless stops (0.49) >> voiceless fricatives (0.46) >> voiced stops (0.35) >> liquids (0.28) >> nasals (0.24) >> voiced fricatives (0.08), which lines up with universal hierarchies of geminate markedness.

To test Hypothesis 2, we conducted a wug well-formedness judgement experiment to elicit native speakers' judgements on possible native words or Hungarianised loanwords. 115 native speakers were presented with a list of nonce word pairs: one member of the pair was a monosyllable ending in a short vowel + short consonant sequence, while the other was the minimal pair of it with the difference that it ended with a geminate. The list contained all the possible short vowel and singleton / geminate combinations. Participants were asked to decide which item in the word

pair they considered more well-formed as a word of Hungarian. By counting the preferences and collapsing them across consonant classes, we established the following hierarchy based on geminate-to-singleton ratios: voiceless affricates (0.56) >> voiceless stops (0.53), voiceless fricatives (0.53) >> liquids (0.52) >> nasals (0.39) >> voiced stops (0.35) >> voiced fricatives (0.15), which is again very similar to universal hierarchies of geminate markedness, except for the fact the geminate-to-singleton ratio for liquids is surprisingly high in native speakers' judgements (this might be due to additional factors, e.g. the accidental similarity of wug words to word endings or well-known foreign words or brand names). There is a strong positive correlation (r=0.8271) between geminate-to-singleton ratios extracted from the lexicon and elicited from native speakers, which suggests that native speakers seem to have a knowledge of these patterns.

Based on frequencies in the lexicon, we implemented a maximum entropy model using the Maxent Grammar Tool (Hayes & Wilson 2008). We used only markedness constraints for geminates (*ZZ, *SS, *TT, *DD, *TTS, *NN, *LL) and singletons (*Z, *S, *T, *D, *TS, *N, *L). Each letter (or double letter) is a shorthand for a consonant class: voiced fricatives, voiceless fricatives, voiceless stops, voiced stops, voiceless affricates and liquids, respectively. The model assigned weights to the constraints and probabilities to the tested forms. There was a perfect correlation between between the observed (frequencies in the corpus) and expected (assigned by the model) probabilities, which suggest that the correct weighting of geminate markedness constraints is sufficient to predict the statistical distribution of singletons and geminates for each consonant class.

Finally, to test Hypothesis 3, we implemented a model in the UCLA Phonotactic Learner (Hayes & Wilson 2008) without using handcrafted markedness constraints. Since we have found earlier in a learning experiment that there are no consistent co-occurrence restrictions on short vowel + geminate vs singleton combinations in the native Hungarian phonology, our goal was to find out whether it is possible to learn (dis)preferences for geminates and singletons for each consonant or consonant class by taking only consonants into consideration. Our training data included word-final singleton and geminate consonants extracted from a corpus containing monosyllables ending with short vowel + singleton and short vowel + geminate sequences. We used a singleton and a geminated version of each consonant as testing data to see what the probability is of each consonant as a singleton or a geminate in word-final position. What we have found is that the learner is able to make phonotactic generalisations and come up with constraints using distinctive features from feature matrices, and by weighting those constraints, it is able to predict the distribution of each consonant in singleton and geminated forms.

In general, hypotheses (1), (2) and (3) are all supported by our results. Hypothesis 1 is confirmed, since we have found that the frequency of geminates compared to singletons by consonant class in a corpus of Hungarian words reflect patterns of universal geminate markedness, even though it is not what we would necessarily expect, since all geminates are allowed in the native phonology. Similarly, Hypothesis 2 is proven by native speaker preferences, which also line up with the patterns of universal markedness. Hypothesis 3 seems to be supported by the results of our learning experiments, as universal patterns of geminate markedness can be learned from the native lexicon by making phonotactic generalisations, (which also disproves earlier claims according to which gemination in Hungarian loanwords is not predictable based on native phonotactics (cf. Nádasdy 1989)). However, it is not clear whether native speakers in fact have a knowledge of universal patterns (i.e., knowledge that goes beyond the lexicon) or they have generalised those patterns only based on the native lexicon. Moreover, the learning simulation without handcrafted constraints is only a first step in testing Hypothesis 3: the next step would be to see whether a constraint-induction model could actually learn to ignore the vowels (i.e., specific VC combinations).

Decomposing Color Expressions in Malayalam

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We provide evidence for the ambiguity in color terms (e.g., *green*) between a gradable and non-gradable reading, as proposed in [5]. The evidence comes from color terms in Malayalam. Expressions for color exhibit different morphosyntactic behavior in attributive and predicative positions, and in comparatives, as opposed to other adjective-like expressions. The Malayalam data also provide evidence for the existence of an unpronounced noun color, as in [4].

Malayalam adjective-like expressions. Malayalam does not have a lexical category of adjectives [1], [6]. Adjective-like meanings for attributive modification and predication are expressed by structures built from roots denoting property concepts (PC) [6]. As argued by [3] PCs can be lexicalized as adjectives or nouns, both across and within languages (e.g., *intelligent, intelligence*), with further consequences for the grammatical structures in which they can appear. Nominal PCs denote abstract mass substances (e.g., *goodness, height, whiteness*) [2], [3]. We follow [6], in suggesting that all PC roots in Malayalam denote mass substances. The roots are then converted into a reduced relative clause (Class 1) or a nominal (Class 2) in the syntax, depending on the functional head they merge with. The functional head determines their subsequent grammatical properties. We go beyond [6] in showing that color terms have some properties in common with Class 1 and Class 2 expressions, for which we provide an account.

Types of PC expressions: Adjective-like expressions are built on the basis of two forms, ending in *-a* (Class 1) and *–am* (Class 2), [6]. Class 1 forms are relative clauses, *-a* being the independently attested relative verbal morpheme. Class 2 forms are nominals, *-am* being a nominal marker.

1) a. *Class 1 (relativized native roots)* b. *Class 2 (nominalized borrowed roots)*
valiya- big, ceriya- small, puthiya- new santosham- happiness, sankatam- sadness

Color terms belong to Class 1, in that they all end in *-a*. Some roots (e.g., *wel* 'white') have two *-a*-ending forms, one morphologically simpler (Type 1), the other more complex (Type 2).

2) Examples of color terms (morphologically Class 1): Type 1 and Type 2

a.	√wel	welḷa	welḷḷutta	'white'
b.	√kar	-----	karutta	'black'
c.	√pac	pacca	-----	'green'

Grammatical properties of color terms vs. other PC expressions. Color terms behave the same as non-color Class 1 forms in attributive position (3). In predicative position, however, non-color Class 1 forms use the attributive form with the addition of a pronominal (4a), (analyzed as a free relative in [1] or light-headed relatives in [6]), the Type 2 color terms do as well (4c), but the Type 1 color terms do not (4b).

3) a. valiya ela 'big leaf' b. welḷa ela 'white leaf' c. welḷḷutta ela 'white leaf'

4) a. ela valiya-tə aaɳə
leaf big-N.Sg EQ
'The leaf is big.'

b. ela welḷa aaɳə
leaf white EQ
'The leaf is white.'

c. ela welḷḷutta-tə aaɳə
leaf white-N.Sg EQ
'The leaf is white.'

In comparatives, non-color Class 1 expressions and Type 2 color terms prohibit the appearance of the degree word *kuuʈuttal* 'more'. Type 1 color terms allow 'more', similarly to Class 2 forms.

5) anil ravi-e kaaḷum { (*kuuʈuttal) valiya-van aaɳə / (kuuʈuttal) pokkam unʈə }
Anil Ravi-ACC than more big-M.SG EQ more tallness EX

‘Anil is bigger than Ravi (and both are big)’ / ‘Anil is taller than Ravi.’

6) ii ela aa elain-e kaaɭum { (*kuuʈuttal) weḷḷuttatə / (kuuʈuttal) weḷḷa } aaɳə
this leaf that leaf-ACC than more white more white EQ
‘This leaf is whiter than that leaf.’

Analysis. We follow [6] in the analysis of non-color Class 1 forms. The PC root combines with a null *v* with possessive semantics, which also introduces a degree argument. For an individual to have a gradable property (e.g., *bigness*) is for that individual to have a certain amount of the property. The degree argument of the null *v*_poss is bound by a positive degree operator (POS). Thus, in comparatives *more* is prohibited (5), and the interpretation is norm-related. (*Π* is a meta-variable over PC-denoting expressions; μ is a measure function). The resulting verbal predicate of individuals is semantically but not syntactically fit to be used attributively. When relativized by *–a*, it functions syntactically as an attributive modifier to NPs (8).

7) a. $[\![\varnothing_{v\_poss}]\!] = \lambda\Pi\,\lambda d\,\lambda x\,\exists y$ [*y* is an instance of *Π* & *x* has *y* & $\mu(y) \geq d$]
b. $[\![\text{POS}]\!] = \lambda g_{<d,<e,t>>}\,\lambda x\,\exists d$ [$g(d)(x)$ & $d > d_s$]

8) a. [[[√big $\varnothing_{v\_poss}]_v$ POS] *–a*]$_{rel}$ *valiya* ‘big’ (Class 1, non-color)
Lit. ‘having an instance of bigness measuring to a degree that exceeds the standard’
b. $[\![$*valiya* $]\!] = \lambda x\,\exists d\,\exists y$ [*y* is an instance of bigness & *x* has *y* & $\mu(y) \geq d$ and $d > d_s$]

We depart from [6] in treating Class 2 forms as not incorporating a degree argument. We analyze Type 1 color terms in a similar way. Both color roots and Class 2 roots combine with a null *v* that does not have possessive semantics or a degree argument (9). Color terms are then relativized using *–a*, similar to other Class 1 forms, without a change to their semantics. Class 2 forms are further nominalized by *–am*, remaining as predicates of individuals.

9) $[\![\varnothing_v]\!] = \lambda\Pi\,\lambda x$ [x is an instance of *Π*]

10) a. [[[√white $\varnothing_v]_v$ *–a*]$_{rel}$ *weḷḷa* ‘white’ (Class 1, color)
Lit. ‘being an instance of whiteness’
b. $[\![$*weḷḷa* $]\!] = \lambda x.$ [*x* is an instance of whiteness]

11) a. [[[√tall $\varnothing_v]_v$ *–am*]$_{NP}$ *pokkam* ‘tallness’ (Class 2)
Lit. ‘instance of tallness’
b. $[\![$*pokkam* $]\!] = \lambda x.$ [*x* is an instance of tallness]

Type 2 color terms combine with the *v*_poss that derives non-color Class 1 forms, here spelled-out as *–utt*. The derivation and interpretation is analogous to that seen in (7).

Gradable and non-gradable color terms. Type 1 color terms are non-gradable, Type 2 color terms are gradable, providing evidence for the ambiguity posited in [5]. Only Type 1 color terms can be used as classificatory modifiers: e.g. *pacca weḷḷam* Lit. ‘green water’ ‘fresh water’, *cuvanna bhoomi* Lit ‘red earth’ ‘brown sand’, *weḷḷa wine* ‘white wine’ (in fact yellow in color).

Covert COLOR. We propose that Type 1 color terms are always attributive, as their *–a*-ending suggests. The absence of a pronominal in (4b) is due to the presence of an unpronounced COLOR, as in [4].

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When prefixes can be dominant

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Overview: In this paper, we show that a difference in structure between functional and lexical items has a restricting effect on the phonology. Specifically, in lexical items a category-defining node is responsible for the absence of dominant prefixes in vowel harmony. Crucially, in functional items, when category-defining nodes are absent, dominant prefixes are found. We show that the presence or lack of a category defining node determines where left edge prosodic boundaries are placed in words, which has the effect that prefixes lie outside the prosodic domain of the root in lexical items, but not functional. Finally, we extend this proposal to lexical stress assignment where we again see that dominant prefixes are absent in lexical items.

Data: In certain vowel harmony systems, both roots and suffixes can be 'dominant', i.e., donating the harmonic value to an unspecified vowel. However, it has been claimed no languages have dominant prefixes (Baković 2000; Hall & Hall 1980). However, this claim is too strong. In Tunen (Bantoid; Dugast 1971), we see that functional words can have dominant (class) prefixes:

(1a) mu-tənə 'cl.3-this!' (1b) mo-tana 'cl.4-this!'

In (1), an alternating base /-TANA/ is realized as [+ATR] [-tənə] in the context of a dominant +ATR prefix (a) but as -ATR [-tana] when preceded by a non-dominant +ATR prefix (b). However, when this prefix precedes a lexical item, the lexical root (underlined) surfaces with an ATR value independent of the prefix:

(2) mu-and 'cl.3-roof' (3) mu-ənj 'cl.3-bracelet'

A similar pattern is observed in KiBudu (Bantoid; Lojenga 1994). In (4), we see a functional item with an alternating base /-PÍNI/ 'two' which depends on the ATR value of the prefix. In (5), we see a complete reversal: in the context of a lexical item, the ATR value of the prefix is dependent on the lexical item.

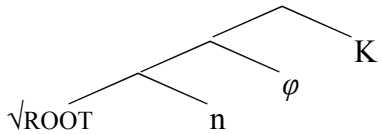
(4a) ɗi-píni(> [ɟepíni]) 'cl.8-two' (4b) ka-pínı 'cl.6-two'

(5) ɗi-siɓó 'cl.8-rainbow' (6) ɗɪ-kyɛmʊ 'cl.8-complete bridepiece'

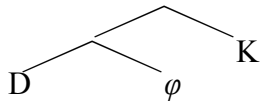
The generalization that emerges is: dominant prefixes exist but their dominance is restricted to functional items (*cf.* Hyman to appear). Kinande (Bantoid; cited in Hyman to appear) and Kalenjin (Nilotic; Hall & al. 1974, Lodge 1995) show the same generalization.

Proposal: A similar contrast between lexical and functional items is observed in suppletion patterns: whilst case-driven suppletion is observed in pronouns it is not seen in lexical items. Working in Distributed Morphology, Moskal (to appear) argues that the ban on case-driven root-suppletion in lexical nouns stems from a structural difference between lexical and functional material. Lexical nouns crucially contain a root and category-defining node *n*, whilst pronouns consist only of a pronominal base ('D'). On top of the base, we have *φ*-features and case (K). This is represented in (7) and (8), respectively.

(7)



(8)



Abstracting away from the details, *n* has a delimiting effect that causes K to be insufficiently local to the root to condition root-suppletion. Relevant here is that Vocabulary Insertion (VI) proceeds from the root outwards (Bobaljik 2000), and category-defining nodes result in the VI of their complement (*cf.* Embick 2010). The result is that the root undergoes VI on its own in (7), but since pronouns lack a category-defining head, no VI domain is formed only containing D.

We propose that the same asymmetry of VI domains is also responsible for the ban on dominant prefixes, and that prosodic structure begins to be built concurrently with VI. (Lexical) roots form a separate VI domain, and, whilst not closed off entirely, we propose the following two hypotheses to derive the ban on dominant prefixes in lexical items (*cf.* the prefix-suffix asymmetry, Nespor & Vogel 1986; see also Cutler et al. 1985; Hawkins & Cutler 1988; Bybee et al. 1990, van Oostendorp 1999, Cysouw 2009; Kim 2014):

(9) The *left edge* of prosodic words aligns with the first VI domain;

When prefixes can be dominant

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(10) Outer material cannot alter material across a prosodic boundary.

That is, at the point that a VI domain is formed, prosodic words begin to be built left-to-right. With lexical material, the category-defining node creates a VI domain containing the root, and the left edge of a prosodic word is introduced (*cf.* Kim 2014; see also Edge-based Alignment theory, Selkirk 1986, Cheng & Downing 2012). This, coupled with (10), bans prefixes from influencing roots since they will then appear outside the prosodic boundary (while allowing roots to influence prefixes). Functional material, however, lacks category-defining nodes; therefore, no VI domain low in the structure is created and the prosodic word boundary is placed higher, crucially above the prefix, allowing prefixes to influence their following morpheme.

Extension: This account can be extended to lexical stress assignment (default stress is assumed to be assigned late and not subject to these restrictions). In accordance with (9) and (10), we predict that the stress of a prefix can never affect the stress of a root. Consider Cupeño (Alderete 1999): a stressed prefix can surface as such in combination with an *unstressed* root (13). However, it cannot surface as stressed when combined with a *stressed* root (14), since in that configuration the prefix would delete the stress of the root across the boundary; rather, we see that the root stress surfaces and deletes stress from the prefix.

(13) /čém-yax/ → čém-yax ‘we say’ (14) /čém-náačin/ → čem-náačin ‘we passed on’

In the paper, we discuss two apparent counter-examples (data from Alderete 1999). Firstly, the Russian perfectivizing prefix *vy-* (15) can delete the stress of a lexically stressed base:

(15a) p’isát’ vý-p’isat’ ‘write/write out’ (15b) skazát’ vý-skazat’ ‘say/expect’

However, following Gribanova (to appear), we assume *vy-* is a lexical prefix (LP), crucially located below category-defining *v*. Recall that *v* results in VI of its complement (16). Thus, the VI domain comprises both prefix and root, putting the prosodic boundary left of the prefix (17).

(16) [[LP √ROOT] *v*] (17) (**ω** vý-p’isat’ ‘write out’

Secondly, the Japanese prefix *ma-* ‘true’ (18) places a stress on the first syllable of the root, irrespective of whether that root is lexically stressed (a) or unstressed (b). In particular, (18a) seems to violate the hypotheses proposed here, since the prefix alters the stress of the root.

(18a) /ma-yonaká/ → ma-yónaka ‘dead of night’ (18b) /ma-usiro/ → ma-úsiro ‘right behind’

Curiously, though, this prefix is post-stressing: it imposes stress on its following syllable. Assuming post-stressing morphemes contain a segmentally null C*V́ template at the right edge, a nucleus bearing stress with any number of consonants intervening, *ma-* is represented as in (19):

(19) maC*V́-

In order to attach to the root, the prefix must then literally integrate into the root structure, causing the boundary between prefix and root to break down. In other words, the requirement of the prefix results in a merging of prefix and root into a single unit, which in turn means that the boundary cannot be identified. In sum, we do not find prefixes affecting root stress across a boundary at the left edge of a VI domain.

Conclusion: In this paper, we showed that a difference in structure between lexical and functional items has consequences for the phonology. Specifically, drawing on independently motivated distinctions in the VI domains of lexical and functional items, we saw that the generalization identified for suppletion is also reflected in vowel harmony: lexical items are more restrictive than functional items. In order to derive the lack of dominant prefixes in lexical items, we proposed two hypotheses: (i) the *left edge* of prosodic words aligns with the first VI domain, and (ii) outer material cannot cross a prosodic boundary. These hypotheses are further corroborated by the absence of dominant prefixes in stress systems.

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How to get off an island

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Introduction: The grammar possesses strategies for bypassing syntactic islands. Based on the selective island (SI) phenomenon, Cinque (1990) and Postal (1998) argue for a resumptive pronoun strategy for extraction from islands. Bachrach & Katzir (2009) argue that multiple dominance obviates islandhood, via a delayed Spellout (DS) mechanism. We argue that both SIs and DS islands arise from the same source, and that DS is the sole mechanism for escaping islands in wh-movement. Fox & Pesetsky's (2009) Collect-based implementation of DS and Johnson's (2010) theory of movement conspire to predict the effects of the resumptive pronoun strategy in both sharing, and non-sharing, contexts; as well as why SI effects emerge in leftward, but not rightward, movement (Postal 1998).

Selective islands: Cinque (1990) and Postal (1998) list a number of restrictions which hold uniquely on extraction from island structures (the SI effects). E.g., extraction from pronoun-rejecting contexts:

(1) a. John can speak (in) Hungarian, and Ted can speak (*in) it too.
b. Which languages did Mary say that Ted can speak (in) _?
c. Which languages does John know a man who can speak ?(*in) _?

These authors argue for a resumptive pronoun strategy, in which a wh-phrase above the island binds a null pronoun below. This correctly predicts that island flouting extraction (1c), but not ordinary extraction (1b), is inhospitable to pronoun-rejecting contexts (1a).

Delayed Spellout: BK observe that extraction from an island noticeably improves if it applies across-the-board (ATB):

(2) a. ??That's the book that John met the man who wrote _.
b. That's the book that John met the man who wrote _ and Mary met the woman who published _.

BK argue that the domains of Spellout for individual constituents are defined in terms of *complete* dominance domains (CDDs) of designated nodes (**Phase Nodes**):

(3) a. **Complete Dominance (CD)**: a node X completely dominates a node Y iff X reflexively dominates *every* mother of Y.
b. **Spellout Domain for X (SOD(X)):** {Y: X **completely dominates** Y}
c. **Island for movement of X:** An island is an SOD which does not allow X to land at its edge (from Fox & Pesetsky 2009)

The phase node is just the maximal projection of the traditional phase heads v, C, etc.

A structure like (4) will be grammatical, even if A and C contain islands, since X is *in*completely dominated within them:

(4) $[_{\&P}$ X $[_{\&'}$ $[_A$ A $[_B$ B X]] & $[_C$ C $[_D$ D X]]]]

Fox & Pesetsky's (2009) notion of Collect answers a question not addressed by BK. A multiply dominated node is participating in multiple subderivations until the point at which the roots of each subderivation merge. But at what point do these subderivations become "aware" of each other for the purposes of CD calculation? FP argue that this "awareness" results from a syntactic operation called Collect. If Collect applies to two syntactic object, then each will be visible to the other for purposes of complete dominance calculation. In (4), X will delay Spellout if the two conjuncts first Collect; if they do not, X will be Spelled out in in both conjuncts.

The puzzle: Islandhood is not fully voided in sentences like (2b). Instead, the full array of SI effects hold. E.g.:

(5) That's one language the John knows a man who speaks *(in) _ and Mary also knows a woman who speaks (*in) _.

The data have a hierarchical structure: non-SI/non-sharing contexts are marginally acceptable (1c); non-SI/sharing contexts are fully acceptable (2b); and SI contexts are starred, regardless of sharing (1c, 5). We argue that his follow from the DS analysis, combined with certain assumptions about the syntax of movement.

The analysis: Johnson (2010) has built a remerge-based theory of movement which derives trace conversion (Fox 1999) without violating the inclusiveness condition. Crucial to Johnson's account, and ours, are two related proposals: (i) a movement step always involves a parallel merge (PM; Citko 2005) configuration at some derivational point, and (ii) non-final movement steps always introduce a null definite determiner. In a typical derivation, the silent D merges with an NP. In the final step, a Q morpheme (Cable 2007) parallel merges with the DP (wh-movement) or NP(quantifier raising), before remerging in an interpretable position c-commanding the DP. Successive cyclic movement is QR feeding wh-movement: merger of a D_1 with an NP is followed by parallel merge of a D_2 with NP. DP_1 merges in the lower, DP_2 in the intermediate, position. Q is introduced only in the final step. Suppose this sort of cyclic merger applies in a sideward fashion in the case of ATB-movement, producing a structure like (6), in which D_1 and D_2 are both merged with NP_1:

(6) $[_{vP}$ John v $[_{VP}$ cook $[_{DP_1}$ D_1 NP_1]]] $[_{vP}$ Mary v $[_{VP}$ eat $[_{DP_2}$ D_2 NP_1]]

If BK's Spellout algorithm is applied to (6), the shared NP will avoid Spellout, leaving only the bare Ds in the SOD(vP)s. Assuming that cyclic Spellout applies at LF, the full DP will not be interpreted in these positions, only the bare D. Since bare Ds are structurally identical to pronouns (Postal 1966, Stanton 2014), this analysis predicts the effects of a resumptive pronoun analysis in ATB-structures.

So far this analysis over-generates: We incorrectly predict SI effects in all ATB cases (e.g. (7)), not just island structures:

(7) Which languages does Bill speak in _ and Ted not understand _?

However, if early Collect can apply freely and fails to in (7), then when the initial SODs in each conjunct are Spelled out, the derivation of each conjuct is unaware of the other. Since the NP is effectively unshared, it will be spelled out, and no SI effects will arise. In island cases (5), Collect must apply early to avoid an island effect. Hence the NP will avoid Spellout, triggering SI effects. Moreover, since movement always involves a PM configuration at some point, early Collect is available even in non-sharing contexts. This is what enables extraction from islands in non-sharing environments to be marginally acceptable (1c). If we assume that Collecting, rather than simply merging, is an unnecessary (and hence marked) option in these non-sharing structures, we also explain why they are degraded relative to shared island structures (the contrast in (2)).

Rightward movement: Postal (1998) shows that selective island effects don't hold of rightward movement:

(8) John knows someone who can speak in _, and Ted knows someone who can understand understand _, several Slavic languages.

Where Postal's analysis must stipulate this difference between leftward and rightward movement, ours naturally predicts it. The theory of cyclic linearization automatically predicts that rightward movement can evade islands (Sabbagh 2007). Consequently, Collect needn't be invoked to avoid islandhood here, and SI effects should not emerge.

Order! On Word Order and the Structure of the DP

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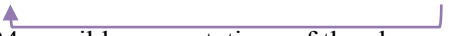
Summary: Novel observations show that Cinque's (2005) phrasal movement proposal makes correct predictions regarding the grammaticality of word order variation in Lebanese Arabic (LA) DPs. Adding an adjective yields a grammatical order Cinque (2005) cannot derive. We show that assuming an additional merge position—either for demonstratives or for numerals—derives the order without losing Cinque's typological predictions, and we present evidence favoring an additional *numeral* position.

Background: The cross-linguistic distribution of the order of Demonstrative, Numeral, Adjective, and Noun in the DP is uneven: 5 frequent orders, 9 infrequent, 10 rare/unattested. Cinque (2005) explains this pattern by allowing only movement of the overt NP and phrases containing it, assuming merge order (1) and the markedness assumptions in (2). Additionally, *partial* movement of NP, to positions below Dem is typologically rare and considered marked.

1. $[_{WP}$ Dem $[_{XP}$ Num $[_{YP}$ Adj $[_{NP}$ N $]]]]$

2. a. $[_{WP}\ [_{XP}\ [_{YP}\ [_{NP}$ N $]_1$ Adj $t_1]_2$ Num $t_2]_3$ Dem t_3 $]$ — Unmarked
   b. $[_{WP}\ [_{NP}$ N $]_1$ Dem $[_{XP}$ Num $[_{YP}$ Adj t_1 $]]]$ — Marked
   c. $[_{WP}\ [_{YP}$ Adj $[_{NP}$ N $]]_1$ Dem $[_{XP}$ Num t_1 $]]$ — Very marked
   d. $[_{WP}\ [_{NP}$ N $]$ Dem $[_{YP}[_{XP}\ [_{NP}$ ~~N~~ $]_1$ A t_1 $]_2$ Num $t_2]$ — Highly marked



Data: Of the 24 possible permutations of the elements Dem-Num-Adj-Noun, 9 are grammatical in LA. These 9 orders are derivable by Cinque. Of the remaining 15, given in (3), 14 orders, namely (3b-o), involve impossible/highly marked movements. As predicted, they are judged marginal/ungrammatical.

3. a. Dem-Num-A-N b. A-N-Dem-Num c. Dem-A-N-Num d. Num-A-N-Dem e. A-N-Num-Dem
   f. Num-Dem-A-N g. Num-Dem-N-A h. Num-N-Dem-A i. N-Num-Dem-A j. A-Dem-Num-N
   k. A-Dem-N-Num l. Dem-A-Num-N m. Num-A-Dem-N n. A-Num-Dem-N o. A-Num-N-Dem

(3a) manifests the order of merge. Its derivation involves no movement. At most we expect it to be marked, so its ungrammaticality in LA is surprising. We explain this ungrammaticality by assuming, following Shlonsky (2012), that DPs in agreement-rich languages must involve NP movement above agreeing modifiers. Since adjectives agree in LA, (3a) cannot be grammatical.

A problem arises when adding a second adjective: Sentence (4), manifesting the surface order Det-Num-N-Adj-Dem-Adj, is grammatical but underivable by Cinque (2005). And the adjective following the demonstrative cannot be a dismissed as a reduced relative as it is non-intersective and non-predicative (a "low" adjective in terms of Cinque (2010)).

4. t-tlat mhandsiin l-madaniyyiin hol s-seeb?iin
   the-three engineers the-civil these the-former 'These three former civil engineers'

Allowing movement of phrases not containing the NP would derive (4), but it would also overgenerate, deriving (3f-o), which are all extremely rare/unattested typologically and ungrammatical in Arabic. There are two ways to derive (4) without over-generating. The first is to assume a lower position for demonstratives: Assuming (5) as the merge order, the relatively costless derivation in (6), which consists of step-wise pied-piping to a position below Num, derives the word order in (4).

5. $([_{WP}$ Dem) $[_{XP}$ Num $[_{YP}$ Adj $([_{ZP}$ Dem) $[_{NP}$ Noun $]]]]$
6. $[_{XP}$ Num $[_{YP}$ Adj$_1$ $[_{ZP}$ Dem $[_{YP}$ Adj$_2$ $[_{NP}$ Noun $]]]]$

Such an analysis would find its place among those proposed by Guardiano (2010), Brugè (1996), and Roberts et al. (2011), who provide cross-linguistic evidence for low DEM. It is also supported by the optional co-occurrence of a pre-nominal and a post-nominal demonstrative in LA (7). WALS also lists 17 languages in which this co-occurrence is obligatory, including Malagasi (Dryer et al. 2013).

7. ha l-mhandsiin hool
   DEM the-engineers DEM.pl

Another alternative is to retain a unique position for demonstratives, as Cinque does, but posit a second, lower, position for numerals, as in (8). The movements in (9) would derive the word order in (4): NP moves above the first adjective, then the numeral, the second adjective, and the demonstrative merge, then **$[_{ZP}[_{UP}$Adj$_1[_{NP}$Noun$]]$Num$]$** moves directly above the demonstrative.

8. $[_{WP}$ Dem $([_{XP}$_Num) $[_{YP}$ Adj $([_{ZP}$_Num) $[_{NP}$ N $]]]]$

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9. [$_{WP}$ Dem [$_{YP}$ Adj$_2$ [$_{ZP}$ Num [$_{UP}$ Adj$_1$ [$_{NP}$ Noun]]]]]

The low demonstrative analysis in (6) seems to involve a less marked derivation than the low numeral one in (9). But there are several reasons not to exclude the low numeral possibility, detailed below.

Reason 1: Standard Arabic (SA) DP-internal case patterns militate in its favor. In the absence of numerals, case is manifested on the head noun, and adjectives concord with the noun in case (10). When a DP contains a numeral, the numeral bears the DP case, and the noun appears in the genitive (11). When an adjective is added to (11), it can match either the noun in case and manifest the genitive, or it can match the numeral and manifest the structural case (12).

10. shaahada al-muhandis-u as-saabiq-u barnaamaj-an
    watched the-engineer-NOM the-former-NOM program-ACC
    'the former engineer watched a program'

11. shaahada thataathatu muhandisiin xamsata baraamij-in
    watched three-NOM engineer-GEN five- ACC programs-GEN 'Three engineers watched 5 programs'

12. a. waSala [thalaathatu [[[muhandisiin] saabiqiin] lubnaaniyiin]]
       arrived-3ms three-NOM engineer.GEN former.GEN lubnaaniy.GEN
    b. waSala [[thalaathatu [muhandisiin]] saabiquun] lubnaaniyuun]
       arrived-3ms three-NOM engineer.GEN former.NOM lebanese-NOM'
    c. waSala [[thalaathatu [[muhandisiin] saabiqiin]] lubnaaniyuun]
       arrived-3ms three-NOM engineer.GEN former.GEN lebanese-NOM
    d. *waSala thalaathatu muhandisiin saabiquun lubnaaniyiin
       arrived-3ms three-NOM engineer.GEN former.NOM lebanese-GEN
       'Three Lebanese former engineers arrived'

Let us assume that adjectives concord in case with the case-marked complement they immediately C-command. The variation in case-marking on adjectives (12a-c) can be attributed to different positions of the numeral: When the base order is [Num[Adj*[N]]], the adjective is in genitive (12a), N movement over 'former', followed by pied-piping over 'Lebanese' yields the observed word order. When the base order is [Adj*[Num[N]]], the adjective bears NOM (or ACC when the DP is in object position) (12b). Surface order is derived by moving Num+N above the adjectives, with pied-piping. In (12c), the numeral is straddled by the adjectives,with 'former' immediately modifying 'engineer' and 'Lebanese' modifying 'three former engineers'. Surface order is reached by moving N above 'former', then moving [$_{NumP}$three [$_{XP}$[$_{NP}$engineer] former]] above 'Lebanese'. Finally, the ungrammaticality of (12d) shows that case cannot be arbitrarily assigned: An adjective concording with the noun in GEN cannot be separated from the noun by the numeral (and adjectives concording with the numeral). An alternative, at odds with typological generalizations, is that numerals are adjectives and can intersperse freely among different adjectives. But numerals assign case, so they cannot be adjectives.

Reason 2: Like demonstratives, numerals can occur in Arabic before and after the noun. In fact, the low and high numeral positions can co-exist, so a DP can manifest two numerals concurrently (13).

13. a. t-tlatt wleed t-tleeteh
       the-three kids the-three
       'The three kids'

    b. l-xams qaarraat l-arba henneh tleeteh…
       the-five continents the-four t hey three…
       'The five continents which are four, are three.'

The co-occurrence of numerals conveys redundancy in (13a), and contradiction (humor) in (13b). The doubling of the demonstrative in (7), however, makes no semantic contribution, suggesting that it may be a matter of concord. That demonstrative doubling is concord is also supported by the obligatory co-occurrence of pre- and post-nominal demonstratives in Malagasy and a host of other languages.

Reason 3: The two positions for numerals are motivated based in Ouwayda's (2011) work on transdecimals, which can trigger either plural or non-plural agreement, correlating with restrictions on collective/distributive interpretations of adjectives and verbs (14).

14. a. tleetiin walad mnazzam
       thirty child organized-ø
       '30 organized kids'

    b. tleetiin walad mnazzam-iin
       thirty child organized-pl
       'An organized group of 30 kids' OR '30 organized kids'

While the unpredicted order in (4) can be handled by postulating two positions for demonstratives, our main contribution lies in proposing that there may also be two numeral positions. Note that the second Num does not adversely affect Cinque's typological predictions: The frequent and infrequent orders are derived as he describes from Dem>Num>Adj>Noun (some are additionally derivable from Dem>Adj>Num>Noun, somewhat increasing their expected frequency). The rare/unattested word orders continue to be underivable or to involve very marked movements.

States and Causation: The Curious Case of Labile Adjectives in English

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Introduction: In the literature, no clear consensus has been reached on whether stative predications also require a Davidsonian-style eventuality variable in their representations (cf. Higginbotham 1985 vs. Maienborn 2003). In this paper, I analyse the strange semantic behaviour of a small but respectable class of mental-state adjectives to argue (i) that argument structure relations need to be separated from lexical descriptions in stative eventuality representations, just as in the Neo-Davidsonian approach to thematic relations of dynamic verbs (Parsons 1990 inter alia) and (ii) that just as in dynamic events, causation is implicated in the argument structure hierarchies here as well (Pustejovsky 1991, Hale and Keyser 1993).

Background: It is not just adverbial modification that benefits from the existence of a Davidsonian event variable. Evidence for the separation of thematic relations (Higginbotham 1985, Parsons 1990, or even just the external argument (Kratzer 1996), require an event variable in order to construct an integrated event description, and connect well with decomposed and constructivist views on argument structure. But do states show evidence of argument structure separation and flexibility that might provide some motivation for admitting that they too construct situational descriptions in the same way? Consider object experiencer verbs (cf. Belletti and Rizzi 1988, Landau 2005) like *amaze, fascinate, interest, please, frighten* etc. As noted in the literature, they often have a dynamic version alongside their more stative counterpart (*Horror movies frighten John.* vs *The tiger frightened John (by jumping out at him from the bushes).* On the dynamic reading, 'the tiger' performs some action that causes a state of fear to arise in John. In the stative reading, 'horror movies' are the *source* of John's fear. One could argue that SOURCE/TARGET/SUBJECT-MATTER ETC is just the static equivalent of CAUSE: one state of affairs can be directly responsible for another state of affairs (especially a psychological one), even if there is no temporal transition expressed. Thus argument structure asymmetries corresponding to causative embedding can be argued for if one looks at transitive states of this kind. That said, these simple transitives do not provide straightforward arguments for separating the argument structure from the lexical semantics of the verb in and of themselves. Turning now to adjectival predications. Argument structure complexity is even more difficult to motivate, since they are all monovalent (although distinctions analogous to the unaccusative-unergative distinction have been proposed in the literature Cinque 1990, Bennis 2004). Interestingly, monovalent predications can be built from the bivalent stative OE verbs above using participial morphology, and both *-ing* and *-ed* participial morphology are productively available. Make a participle in *-ing*, and the resulting participle must modify the *subject* of the corresponding verb; make a participle ending in *-ed/en*, and the resulting participle must modify the internal argument of the corresponding verb. (Note that with stative psych verbs, the participles so formed do have the external distribution of adjectives, and are not merely non-finite verbal structures/reduced clauses (see Bennis 2004.)

(1)a. The tiger frightened the man. OBJECT EXPERIENCER VERB

b. The frightening tiger EXTERNAL ADJECTIVE

c. The frightened man. INTERNAL ADJECTIVE

Internal Adjectives are built from abstracting over the internal argument position of the verb and reifying the property of possessing a particular emotional state, here 'fear', (whether or not there was an actual event that triggered that emotional state). External Adjectives are built from abstracting over the highest argument position of the verb,

while the internal argument seems to be bound off by being interpreted generically.

(2) a. [[frighten]] = λxλy[Fright(s) & EXPERIENCER(s, x) & SOURCE/CAUSE(s,y)]

b. [[frightened]] = λx[Fright(s) & EXPERIENCER(s, x)]

c. [[frightening]] = λyGENx[Fright(s) & EXPERIENCER(s,x) & SOURCE/CAUSE(s,y)]

A Curious Phenomenon: Surprisingly, there is a class of *underived* adjectives in English that have the same intuitive argument structure as OE psych adjectives derived from verbs. To my knowledge this is a set of data that has not so far been addressed in the literature. These adjectives are ambiguous between the *frightened*-type reading and the *frightening*-type reading.

EXTERNAL ADJ READING	INTERNAL ADJ READING
The *happy/sad* man cried.	The *happy/sad* news made the woman cry
The *curious* man looked at the painting.	The *curious* painting attracted many stares.
He was a *proud* father at that moment.	It was a *proud* moment for the father.
He is a man *comfortable* in his own skin.	This *comfortable* sheepskin is very warm.

The adjectives modifying the inanimate nouns here *cannot* be ascribing an emotional state. They assert that the inanimate noun has the property of triggering said emotional state. This is not merely a metonymic *extension* of the psych adjective's meaning in some way, since it is categorically not possible to do with derived adjectives like *frightened, interested or fascinated* that bear unambiguous morphology.

(3) a. *The fascinated painting drew gasps from the crowd.

b. *The interested book was high on the best seller list.

It is also not a systematic coercion that is always possible, since there are a few adjectives describing emotional states that do *not* allow the SOURCE/SUBJECT-MATTER reading.

(4)a. *The angry news article was impossible to keep silent about.

b. The sad news article was impossible to keep silent about.

Moreover, these adjectives are not just vague in some sense. This is a genuine ambiguity where the difference in reading corresponds to different selectional properties. Not surprisingly, the EXPERIENCER reading of *curious* allows for the selection of an infinitival expressing the target of emotion as in Faraci (1974) Landau (1999), but the SOURCE/SUBJECT-MATTER/CAUSE reading of *curious* does not.

(5) a. *Mary was curious [OP_i [for John to see t_i]]

b. The movie$_i$ was quite curious [OP_i [PRO_{gen} to watch t_i]

Analysis and Interpretation: I will argue that the labile psych adjectives here involve abstraction over the highest argument of an implicit predication. Contra Landau (1999), I will argue that the Internal(psych)-adjective version of *curious* involves a simple psych property predication and is a monovalent form. Secondly, I will propose that the SOURCE/CAUSE version of *curious* is derived by abstraction over the highest argument of a *causativized* version of the psych-property predication, where the EXPERIENCER argument is generically bound, much as in the representations in (2c). Rather than control facts in (5) reflecting an argument-adjunct distinction as Landau (1999) argues, I will argue that they result from special properties of EXPERIENCERS with respect to control. If the analysis is on the right track, then it means that even underived adjectival states/properties such as *happy*, *curious* etc., can undergo labile causativization as an input to attributive modification. The phenomenon therefore argues in favour of the view that adjectives denote pure stative properties without 'argument structures' per se (a Neo-Davidsonian position). This type of alternation seems to call for a situational variable a la Davidson, and a severing of the external argument from the adjectival denotation itself. The labile causational diathesis suggests further that states and dynamic eventualities are part of the same logical ontological vocabulary.

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Super additive phonological similarity as constraint conjunction

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This paper presents a case of parasitic tone harmony from Dioula d'Odienné in which super additivity of local and long-distance segmental feature similarities increases the likelihood of tone harmony. The analysis is based in an agreement by surface correspondence framework (e.g., ABC: Hansson 2001; Rose & Walker 2004), which formalizes the widespread observation that more similar objects are more likely to interact (e.g., Kaun 1995; Burzio 2002; Zuraw 2002; Frisch et al. 2004). Dioula exhibits super additivity in that the more similar two segments are—along independent but related planes of similarity (e.g., sonority, vowel quality, nasality), the more likely tone is to spread. In this present analysis, I argue that super additivity in the Dioula data can be formally captured by integrating weighted constraint conjunction into Maximum Entropy Optimality Theory (MaxEnt: e.g., Goldwater & Johnson 2003), counter to previous arguments that a weighted approach to OT does not need constraint conjunction (e.g., Potts et al. 2010). Such a novel approach, combining ABC, probabilistic OT, and conjunction, offers insights into the constraint conjunctions that may occur in a corpus of natural language data, based along dimensions of similarity attraction.

Dioula d'Odienné (Mande; Braconnier 1982; a.o.) exhibits a variable tone pattern that is conditioned by consonants and vowels. In TYPE 1 lexical items, morphological H(igh) tone denoting definiteness appears on the final vowel of the root, as shown in (1a). In TYPE 2 stems, the definite H tone triggers regressive H tone harmony on the final and penultimate syllables (1b):

(1)

			indefinite	*definite*	*gloss*
a.	TYPE 1	L.L → L.H	fòdà	fòd**á**	'season'
b.	TYPE 2	L.L → H.H	kùnà	k**ú**n**á**	'leprosy'

The current work shows that whether nouns exhibit disharmonic TYPE 1 or harmonic TYPE 2 behavior is probabilistically dependent on several factors. For analysis, all multisyllabic nouns (n = 1173) were collected from the Dioula lexicon (Braconnier & Diaby 1982). The data demonstrate that the sonority of the final intervocalic consonant influences tone harmony. Nouns with less sonorous final intervocalic consonants (e.g., obstruents) are with high likelihood TYPE 1. Amongst sonorants, liquids are more likely to facilitate tone harmony than nasal sonorants. This pattern suggests that segments that are more similar in sonority—e.g., liquids and surrounding vowels—are more likely to interact than segments with less similar degrees of sonority. In addition to sonority, similarity in nasality and vowel quality in the VCV# sequence also leads to a greater likelihood to exhibit harmonic TYPE 2 behavior. Words in which the final vowel is nasalized and the intervocalic final consonant is also nasal are more likely to be TYPE 2 items (e.g., /sànạ̀/ → [sánạ́], 'tree'). Nasalized vowels without adjacent nasal consonants or nasal consonants without adjacent nasalized vowels do not as readily propagate tone harmony. Additionally, long distance featural identity between the two vowels facilitates tonal agreement (e.g., /tùrù/ → [túrú], 'oil'), whereas featural nonidentity inhibits tonal agreement (e.g., /brìsá/ → [brìsá], 'bush').

A multivariate analysis of the data reveals that these effects of similarity are additive: the more similarity that is exhibited between members of the VCV# sequence, the more likely it is that the penultimate vowel will assimilate the H tone of the final vowel in the definite form (i.e., TYPE 2 behavior). For example, 71% (202/284) of nouns with liquid sonorants, nasality agreement, and vowel quality agreement (e.g., /tùrù/ → [túrú], 'oil') are TYPE 2 items, with tone harmony; in contrast, only 38% (37/97) of nouns with liquid sonorants but no nasality nor vowel quality agreement (e.g., /tùlɛ̀/ → [túlɛ́], 'raven') are TYPE 2.

The basic system of tone harmony in Dioula can be modeled in ABC as the propensity for similar segments to correspond and become more similar via tonal harmony. Local and long-distance correspondences between featurally similar segments are mandated by a set of CORR constraints that compel correspondence over adjacent, similar segments, as illustrated in the tableaux below. The CORR constraints are paired with IDENT-XX [H], which requires agreement in H tone over corresponding segments, and input-output faithfulness (e.g., IDENT-IO V [tone]). Segments that do not meet the similarity prerequisites for correspondence will not be units relevant to correspondence-triggered tone harmony, as demonstrated in (4, TYPE 1) versus (5, TYPE 2) with a sonority-prerequisite correspondence:

	input	W ~ L	CORR-X::X [son]	IDENT-XX [H]	IDENT-IO V [T]
(2)	/brìsà, -H/	brìsá ~ bríᵢśᵢáᵢ			W
		brìsá ~ brìᵢsᵢáᵢ		W	
(3)	/kùnà, -H/	kúᵢńᵢáᵢ ~ kùná	W		L
		kúᵢńᵢáᵢ ~ kùᵢnᵢáᵢ		W	L

The additive similarity preconditions to tone agreement in Dioula amount to a ganging effect, with more similarity in sonority, nasality, and vowel quality leading to a greater likelihood of tone harmony. Constraint conjunction has been one method proposed in Optimality Theory for managing such additive effects (e.g., Smolensky 2006). With weighted constraint approaches that can also model variation, however, it has been argued that constraint conjunction is unnecessary and that weighted constraints are by themselves sufficient to capture additive ganging (in harmony systems, see e.g., Potts et al. 2010). Although an additive similarity precondition effect for Dioula can be obtained via the additive calculation of *Harmony* scores, the quantitative data from Dioula shows that the simple addition of constraint weights in HG is insufficient to adequately model the probabilistic super-stacking effects of similarity. Two analyses of the lexical data were fit and compared using a logistic regression implementation to simulate Maximum Entropy OT: one without constraint conjunction and one with an array of binarily-conjoined CORR constraints. The conjoined CORR constraints (i.e., interaction terms in the regression implementation) provide an independent weighting for the conjunction of two constraints: for example, when an item occurs with *both* a sonorant consonant and identical vowels, the cost of tone disharmony is a super-additive penalization above and beyond the additive *Harmony* score of the individual, non-conjoined CORR-X::X [son] and CORR-VV constraints. Information-theoretic model comparison (based on Burnham & Anderson 2002; a.o.) demonstrates that the analysis with conjoined constraints significantly better captures the lexical patterns in Dioula than an analysis with no constraint conjunction, without overfitting ($\Delta AIC = 18$). These results indicate the data-driven validity of the super-additive effects.

The variable lexical tone pattern in Dioula d'Odienné offers evidence that, to capture observed phonological patterns, super additivity using both constraint conjunction and constraint weights is necessary. Although the tone phenomenon of Dioula is unusual in comparison to more familiar consonant-tone depressor/elevator phenomena, a probabilistic ABC treatment of tone harmony predicts the existence of such a system, in which increasing similarity along multiple dimensions results in the increasing likelihood of harmony. Couching the analysis in ABC furthermore provides a potential explanation for which constraints are most likely to be conjoined, based on principles of similarity attraction rooted in phonetics and feature theory (e.g., Wayment 2009).

The learnability filter and its role in the comparison of metrical theories

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The midpoint pathology (in the sense of Kager 2012) characterizes a type of unattested stress system in which stress is drawn to the middle of mid-length words, but not others. Kager (2012) shows that the pathology is an unavoidable prediction of analyses employing contextual lapse constraints (e.g. *EXTLAPSER; no 000 strings at the right edge), and argues that the only way to avoid it is to eliminate these constraints in favor of weakly layered feet. I argue instead that systems exhibiting the midpoint pathology are unattested not because the constraints that would generate them are absent from CON, but because the necessary ranking is difficult to learn.

This proposal has implications for metrical theory, and phonological theory more generally. If the absence of midpoint systems can be attributed to a learning difficulty, there is no need to eliminate contextual lapse constraints from CON, and Kager's (2012) argument for the necessity of weakly layered feet does not hold. More broadly, these results support the view that typology is shaped and limited by considerations of learnability (Boersma 2008, Alderete 2008, Staubs 2014). When evaluating the factorial typology of a constraint set, it is important to consider not only what is predicted to be a possible language, but also what can be learned reliably.

The pathology. Midpoint systems share three properties: (i) stress falls at or close to an edge in short words, (ii) stress is drawn towards the middle of mid-length words, and (iii) stress returns to the edge in longer words. The pathology results when two opposite-edge contextual lapse constraints dominate all other accentual phonotactics. In (1), for example, the ranking *EXTLAPSEL >> *EXTLAPSER >> ALIGNL results in a midpoint system; domains where the top two constraints are satisfied are subscripted L and R, respectively. Stressing the initial syllable in (1a) satisfies all three constraints. To satisfy both contextual lapse constraints in (1b), stress is drawn towards the middle of the word. In (1c), where *EXTLAPSEL and *EXTLAPSER no longer conflict, stress returns to the left edge to satisfy higher-ranked *EXTLAPSEL.

(1)	a. *Left edge*	b. *'Midpoint'*	c. *Return to left edge*
	$[[\acute{\sigma}\sigma]_L]_R$	$[\sigma[\acute{\sigma}\sigma]_L\sigma]_R$	$[\acute{\sigma}\sigma\sigma]_L[\sigma\sigma\sigma]_R$
	$[[\acute{\sigma}\sigma\sigma]_L]_R$	$[\sigma\sigma[\acute{\sigma}]_L\sigma\sigma]_R$	$[\acute{\sigma}\sigma\sigma]_L\sigma[\sigma\sigma\sigma]_R$

Kager (2012) shows that the midpoint pathology is an unavoidable consequence of including contextual lapse constraints in CON. By eliminating contextual lapse constraints in favor of weakly layered feet (see also Martínez-Paricio 2013, Martínez-Paricio & Kager 2014), it is possible to avoid the pathology altogether. Kager's (2012) paper stands as a strong argument that weakly layered feet – and feet in general – are a necessary component of metrical theory.

The alternative. This paper identifies several distinct factors that make midpoint systems difficult to learn. Here we focus on two. First: ignoring the long words in (1c), the data in (1a-b) could come from a system with antepenultimate (AP) stress. It is necessary for learners to encounter enough long words (6+ syllables) to be sure that (1) is a midpoint system. Results from a study on the cross-linguistic distribution of word lengths suggests that this situation is unrealistic. In a corpus with data from 100+ languages, words with 6+ vowels make up, on average, 1%. It is unlikely that a child learning (1) would receive much overt evidence that (1) is the correct hypothesis. Without this evidence, a child exposed to (1a-b) might acquire a system with AP stress. Second: when the learner *is* exposed to long words (1c), the necessary updates present the learner with a credit problem. For example, when confronted with long words (1c), a learner could infer that ALIGNL >> *EXTLAPSER; this is at odds with (1b), where it is apparent that *EXTLAPSER >> ALIGNL. I hypothesize that these factors and other biases reflected in the larger typology make midpoint systems hard to learn, which leads to their unattested status.

Modeling results. To test the hypothesis that midpoint systems are hard to learn, I created a learner informed by the results of the word length study, and compared its performance on midpoint systems to superficially similar, but attested, systems. A subset of these systems is below: (2) has initial stress, (3) has antepenultimate (AP) stress, and (4) is (1), "Midpoint".

(2)	*a.*	σ́σ	*d.*	σ́σσσσ	*(3)*	*a.*	σ́σ	*d.*	σσσ́σσ	*(4)*	*a.*	σ́σ	*d.*	σσσ́σσ
	b.	σ́σσ	*e.*	σ́σσσσσ		*b.*	σ́σσ	*e.*	σσσσ́σσ		*b.*	σ́σσ	*e.*	σ́σσσσσ
	c.	σ́σσσ	*f.*	σ́σσσσσσ		*c.*	σσ́σσ	*f.*	σσσσσ́σσ		*c.*	σσ́σσ	*f.*	σ́σσσσσσ

I selected five distributions from the survey data to feed to the learner. Inuktitut has the most long words (6-7 syllable words = 28.1%), Haitian Creole has none (0%), and Portuguese is closest to the average (0.8%). The learner used was Magri's (2012) convergent GLA. Each pattern was presented 10 times, for 10,000 trials per run. As the number of long words decreased, the number of trials required to learn Midpoint (4) increased. When the learner was deprived of long words, it failed to learn the midpoint system, converging instead on one with AP stress. No similar difficulty arose for either of the attested systems. The table below presents the number of trials needed for the learner to converge, organized by system and word length distribution.

	Inuktitut	*Luganda*	*Portuguese*	*English*	*H. Creole*
Initial (2)	*3*	*3*	*4*	*9*	*12*
AP (3)	*14*	*15*	*22*	*68*	*254*
Midpoint (4)	*32*	*66*	*351*	*929*	*10,000+*

The bias against Midpoint is due to basic properties of error-driven learning: for two distinct reasons, Midpoint is *inherently hard to learn*. When the learner is deprived of long-word data, as is the case for most humans, it converges on AP because AP is the hypothesis that is closest to the initial state and compatible with all available data. When the learner is exposed to long words, learning Midpoint is hard due to the credit problem mentioned above: taken individually, the updates provide conflicting information about the pairwise rankings of specific constraints. The long-word story explains why midpoint systems are absent in languages without long words; the credit problem explains why midpoint systems are absent in languages that have them.

Further predictions. If certain crucial rankings can only be inferred from long words, the system in question will be difficult to acquire unless the learner has access to many long words. This makes a prediction: *stress systems where long words are crucial should only arise in languages where long words are frequent*. I show that this prediction is borne out in the typology of quantity-insensitive stress systems (Gordon 2002). In many cases, the behavior of long words is predictable given the behavior of short words. For example, independently needed constraints on where lapses are preferable makes certain properties of long words in lapse-allowing systems predictable, given the properties of short words. In the rare cases where the stress of longer words isn't predictable from that of short words, long words are extremely frequent (Cayuvava (Key 1961, 1967) and Chugach Alutiiq Yupik (Leer 1985)). Furthermore, the necessary updates do not introduce a credit problem, meaning that the system can be learned very quickly.

Summary and implications. Kager (2012) shows that weakly layered feet accomplish two goals: (i) they characterize the maximal size of stress windows, and (ii) they allow us to avoid the midpoint pathology. Staubs (2014) provides an alternative explanation for (i) by showing that large windows are hard to learn, and this paper proposes a similar explanation to achieve the goal in (ii). If we can explain (i) and (ii) by appealing to learnability, that allows an alternative to Kager's (2012) conclusions that weakly layered feet are necessary, and that contextual lapse constraints should be eliminated. We can also understand these restrictions on the typology as representative of restrictions on the types of systems that can be learned accurately and reliably.

An Autosegmental Account of Tundra Nenets Glottal Stop

Darya Kavitskaya and Peter Staroverov

The process of final debuccalization in Tundra Nenets presents both a famous descriptive problem (Tereshchenko, 1956; Janhunen, 1986; Salminen, 1997; Nikolaeva, 2014) and a serious theoretical challenge, because of its transparent and opaque interactions with final vowel deletion (Kavitskaya & Staroverov, 2010). This paper proposes a new autosegmental account of Tundra Nenets glottal stop, framed within Stratal OT and building in particular on the ideas in Bermúdez-Otero (2001, 2012). We argue that both nasals and obstruents lose their place finally at the word level, but nasals may regain place specification due to postlexical assimilation. The proposed analysis captures the interactions between debuccalization and vowel deletion. Our account thus solves a problem for Stratal OT by postulating a relatively abstract intermediate step representation.

Problem. The Tundra Nenets data in this talk come from the authors' original fieldwork. In Nenets, phrase-final /t d s n ŋ/ change to a glottal stop (1a). Phrase and word-medially, the obstruents /t d s/ are deleted before another obstruent (with concomitant fortition of a following fricative) while nasals undergo place assimilation, with concomitant voicing of a following obstruent (1b,c).

(1) Alternations of Tundra Nenets underlying obstruents

a. Debuccalization phrase-finally (words in isolation)
   /mʲat/ [mʲaʔ] 'tent'; /sʲin/ [sʲiʔ] 'lid'

b. Deletion and assimilation word-medially
   /mʲat-ta/ [mʲata] 'his tent'; /sʲin-ta/ [sʲinda] 'his tent'

c. Deletion and assimilation across word boundary
   /nʲe-ʔ xʌnʌ/ woman-GEN.PL sledge [nʲe kʌn] 'a women's sledge'
   /nʲe-n xʌnʌ/ woman-GEN.SG sledge [nʲeŋ gʌn] 'a woman's sledge'

Phrase-finally, the vowel /ʌ/ is deleted, and final /ʌ/-deletion counterfeeds debuccalization (2a). Interestingly, a final-syllable /ʌ/ is also deleted before [ʔ], thus debuccalization triggers (or feeds) pre-final vowel loss.

(2) Final syllable vowel deletion in Tundra Nenets

a. Phrase-finally (words in isolation)
   /xʌnʌ/ [xʌn], *[xʌʔ] 'sledge'; /nʲenzʌtʌ/ [nʲenzʌd], *[nʲenzʌʔ] 'otter'

b. Before a final glottal stop
   /mʲelʌd/ [mʲelʔ] 'master'; /ŋebtobertsʲʌn/ [ŋebtobertsʲʔ] 'scissors'

These data present several problems for Stratal OT and in fact for any OT framework. For one thing, debuccalization must be post-lexical since it only applies phrase-finally (1), but at the same time debuccalization must preceed final /ʌ/-deletion (2a). In current versions of Stratal OT there is only one post-lexical level (Bermúdez-Otero, forthc.; Kiparsky, forthc.), and therefore both conditions cannot be met at the same time. More importantly, the two /ʌ/-deletion processes are clearly related, yet they have to be assigned to different derivational stages because debuccalization triggers pre-final /ʌ/-deletion (2b) but fails to be triggered by final /ʌ/-deletion (2a). An important generalization is thus lost.

Analysis. We propose that Tundra Nenets debuccalization should be analyzed as a two-step process. Final glottal stop is placeless, but the loss of place features derives [ʔ] only from obstruents, while nasals also have to lose nasality to yield [ʔ] (McCarthy, 2008). At the lexical level, both word-final obstruents and nasals lose their C-Place specification, but nasals /n ŋ/ retain nasality, thus: /t d s/ → [ʔ]; /n ŋ/ → [N]. /ʌ/-deletion is not applicable at the lexical level.

Post-lexically, the place loss is no longer operative: the constraint against word-final C-Place is demoted below MAX. At this level, a previously created placeless nasal /N/ may either lose its nasality (phrase-finally, as in [sʲiʔ] 'lid') or assimilate to a first consonant of a following word (phrase-medially, as in [nʲeŋ gʌn] 'a woman's sledge'). All words begin in a consonant, so /N/ never ends up before a vowel.

/ʌ/-deletion is active only post-lexically. The two environments for /ʌ/-deletion are unified by assuming that final /ʌ/ is penalized if its place features are adjacent to a word edge, i.e. if it is followed maximally by a placeless glottal stop. This is encoded in the constraint *ʌ-Place]$_{word}$ which dominates MAX only post-lexically.

Post-lexical final /ʌ/-deletion exposes new place-bearing consonants to word-final position (as in [xʌn] 'sledge'), but this cannot trigger debuccalization since the place loss no longer happens post-lexically. On the other hand, the final consonants which lost their place at the word level now expose a preceeding /ʌ/ to a deletion environment, and pre-final /ʌ/ indeed deletes in these cases, e.g. [mʲelʔ] 'master' (2b). Crucially, /ʌ/-deletion does not happen before a placeless nasal when it regains place due to post-lexical assimilation. For example the phrase /nʲenʲetsʲʌN sawa/ 'the man is good' escapes both processes, surfacing as [nʲenʲetsʲʌn zawa].

Alternatives. Kavitskaya & Staroverov (2010) argue that the Tundra Nenets process interaction presents a serious challenge for Harmonic Serialism and propose a technical solution within OT with Candidate Chains (McCarthy, 2007). Unlike their proposal, the present account does not involve additional machinery, which is motivated solely by opaque interactions of a particular type. Our account is closer in spirit to the existing descriptions that postulate an abstract 'nasalizeable glottal stop' entity which is not phonetically different from [ʔ] but differs solely in alternating with a nasal (Tereshchenko, 1956; Janhunen, 1986; Salminen, 1997). We make precise formal sense of the two different 'glottal stops', while showing that the contrast between /N/ and /ʔ/ is neutralized on the surface.

Conclusion. The proposed account captures the peculiar properties of Tundra Nenets debuccalizaiton, as well as its interaction with final syllable /ʌ/-deletion. Debuccalization is treated as a unified and non-arbitrary phenomenon, while the special behavior of nasals follows from their featural specification. /ʌ/-deletion is treated as a uniform process in its both environments. The interaction between the two processes follows entirely from the independent assumptions of Stratal OT. Our account relies on the partially specified autosegmental representations and predicts that both nasals and obstruents may end up placeless on the surface (Keating, 1988; Cohn, 1990, 1993; Bermúdez-Otero, 2001). Tundra Nenets thus shows that a comprehensive treatment of opacity within Stratal OT has to make use of partially specified representations (Bermúdez-Otero, 2012).

Aspectual distinctions in the present tense in Romance and cross-linguistically

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Many languages lack a morphological perfective/progressive distinction in the present tense and differ from English, which has this distinction in both past and present tenses (see (1) and (2)).

(1) a. I promis*e* to come.
b. He *is* promis**ing** to come.

(2) a. At 8, I promis*ed* to come.
b. At 8, I *was* promis**ing** to come.

It is an ongoing debate how such languages should be analyzed - whether as lacking the semantic perfective/progressive distinction in the present (semantic hypothesis) or as having it in both tenses, but only covertly in the present (syncretism hypothesis). The two hypotheses are illustrated in Figure 1 for Latin, where the morphological asymmetry between present and past is particularly clear. This paper supports the syncretism hypothesis by (i) arguing that perfective readings of simple present tense sentences are available in French as they are in English (see 1a) and (ii) providing an analysis of the morphological patterns found cross-linguistically compatible with the syncretism analysis.

	promis*i* 'I promised'
promi**tt***o* 'I'm promising'	promi**tt***ebam* 'I was promising'

promi**tt***o* 'I promise', 'I'm promising'	promis*i* 'I promised'
	promi**tt***ebam* 'I was promising'

Figure 1: Latin morphology: semantic hypothesis (left) and syncretism hypothesis (right)

Semantic hypothesis. Giorgi & Pianesi (1997) proposed that the Romance morphological gap falls out from present perfective logical forms (LF) being false in Romance by virtue of their logical structure. The Romance perfective denotes a strict inclusion of the event time $\tau(e)$ in the reference time $t_{\text{reference}}$ ($\tau(e) \subset t_{\text{reference}}$). The utterance time, u_t, is assumed to be a point in time. Therefore, combining present tense morphology with perfective aspect will always result in a logically false sentence: there is no event e whose run time $\tau(e)$, point or interval, is strictly included in u_t, a point. Romance expresses the perfective aspect morphologically only in contexts where it can give rise to true readings, e.g. in the past but not in the present. Present tense then only combines with non-perfective aspects in Romance (progressive and habitual).

The English perfective morpheme denotes a non-strict inclusion of the event time in the reference time ($\tau(e) \subseteq t_{\text{reference}}$). A present perfective LF can then be true (see (1a), (3a), and (3b), where $\tau(e) = u_t$) and no present and past morphological asymmetry is predicted.

(3) a. I promise that I will come. "explicit performative" (Austin 1962 a.o.)
b. John kicks the ball. "reportive present" (Bennett & Partee 1972, Kratzer 1998)

Syncretism hypothesis. Kratzer (1998) proposed that there is a single perfective morpheme in English and Romance denoting a non-strict inclusion of the event time in the reference time ($\tau(e) \subseteq t_{\text{reference}}$). Present perfective LFs can then be true in both languages. The only difference between Romance and English is superficial: the perfective/progressive distinction is syncretic in Romance but not in English.

⇒ The two theories make different predictions as to the number of aspectual readings available for simple present and simple past sentences in Romance: they are predicted to have one additional reading ($\tau(e) = t_{reference}$) under the syncretism hypothesis.

French data. In French, the periphrastic progressive *être en train de* ("to be in the midst of") and the simple present tense are generally in free variation in sentences like (4a) and (4b) (Comrie 1976). This fact is predicted under both hypotheses: a progressive parse is available in simple present tense sentences under both analyses.

(4) a. Je fais mes devoirs. (I am doing my homework) progressive: ✓
b. Je suis en train de faire mes devoirs. progressive: ✓

However, with explicit performatives, only simple present tense morphology can give rise to the performative effect: (5a) can be used to make a promise, but (5b) rather describes someone being in the middle of making a promise (parallel to English (6)).

(5) a. Je promets que je viendrai. performative: ✓
b. Je suis en train de promettre que je viendrai. performative: *

(6) a. I promise that I will come. performative: ✓
b. I am promising that I will come. performative: *

Under the syncretism hypothesis, sentences (5a) and (6a) have a present perfective parse available, but not (5b) and (6b). This difference makes it possible to derive the contrasts in (5) and (6) with respect to performativity, if we assume in addition that (a) the time of the event denoted by the explicit performative verb and the utterance time have to match (i.e., $\tau(e) = u_t$) for the performative effect to arise (Lauer 2013, Krifka 2014, etc) and (b) a LF in the progressive entails that $t_{\text{reference}}$ and $\tau(e)$ are not equal (Katz 2003, Portner 1998, etc). Under these conditions, only a present perfective LF can convey that $\tau(e) = u_t$ and therefore only a present perfective LF can have a performative reading.

Under the semantic hypothesis, (i) no asymmetry is predicted between (5a) and (5b) because neither has a perfective parse, and (ii) both should be equally bad as performative utterances.

More French data. The verbal stem used in the present tense and in the imperfect can have perfective readings in modal uses, e.g. with futurates (e.g., *Dès qu'il entre*$_{\text{PRESENT}}$*, tu sautes* "as soon as he enters, you will jump") and in antecedents of conditionals (e.g., *S'il prenait*$_{\text{IMPERFECT}}$ *ce syrop, il irait mieux* "If he took syrup, he would feel better"; see Iatridou 2000). This fact falls out straightforwardly from the syncretism hypothesis: the present and imperfect stem is underspecified and therefore can be used with a perfective meaning. Under the semantic hypothesis, this stem is marked as [-Perfective]: the presence of perfective readings is problematic and has to be accounted for either by assuming a non trivial syntax (Ferreira 2014) or that morphology can be "fake" (Iatridou 2000).

Cross-linguistic variation. Languages that have a perfective/progressive distinction in the present (English, Japanese) necessarily have it in the past and in the future (Bybee 1994 a.o.). Under the semantic hypothesis, this implicational universal could be explained as the consequence of languages being divided between those with an English-like perfective and those with a Romance-like perfective. Under the syncretism hypothesis, the asymmetry can be understood as resulting from a preference to neutralize a distinction in a context where there is a better disambiguation strategy available. In the present tense, it should be easier to disambiguate between the two aspectual readings because the progressive reading is much more likely to be true than the perfective one. For a present perfective LF to be true, $\tau(e)$ and u_t have to perfectly match. This condition is arguably hard to be met outside of a limited set of contexts like performative and reportive present sentences. In the other tenses, no such asymmetry is expected and therefore hearers would not be able to default as easily to one of the two readings in case of syncretism.

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Property concept and spatial configurational states in Mandarin

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This paper compares two kinds of causative predication in Mandarin Chinese, arguing that their forms reflect the nature of the kind of state associated with the causative predicate. In Mandarin, caused change of state (COS) predication is expressed largely through resultative verb compounds (RVCs) (1) comprising an activity verb and (e.g. *yā* 'press') and what appears to be an adjective (e.g. *biǎn* 'flat'). In contrast, events of caused change of location i.e. events of putting, and of putting in a spatial configuration, are expressed by monomorphemic verbs (2).

(1) xiǎoháir **yā-biǎn-le** nítuán
child press-flat-PERF mudball
The child pressed the mudball flat.
CAUSED COS

(2) lǎo tàitai **guà-le** xiē huà zài qiáng-shang
old lady hang-PERF some painting be.at wall-upon
The old lady hung some paintings on the wall.
PUTTING IN SPATIAL CONFIGURATION

I argue that caused COS RVCs such as (1) are systematically related to property concept adjectives. Specifically, the second member of the RVC (V2) is a COS verb derived from a homophonous adjective. Locative and spatial configurational state predicates, however, have no clear derivational relationship with a counterpart expressing change of location or configuration, caused or otherwise.

I show the second member of an RVC may be a deadjectival COS verb, describing a change to the state described by the homophonous adjective. Adjectives such as *biǎn* 'flat' (3) show a COS interpretation in the presence of the perfective marker *-le* (4). This form cannot, however, express caused COS (5).

(3) nítuán **hěn biǎn**
mudball very flat-PERF
The mudball is very flat.

(4) nítuán **biǎn-le**
mudball flat-PERF
The mudball got flat.

(5) *xiǎoháir **biǎn-le** nítuán
child flat-ASP mudball
Intended: The child flattened the mudball.

The COS sense in (4) is not simply inferred from the perfective context, but arises also in degree modification and negation contexts. Apparent adjectives, when modified by *-de hěn lìhai* 'to a serious extent', describe *change* to a high degree. They may combine with the negation marker for stative predicates *bù*, negating that the state holds, or with the negation marker for events *méi*, negating the occurrence of a COS event. Underived COS verbs such as *pò* 'break' only allow degree modification with *-de hěn lìhai* 'to a serious extent' but not *hěn* 'very', and may only be negated with *méi* but not *bù*. All these indicate that the COS interpretation of an apparent adjective really arises from a homophonous COS verb. Now underived COS verbs, which have no adjectival counterpart, also occur as V2 in an RVC. This shows that V2 in an RVC is a COS verb that may be deadjectival. That is, the form *biǎn* 'flat/flatten' may have either the meaning in (6) or (7).

(6) $biǎn_{Adj}$ 'flat': λx FLAT(x)

(7) $biǎn_{V}$ 'flatten': λx λe [BECOME[FLAT(x)]](e)

In contrast with adjectives, the stative locative morpheme *zài* 'be at' (8) produces no interpretation of change (i.e. arrival) with perfective *-le* (9), although *-le* is able to induce COS interpretations for other stative predicates such as *xǐhuān* 'like' (10). Rather, arrival requires a path-encoding morpheme e.g. *dào* 'arrive' (11). That is, locative predicates, unlike adjectives, do not seem to participate in event structure alternations. This conclusion converges with Gehrke's (2007) argument that West Germanic prepositions are not ambiguous between locative and directional meanings.

(8) wǒmen **zài** jīchǎng
1pl be.at airport
We are at the airport.

(9) *wǒmen **zài-le** jīchǎng
1pl be.at-PERF airport
Intended: We got to the airport.

(10) wǒ **xǐhuān-le** tā de nǚ-ér
1sg like-PERF 3sg ASSOC daughter
I started to like her daughter.

(11) wǒmen **dào-le** jīchǎng
1pl arrive-PERF airport
We arrived at the airport.

Verbs of putting such as *fàng* 'put', and verbs of putting in a spatial configuration (henceforth V_{SC}) such as *guà* 'hang' in (2) above, however, do show both causative (as in (2)) and stative (12) uses. On the other hand, these verbs do not have seem to have an achievement sense of entering a spatial configuration: (12) is not felicitous if the durative marker is replaced by the perfective.

(12) dēnglong zài wū-liáng-shang **guà-zhe** / ??-le
lantern be.at house-beam-upon hang-DUR / PERF
Lanterns hang from the beams of the house.

The question then is whether one of either the stative or the causative sense can be said to be derived from the other. I argue against a derivational relationship. Rather, I show that both senses are independently available, as argued for English by Levin and Rappaport Hovav (1995). Deriving causative V_{SC} from a stative variant seems unwarranted for two reasons. One is the lack – or at least the unclear status – of an intransitive sense of change to a spatial configuration. A derivational relationship between the stative and causative would be more plausible for a language where the inchoative is also attested, as in Spanish (Talmy 1985). Second, clearly deadjectival COS verbs do not causativize (3)-(5), casting doubt on any phonologically null causative alternation in Mandarin.

I then show that the stative sense cannot be understood as a result state predicate derived from the causative verb, potentially effected by the durative marker *-zhe*. First, V_{SC} with *-zhe* may describe a state "unrelated to any preceding action": *guà-zhe* 'hanging' may also describe fruit or leaves hanging from tree branches (Jaxontov 1983). Second, *-zhe* combines with different kinds of verbs, as long as the predicate does not describe a punctual event. These may include verbs with state e.g. *ài* 'to love', activity e.g. *zuò* 'to do', and accomplishment e.g. *gǎibiàn* 'to change' event structures. That is, *-zhe* is dedicated neither to marking states nor results. Third, *-zhe* with a causative predicate does not generally yield a result state interpretation. (13) shows that RVCs cannot combine with *zhe* to produce a result state reading. Importantly, result state interpretations are equally unavailable when *-zhe* combines with an RVC formed by a V_{SC} (14). These data suggest that stative V_{SC} is not derived from the causative.

(13) jìngzi cā-liàng-le/*zhe
mirror wipe-bright-PERF/DUR
The mirror has been wiped bright.

(14) huà guà-hǎo-le/*zhe
painting hang-good-PERF/DUR
The painting has been hung (properly).

That is, a V_{SC} such as *guà* 'hang' has two representations. One is a causative variant that expresses a caused spatial configuration at a location (15) (P_{LOC} is a variable over locative predicates such as *zài qiáng-shang* 'on the wall' in (2)). The other is a stative variant that describes the state of being in a spatial configuration (16). These variants are not derivationally related, but can be understood as arising from systematic polysemy.

(15) $guà_{CAUS}$:
$\lambda P_{LOC}\ \lambda y\ \lambda x\ \lambda e'\ \lambda e''\ \lambda e$ [ACT(x, y)(e′) & BE.HANGING(x)(e″) & P_{LOC}(e″) & CAUSE(e′, e″)(e)]

(16) $guà_{CONFIG}$: $\lambda e\ \lambda x$ [BE.HANGING](x)(e)

The non-derivational approach towards causative and stative V_{SC} is more consistent with the lack of monomorphemic caused COS verbs in Mandarin, and with the event structure rigidity of the stative locative, than a derivational approach. In contrast, the relative flexibility of property concept adjectives in allowing COS interpretations is better captured by a derivational relationship.

Rising scale segments: additivity, comparison and continuation

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Problem In several unrelated languages, additivity is homophonous with comparison (e.g. English *more*) and/or continuation (e.g. German *noch*, 'still'), as illustrated in examples (1) and (2), where the additive interpretation of *more* and *noch* is the most salient. The homophony between comparison and additivity is also attested with the Guarani suffix *-ve* (see Thomas 2009), with the French *de plus*, Spanish *más* and Portuguese *mais*. The homophony between additivity and continuation is attested in Hebrew (*od*, Greenberg 2012) among other languages. Finally, Romanian *mai* may be interpreted as an additive, comparative or continuative operator.

(1) Tom had two coffees this morning, and he had one more after lunch.

(2) Otto hat NOCH einen Schnaps getrunken. (Otto had another Schnaps, Umbach 2012)

Existing analyses of additivity (Greenberg 2009, 2010, Thomas 2009, 2010) posit an ambiguity between the additive and the non-additive interpretations of these particles. This does not account for the lexical association of additivity with comparison and continuation cross-linguistically. The goal of this talk is to explain this association by decomposing the denotation of the relevant particles and pointing out a common core, using Schwarschild's (2012, 2013) notion of directed scale segments and an analysis of semantic underspecification in Distributed Morphology (DM).

Comparison Schwarzschild (2012, 2013) proposes that comparative statements assert the existence of a scale segment σ that is rising ($\nearrow\sigma$), whose starting point $\textsc{start}(\sigma)$ is the measurement of the standard of comparison and whose endpoint $\textsc{end}(\sigma)$ is the measurement of the target of comparison. I propose an extension of Schwarzschild's analysis that deals with amount comparison in the following way: (3) asserts the existence of a rising segment σ on a scale of cardinalities, such that $\textsc{start}(\sigma)$ is the cardinality of the set of beers that Sandra drank, $\textsc{end}(\sigma)$ is the cardinality of the set of beers that Tom drank, and the difference $\Delta(\sigma)$ between $\textsc{end}(\sigma)$ and $\textsc{start}(\sigma)$ equals 2:

(3) Tom drank two more beers than Sandra.

$$\exists\sigma[\nearrow\sigma \wedge \textsc{start}(\sigma) = |\{x : \textbf{beer}(x) \wedge \textbf{drink}(x)(\textbf{Sandra})\}| \wedge \textsc{end}(\sigma) = |\{x : \textbf{beer}(x) \wedge \textbf{drink}(x)(\textbf{Tom})\}| \wedge \Delta(\sigma) = 2]$$

Following Bresnan (1973) and many others since, a gradable predicate is formed from a non-gradable NP (or VP) by inserting a covert MUCH operator in the LF. MUCH combines with a measure function f, two sets of entities P and Q and a functional head Σ (of the type of END or START). RISE denotes a property of rising scale segments and is combined intersectively with the property of scale segments it c-commands. A differential expression in (9) measures the difference between the extremities of the scale. The LF of (3) is given in (10), where expressions in big caps stand for (bundles of) features in DM:

(4) $[\![\text{MUCH}]\!]^c = \lambda f.\lambda P.\lambda Q.\lambda\Sigma.\lambda\sigma.\Sigma(\{x : P(x) \wedge Q(x)\})(f)(\sigma)$

(5) $[\![\text{COUNT}]\!]^c = \lambda P.|P|$

(6) $[\![\text{END}]\!]^c = \lambda P.\lambda f.\lambda\sigma.\textsc{end}(\sigma) = f(P)$

(7) $[\![\text{START}]\!]^c = \lambda P.\lambda f.\lambda\sigma.\textsc{start}(\sigma) = f(P)$

(8) $[\![\text{RISE}]\!]^c = \lambda\sigma.\ \nearrow\sigma$

(9) $[\![\text{DIFF TWO}]\!]^c = \lambda\sigma.\Delta(\sigma) = 2$

(10) [$\exists_\sigma$ [[[DIFF TWO] [RISE [END [[[MUCH COUNT] BEER] 1 TOM DRANK t_1]]]]
[START [[[MUCH COUNT] BEER] 1 SANDRA DRANK t_1]]]]

In the talk, I will also present an analysis of adverbial comparison along the same lines.

Additivity The additive interpretation of (11) is captured by letting the starting point of the segment be the measurement of a contextually salient set of beers $\phi_{\text{BEER},c}$, while its endpoint is the measurement of the union of this set with the set of beers that Tom drank. The numeral *one* is interpreted as a differential expression: (11) is true iff there is a rising scale segment $\nearrow\sigma$ that starts with the cardinality of some salient set ϕ_c and that ends with the cardinality of the union of ϕ_c with the set of beers that Tom drank, and the difference between the endpoint and the starting point of the scale equals one (which entails that Tom drank one beer).

(11) Tom drank one more beer.

Whereas comparative interpretations of *more* are generated by combining MUCH with END and START, which fix the endpoint and the starting point of a scale segment respectively, additive interpretations are obtained by combining MUCH with the additive head ADD, which fixes both the starting point and the endpoint of a scale, as shown in (12). The LF of (11) is given in (13):

(12) $[\![\text{ADD}]\!]^c = \lambda P.\lambda f.\lambda\sigma.\textsc{start}(\sigma) = f(\phi_{\text{P},c}) \wedge \textsc{end}(\sigma) = f(P \cup \phi_{\text{P},c})$

(13) [$\exists_\sigma$ [[DIFF TWO] [RISE [ADD [[[MUCH COUNT] BEER] 1 TOM DRANK t_1]]]]]

Continuation Temporal continuation is expressed by quantifying over segments of the time line (the set of instants of time ordered by the temporal precedence relation). Let ∂ be the static presupposition operator of Beaver and Krahmer (1998). Then *es regnet noch* ('it is still raining') is analyzed as in (14). It asserts that there is an increasing segment σ of the time line whose endpoint is the time of utterance t^* such that it is raining at σ's endpoint, and it presupposes that it is raining at every instant in σ that precedes its endpoint:

(14) $\exists\sigma[\nearrow\sigma \wedge \textsc{end}(\sigma) = t^* \wedge \textbf{rain}(t^*) \wedge \partial\forall t(t \in \sigma \wedge t < \textsc{end}(\sigma) \rightarrow \textbf{rain}(t))]$

(15) $[\![\text{CONT}]\!]^c = \lambda P_{<i,t>}.\lambda\sigma.\lambda t.\textsc{end}(\sigma) = t \wedge P(t) \wedge \partial\forall t(t \in \sigma \wedge t < \textsc{end}(\sigma) \rightarrow P(t))$

(16) [$\exists_\sigma$ [PRES [RISE [CONT [RAIN]]]]]

Vocabulary insertion In English, the vocabulary item *still* is specified for the feature RISE in the context of the feature CONT. On the contrary, *more* is specified for the feature RISE without contextual restriction. Consequently, the insertion of *more* in the context of CONT is blocked by the availability of the more specific VI *still*. In German, *noch* is only specified for RISE, while *mehr* is specified for RISE in the context of END, which prevents *noch* from spelling out comparison. Finally, in Romanian *mai* is specified for RISE without contextual restriction and no other VI is specified for RISE. In all of these languages, ADD, END and CONT are realized as zero morphemes.

Restrictions on additivity interpretations of *more* Greenberg (2009, 2010) and Thomas (2009, 2010) observed that *more* is unattested with gradable predicates that denote intensive measure functions, as illustrated in (17). I propose that this follows from the fact that additive *more* requires the insertion of MUCH for type theoretic reasons. As Schwarzschild (2006) observed, MUCH is incompatible with gradable predicates that are interpreted intensively, even in comparative sentences. To wit, (18) cannot mean that the coffee that I bought was hotter than the coffee than Bill drank, but only that I bought more coffee by volume, price, or some other salient extensive measurement.

(17) Yesterday John bought 10 carat gold. #Today he bought 12 carat more. (Greenberg 2010)

(18) I bought more coffee than Bill.

One advantage of this analysis it that it reduces the anti-intensiveness of additivity to a restriction that is independently attested with comparative interpretations of *more*. Other restrictions on additive interpretations of *more* will be discussed in the talk.

Conclusion The common semantic core of additive, comparative and continuation operators is quantification of rising scale segments. These operations differ from one another in the identification of the segments' extremities and the nature of the scales. The homophony that this observed cross-linguistically is due to semantic underspecification of VIs such as *more*, *noch* and *mai*.

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When statistics met formal linguistics: variation in Dutch verb clusters

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SUMMARY This paper combines quantitative-statistical and formal-theoretical approaches to language variation. I provide a quantitative analysis of verb cluster variation in 267 dialects of Dutch and map the results of that analysis against grammatical microparameters extracted from the theoretical literature. Based on this new methodology, I argue that variation in verb cluster ordering in Dutch dialects can be largely reduced to three grammatical microparameters.

THE DATA: VARIATION IN DUTCH VERB CLUSTERS Of the 6 theoretically possible orderings for the three-verb cluster in (1), 4 are attested in Dutch dialects (Barbiers et al., 2008):

(1) a. *Ik vind dat iedereen moet$_1$ kunnen$_2$ zwemmen$_3$.*
I find that everyone must can swim
'I think everyone should be able to swim.'

b. Ik vind dat iedereen moet$_1$ zwemmen$_3$ kunnen$_2$.

c. Ik vind dat iedereen zwemmen$_3$ moet$_1$ kunnen$_2$.

d. Ik vind dat iedereen zwemmen$_3$ kunnen$_2$ moet$_1$.

e. *Ik vind dat iedereen kunnen$_2$ zwemmen$_3$ moet$_1$.

f. *Ik vind dat iedereen kunnen$_2$ moet$_1$ zwemmen$_3$.

However, not every Dutch dialect allows every one of the orders in (1a-d): some allow one, some 2, some 3, and some 4. In total, there are 12 different combinations of orders attested in Dutch dialects, i.e. there are 12 different dialect types for this single verb cluster. When we do the same analysis for the 31 verb cluster orders that were investigated in Barbiers et al. (2008), we find a staggering 137 different types of dialects.

RESEARCH QUESTIONS This high degree of interdialectal variation raises fundamental questions for parameter theory: to what extent is this variation determined by grammatical microparameters, and how do we go about identifying those parameters?

THE METHODOLOGY The analysis starts from a 31×267 data table with cluster orders as rows and dialect locations as columns. Cells contain "yes" if that cluster order occurs in that dialect, and "no" if it doesn't. To this table I apply a Multiple Correspondence Analysis (Husson et al., 2011), which involves two steps. First, the raw data table is transformed into a 31×31 distance matrix, whereby each cluster order is compared to each other cluster order and the degree of difference between them is given a score between 0 (= identical geographical distribution) and 1 (= complementary geographical distribution). Second, the 31×31 distance matrix is reduced to a two- or three-dimensional one for easy visualization and interpretation. A two-dimensional representation of the verb cluster data under investigation here is given in figure 1. In this graph, each of the 31 cluster orders is situated on a two-dimensional plane. When two cluster orders are close together this means that they have a highly similar geographical spread, while when two orders are far apart they typically do not occur in the same dialect locations.

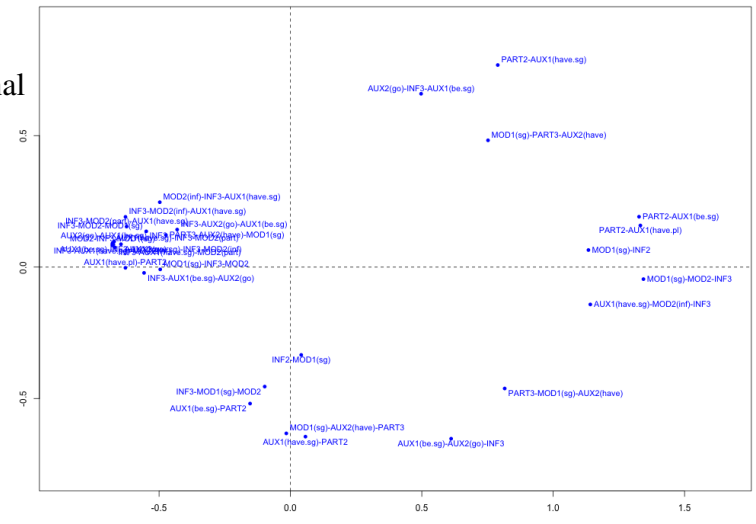

Figure 1: Two-dimensional plot of 31 verb cluster orders

The question now is to what extent this variation can be accounted for by grammatical factors. In order to investigate this I extracted possible grammatical parameters from the theoretical literature. For example, in Barbiers (2005)'s analysis, the base order is strictly head-initial, all movements are VP-intrapositions, they are feature-driven and can pied-pipe VPs other than the one undergoing checking. This means we can now categorize verb clusters according to whether (a) they can be base-generated, (b) they involve movement, (c) they involve pied-piping, and (d) they involve a feature-checking violation. A small sample is given in Table 1.

	base-generation	**movement**	**pied-piping**	**feature-checking violation**
auxiliary$_1$-participle$_2$	yes	no	no	no
participle$_2$-auxiliary$_1$	no	yes	no	no
infinitive$_3$-modal$_2$-modal$_1$	no	yes	yes	no
...	...	...	...	...

Table 1: Partial classification of cluster orders based on Barbiers (2005)

I have added 70 such linguistic variables to the analysis, representing the analyses of among others Barbiers (2005), Barbiers and Bennis (2010), Abels (2011), Haegeman and Riemsdijk (1986), Bader (2012), and Schmid and Vogel (2004). We can then investigate which of those variables provides the best match for the empirical variation depicted in figure 1. For example, is there a linguistic parameter such that all the negative values on the *x*-axis in figure 1 correspond to one setting of that parameter, and all the positive values to the other setting? In order to measure the degree of correspondence between the data and the theory, we calculate the squared correlation ratio (η^2), which is a measure for the proportion of variance along one of the dimensions of figure 1 that is explained by a specific linguistic variable.

THE RESULTS: THREE GRAMMATIAL MICROPARAMETERS Reducing the 31×31 distance matrix to three (rather than two, as in figure 1) dimensions accounts for 78.46% of the variation found in the verb cluster data. I take this to mean that there are three grammatical microparameters at play in this data set, and that these three parameters together are responsible for roughly 80% of the variation. In order to identify those parameters we need to map each of those three dimensions against the 70 variables extracted from the theoretical literature and see which ones match up best. The first dimension turns out to be highly correlated with the position of participles and infinitives vs. their selecting verbs, i.e. auxiliaries and modals (η^2=0.61): it sets apart dialects where the modal precedes the infinitive and the participle precedes the auxiliary from dialects where at least one of these conditions is not met. The second dimension sets apart clusters that end in a descending order (21, 132, 321, 231) from clusters that end in an ascending order (12, 123, 312, 213) (η^2=0.38). The third dimension separates strictly head-final orders (21 and 321) from all the others (η^2=0.68).

BEYOND THE NUMBERS: A PARAMETRIC ANALYSIS Based on these three parameters we can construct a parametric account of verb cluster ordering in Dutch, whereby we start out from a head-final base order, which can be changed by movement or not (dimension 3: $\pm$MOVEMENT); if it is, this can involve multiple movement steps in the case of three-verb clusters (123, 312, 213) or not (321, 132, 231) (dimension 2: ECONOMYOFMOVEMENT); and this is combined with a head parameter regulating the position of participles and infinitives (dimension 1).

FURTHER EXTENSIONS: HEADEDNESS This methodology can shed new light on old verb cluster puzzles such as headedness: we can directly compare head-initial, head-final, and 'mixed' analyses and see to what extent the patterns they predict also show up in the data.

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