Abstracts

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Poster Session I
Friday 2:45 - 4:45

Movement vs. long distance Agree in raising: disappearing phases and feature valuation

Synopsis This paper proposes that cross-linguistic differences in the distribution of subjects in raising constructions follow from whether or not there are phase boundaries between matrix T and the highest subject position in the embedded clause. Languages like (1a) are shown to require movement of the embedded subject, whereas languages like (1b) allow the subject to be licensed in situ via Agree with T. We argue that (1a) is the default structure predicted under a dynamic phase approach, and that (1b) is derived by phase extension due to *v*/V-raising and a particular type of selection of the raising complement.

(1) a. [$_{TP}$ SUBJECT T [$_{PHASE}$ … *seem* … [$_{PHASE}$ ~~SUBJECT~~ …] Movement-language
b. [$_{TP}$ T+*v* … *seem* … SUBJECT …] Agree-language

Agree vs. movement languages While infinitive-internal subjects are prohibited in English raising infinitives such as (2a), similar constructions are possible in Gr(eek), Ro(manian), Sp(anish) (Alexiadou, Anagnostopoulou, Iordachioaia & Marchis [AAIM] 2010, To appear), as well as Hu(ngarian) (and other languages; Szabolcsi 2009), see (2b-d). The above authors show that raising constructions in these languages (GrRoSpHu) have the following properties: the subject can occur within the embedded subjunctive (GrRo) or infinitive (SpHu; in Hu, focused XPs must precede the V they are associated with; since the subject in (2d) follows the matrix V, but precedes the embedded V, this word order is evidence for the subject occurring within the infinitive); it can be an R-expression (i.e., there is no co-indexed matrix *pro*); and it obligatorily agrees with the matrix raising verb.

(2) a. *There stopped {(the) teachers} to {(the) teachers} scold the children.
b. Stamatisan/*stamatise [na malonun **i daskali** tus mathites]$_{SUBJ}$ Gr(eek)
stopped.3PL/*3SG [SUBJ scold.3PL **the teachers** the students]$_{SUBJ}$
'The teachers stopped scolding the students.' [AAIM, To appear: (36)]
c. Dejaron/*Dejó [de reñir **los profesores** a los alumnos]$_{INF}$ Sp(anish)
stopped.3PL/*3SG [INF scold the teachers ACC.DOM the students]$_{INF}$
d. Elkezdtek/*Elkezdett [**csak a fiúk** dolgozni éjszaka]$_{INF}$ Hu(ngarian)
began.3PL/*3SG [**only the boys** work.INF at.night]$_{INF}$
'It began to be the case that only the boys work at night' [Szabolcsi 2009: 18]

Furthermore, embedded subjects in GrRoSpHu must take low scope ((2d) cannot mean 'Only the boys began to work at night'), and cannot establish a (covert) c-command dependency with matrix elements (such as an agreeing modifier, (3a); see AAIM for scope). Overt movement, (3b), as well as backward control, (3c), allow such covert dependencies (for space reasons we only illustrate this for Greek). In this respect, GrRoSpHu differ from Adyghe (Polinsky and Potsdam 2006, 2012), which also allows low subjects in raising constructions, however, these (PF) low subjects are interpreted in the matrix clause.

(3) a. Arhise (***pikni**) na skepazi **i skoni** ta epipla
started.3SG (*dense.FEM) SUBJ cover.3SG the dust.FEM the furniture
b. **I skoni** arhise (**pikni**) na skepazi ta epipla
the dust.FEM started (dense.FEM) SUBJ cover.3SG the furniture
'The dust started dense to cover the furniture'
c. Arhise **panikovlitos** na klidoni **mono o Janis** tin porta tu
Started.3SG panicking.MASC SUBJ lock only the Janis.NOM the door his
'Only Janis began in panic to lock his door' Backward control

We argue that the properties in (2)-(3) indicate that infinitive/subjunctive-internal subjects in GrRoSpHu neither overtly nor covertly raise to the matrix clause, but that the Case of the embedded subjects is licensed via Agree with matrix T (see e.g., Alboiu 2006, Alexiadou & Anagnostopoulou [A&A] 1999 for the claim that subjunctive T does not license nominative). In contrast, in languages such as English (and Adyghe) no such Agree relation can be established (see below), and unmoved embedded subjects fail to receive Case. The derivation only succeeds if subject movement takes place (which can involve the pronunciation of the lower copy as in Adyghe).

(4) T [$_{vP}$ *v* [$_{VP}$ V$_{raising}$ [$_{Infinitive/subjunctive}$ … SUBJECT]]] Agree: ✓ GrRoSpHu; *EnAd

Dynamic phase approach Bošković (2010) and Wurmbrand (2011, To appear) propose (following Bobaljik and Wurmbrand 2005) that phasehood is determined contextually: the highest projection of a

cyclic domain (regardless of size or label) constitutes a phase, where cyclic domains are defined as the extended projection of VP (e.g., *v*P) and the extended projection of TP (e.g., CP). This predicts that passive and unaccusative *v*Ps/VPs as well as raising infinitives constitute phases (Legate 2003 for the former). According to this approach, raising constructions then involve two phase boundaries between matrix T and the embedded subject position, cf. (5): the extended VP projection (*v*P or AspP) and the highest projection of the infinitive (XP for simplicity here). We propose that (5) is the structure of raising infinitives in English, whereas Agree languages involve processes that eliminate (or extend) these phase boundaries to the matrix TP.

(5) $[_{TP}$ SUBJ T $[_{\mathbf{vP=PHASE}}$ ~~SUBJ~~ ③ $[_{VP}$ *seem* $[_{\mathbf{XP.INF=PHASE}}$ ~~SUBJ~~ ② $[_{vP}$ ~~SUBJ~~ ①…]]]]]

English raising The structure in (5) entails, as desired, that matrix T can neither Agree with an embedded subject in situ (position ①) nor a subject in the embedded Spec,XP (position ②), cf. (2a), Furthermore, *there*-constructions cannot involve Agree. We follow Hazout (2004a, b), who argues that there is no Agree relation between matrix T and the associate in *there*-constructions, but that the 'associate' is licensed in a subject (*there*)—predicate (associate) configuration. Infinitive-internal subjects are restricted to existential constructions such as (6) in English, and agreement with the *there*-associate is optional (see Koopman 2004). This contrasts sharply with the properties of GrRoSpHu and would be unaccounted for if English also involved an Agree relation between T and the embedded subject.

(6) Essentially there seems/seem to be five compelling issues that…

Lastly, (5) predicts that raising infinitives are locality domains for movement, and movement must proceed through the edges of both XP_{INF} (position ②) and matrix *v*P (position ③). Evidence comes from binding, reconstruction, and scope. Following Lebeaux (1995), Fox (1999, 2000), Q(uantifier) R(aising) is impossible out of English raising infinitives, which Wurmbrand (To appear) attributes to the phasal status of raising infinitives and Scope Economy, which prohibits successive cyclic QR. Case-driven movement of the subject is allowed, however, it must pass through the edges of both XP_{INF} (position ②) and matrix *v*P (position ③). The former is illustrated by the binding properties in (7) (Pesetsky and Torrego 2007 among others). Evidence for movement through position ③ is provided by the bound variable interpretations in (8), which are possible even under the scope options given (Sauerland 2003).

(7) a. [John seems to Mary $[_{\mathbf{XP}}$ ~~John~~ to appear to himself $[_{vP}$ ~~John~~ to be…]]]
b. *[Mary seems to John $[_{\mathbf{XP}}$ ~~Mary~~ to appear to himself $[_{vP}$ ~~Mary~~ to be …]]]

(8) a. Every child$_i$ doesn't ✓ seem to his$_i$ father [*vb bd to be smart] ¬ » ∀
b. A boy$_i$ doesn't ✓ seem to his$_i$ father [*vb bd to be a loser]. ¬ » ∃

Disappearing phases First, AAIM (2010, To appear) note that the Agree-languages allow VSO orders with VP-internal subjects as well as EPP licensing via V-movement (A&A 1998). Combining these properties with approaches that assume that movement of certain phase heads extends the phase to the higher projection (den Dikken 2007, Gallego 2005, 2010, Gallego and Uriagereka 2006), immediately accounts for why the matrix *v*P/VP is not a phase, and T can see below VP in GrRoSpHu. Note that only *pro*-drop related *v*/V-raising extends the phase. For example, French, which has V-raising but lacks *pro*-drop, behaves like English regarding subject raising. Updating the A&A (1998) analysis, we propose that GrRoSpHu have *v*/V-raising, which values φ-features on T, thereby allowing null subjects, while in French V-raising only invovles a T-feature relation between *v*/V and T, and T's φ-features require an additional DP to move to Spec,TP. Crucially, *v*/V-raising extends the *v*P-phase to TP only when there is φ-feature valuation. Second, Wurmbrand (To appear) argues that subjunctives and infinitives with a specific selected tense value (e.g., irrealis) involve an obligatory selectional valuation relation between the matrix V and the highest head in the embedded clause, which extends the phasehood of the top embedded projection. The same mechanism applies to subjunctives in GrRo, i.e., the subjunctive projection looses phasehood, as well as in Spanish, given that the specific infinitival marker (*a*, *de*…) is selected by the matrix verb. Lastly, we propose that subject agreement in (2) is established via a feature sharing relation (Pesetsky and Torrego 2007) between matrix V (moved to T) and the top T-*v*-V head of the infinitive/subjunctive, which in turn Agrees with the subject. We propose that feature sharing is possible only between heads with identical content (in this case T and *v*/V in both positions). This derives Szabolcsi's (2009) observation that only languages that have V-movement also in infinitives/subjunctives are Agree-languages.

Alan Bale (Concrdia University)

AGREEMENT WITHOUT AGREE: DISJUNCTION IN MI'GMAQ

Verbal morphology in Mi'gmaq, a northeastern Algonquian language, provides evidence that number and person features introduce semantic presuppositions (cf., Sauerland, 2003). Such a theory elegantly accounts for both the obligatory and optional morphological patterns involving conjoined and disjoined DP subjects. An interesting consequence of this finding is that syntactic agreement with the subject need not be responsible for verbal affixes that mark person and number. Rather, such affixes could restrict verbal denotations directly. Such a hypothesis is supported by auxiliary distributional facts. It explains why Mi'gmaq has a singular versus dual distinction in the verbal domain, but not the nominal. Thus, what on the surface looks like long distance syntactic effects is actually local and semantic. This analysis of Mi'gmaq can be extended to other languages as well, bringing into question the cross-linguistic nature of agreement.

Conjoined and Disjoined DPs: Intransitive-verb morphology in Mi'gmaq distinguishes between singular, dual and plural. For example, if the subject consists of two conjoined singular DPs, then the verb must be marked with dual morphology. The verb in (1) needs the 2nd, dual ending *-ioq* and cannot bear a non-dual affix such as *-in* or *-it*. This pattern holds for similarly-structured disjoined DPs, like the one in (2). This parallel between disjoined and conjoined subjects, at least on the surface, suggests that dual marking is due to some sort of percolation rule, where two singular features are inherited as a dual (see Marusic et al. 2003).

(1) Gi'l aq Mali etlenm-ioq/*-in/*-it
You and Mary laugh-2.dl/*-2.sg/*-3.sg
'You and Mary are laughing'

(2) Gi'l gisna Mali etlenm-ioq/*-in/*-it
You or Mary laugh-2.dl/*-2.sg/*-3.sg
'You or Mary are laughing'

(3) John aq Mali etlenm-ijig/*-it
John and Mary laugh-3.dl/*-3.sg
'John and Mary are laughing'

(4) John gisna Mali etlenm-ijig/-it
John or Mary laugh-3.dl/-3.sg
'John or Mary is/are laughing'

However, when the two coordinated DPs match in person (either both being 3rd or 2nd), then the conjunctive subjects behave differently from the disjunctive ones. For example, in (3), the verb cannot have the 3rd, singular suffix *-it*. Rather it must have the 3rd, dual suffix *-ijig*. In contrast, the disjunctive subject in (4) is compatible either with the dual or singular suffix. No percolation theory can account for the optionality in (4) while also capturing the obligatory morphological pattern in (2), at least not in a way that is principled and non-arbitrary.

Featural Interpretation: Unlike a percolation theory, a semantic presuppositional account can explain why verbal suffixes in Mi'gmaq pattern the way they do. Consider the syntactic structure in (5) where ϕ represents the number and person features of the coordinate DP.

(5) $[_{TP}[_{\phi P}[_{\&P}\ DP_1 \text{ or/and } DP_2]\ \phi\ ][_{vP} \text{ verb} + \text{affix}]]$

In Sauerland's theory, the ϕ-features act as a gate, allowing only certain kinds of denotations to semantically "pass-through." In accounting for this data, this theory need only be modified slightly, changing the relevant person features from positive ones to negative ones that presuppose an absence. Hence, [2,sg] and [3,sg] are more accurately represented as [-3,-2,-dl] and [-1,-2,-dl] whereas [2, dl] is more accurately represented as [-1,-pl] (note that the dual would not specify [-3] since 3rd parties are permitted as part of the denotation). Semantically, each feature is interpreted as the identity function but with certain well-definedness conditions (see tables below, where SAP abbreviates Speech Act Participant).

Meaning	Defined iff
$[\![\text{-}1]\!](x) = x$	x doesn't contain the speaker
$[\![\text{-}2]\!](x) = x$	x doesn't contain the hearer
$[\![\text{-}3]\!](x) = x$	x doesn't contain a SAP

Meaning	Defined iff
$[\![\text{-}dl]\!](x) = x$	$\lvert x\rvert < 2$
$[\![\text{-}pl]\!](x) = x$	$\lvert x\rvert < 3$

Bundles
[-1,-3,-dl] ⇔ -in
[-1,-pl] ⇔ -ioq
[-1,-2,-dl] ⇔ -it
[-1,-2,-pl] ⇔ -ijig

Feature bundles, such as [-1,-2,-dl], are interpreted based on the meaning of their singular features, e.g., $[\![\textit{-1,-2,-dl}]\!](x) = [\![\textit{-1}]\!]([\![\textit{-2}]\!]([\![\textit{-dl}]\!](x)))$. Thus, the feature bundle [-1,-3,-dl] (which corresponds to *-in*) requires the DP to refer to the hearer, whereas [-1,-pl] (which corresponds to *-ioq*) requires the DP to refer to a one or two-person group that does not contain the speaker. Similarly, [-1,-2,-dl] (which corresponds to *-it*) requires the DP to refer to one non-speech-act-participant (NSAP) while [-1,-2,-pl] (which corresponds to *-ijig*) requires the DP to refer to a one or two-person group of NSAPs. (Note that competition effects will favour the use of singular over dual when the referent is singular, as discussed in Sauerland, 2003. Also, names and pronouns presuppose non-empty reference.)

Coordination: The key difference between $[\![\textit{gisna}]\!]$ (or) and $[\![\textit{aq}]\!]$ (and) follows from the semantics of coordination. As discussed in Link (1983), conjunction with respect to DPs acts as a group-formation operator (i.e., $\oplus$). Thus, $[\![DP_1\ \textit{aq}\ DP_2]\!]$ denotes a group consisting of at least two individuals. As a result, this coordinate structure is only consistent with ϕ-bundles that do not contain [-dl]. Thus, *-in* and *-it* ([-1,-3,-dl] and [-1,-2,-dl] respectively) cannot be used with these structures. In contrast, as discussed in Kratzer & Shimoyama (2002), cross-linguistic evidence from modality suggests that disjunction is interpreted as forming Hamblin-sets of alternatives. Semantic computation with Hamblin-sets involves pairwise functional application. Thus, $[\![DP_1\ \textit{gisna}\ DP_2]\!] = \{[\![DP_1]\!], [\![DP_2]\!]\}$, and taking pairwise functional application into account, $[\![\textit{[[}DP_1\ \textit{gisna}\ DP_2\textit{]}\ \phi\textit{]}\ vP]\!] = \{[\![vP]\!]([\![\phi]\!]([\![DP_1]\!])), [\![vP]\!]([\![\phi]\!]([\![DP_2]\!]))\}$. The resulting meaning is true iff one member of the alternatives is true. However, more importantly, the resulting meaning is defined iff $[\![\phi]\!]([\![DP_1]\!])$ and $[\![\phi]\!]([\![DP_2]\!])$ are defined. In other words, the sentence presupposes that each disjunct meets the presuppositions induced by the ϕ-features. This semantics would explain why $[\![\textit{[[gi'l gisna Mali] [-1,-3,-dl]]}]\!]$ is not well-formed whereas $[\![\textit{[[John gisna Mali] [-2,-3,-dl]]}]\!]$ is (see (2) vs. (4)). Although $[\![\textit{gi'l}]\!]$ satisfies the presupposition introduced by [-1,-3,-dl], $[\![\textit{Mali}]\!]$ does not (the referent contains a NSAP, namely Mali). However, both $[\![\textit{John}]\!]$ and $[\![\textit{Mali}]\!]$ satisfy the presuppositions introduce by [-2,-3,-dl] (both denotations are singular and both are NSAPs). Similarly, the semantics would explain why $[\![\textit{[[gi'l gisna Mali] [-1,-pl]]}]\!]$ and $[\![\textit{[[John gisna Mali] [-2,-3,-pl]]}]\!]$ are both well-formed. Both $[\![\textit{gi'l}]\!]$ and $[\![\textit{Mali}]\!]$ are NSAPs and both of their cardinalities are less than 2. Similarly, both $[\![\textit{John}]\!]$ and $[\![\textit{Mali}]\!]$ do not contain the speaker or hearer and both of their cardinalities are less than 2. Note that competition effects predict that $[\![\textit{[[John gisna Mali][-2,-3,-pl]]}]\!]$ should imply that $[\![\textit{[[John gisna Mali] [-2,-3,-dl]]}]\!]$ could not be used, and indeed there is a slight meaning difference between the two constructions as a result: the use of the plural implies an inclusive *or* meaning whereas the use of the singular implies an exclusive *or*. These competition effects follow from the presuppositional account as well.

Agreement without AGREE: The presuppositional account of ϕ-features is the only theory that can explain both the obligatory and optional nature of number marking in Mi'gmaq. Yet, the features that trigger such presuppositions need not be a part of the DP-subject. They could attach directly to the verb. According to this alternative, the syntactic structure in Mi'gmaq would be better represented as (6) rather than (5), where vPs are interpreted as in Cooper (1983), with a positive and negative denotation plus a presuppositional gap.

(6) $[_{TP}[_{\&P}\ DP_1 \text{ or/and } DP_2][_{vP} \text{ verb} + \phi]]$

In a domain D, $[\![vP]\!] = \langle X, Y\rangle$, where X is the positive denotation, Y the negative, and for all x, $[\![vP]\!](x) = 1$ iff $x \in X$, $[\![vP]\!](x) = 0$ iff $x \in Y$, otherwise $[\![vP]\!](x)$ is undefined. By diminishing the size of the positive and negative denotations (and thus increasing the gap), the vP induces presuppositions about the subject. Thus, the entire presuppositional account of dual versus singular can be redone with respect to this gap (e.g., $[\![\textit{-2}]\!](\langle X, Y\rangle) = \langle X - H, Y - H\rangle$, where H is the set of all groups that contain the hearer, $[\![\textit{-dl}]\!](\langle X, Y\rangle) = \langle X - P, Y - P\rangle$, where P is the set of all groups whose cardinality is greater than 2, etc.). This alternative to Sauerland's theory explains why Mi′gmaq only has a dual marker with respect to verbal suffixes. The ϕ-features only attach to verbs and hence do not adjoin to nouns.

REFERENCES: **Sauerland**. (2003). A new semantics for number. Proceedings of SALT. **Kratzer & Shimoyama**. (2002). Indeterminate Phrases: the View from Japanese. Proceedings of TCP.

Alan Bale (Concordia University) & Jessica Coon (McGill University)

CLASSIFIERS ARE FOR NUMERALS, NOT FOR NOUNS: EVIDENCE FROM MI'GMAQ AND CHOL

Krifka (1995) and Chierchia (1998) provide two very different accounts of the theoretical distinction between classifier and non-classifier languages. Chierchia links the distinction to the nominal system: non-classifier languages have a mass-count distinction while classifier languages do not. Krifka suggests that the difference lies in the the numeral system: classifier languages separate the measure function from the numerals whereas non-classifier languages have a measure function incorporated into the numerals. To account for languages that *optionally* use classifiers (as in Western Armenian (WA), Donabédian 1993), both of these theories need to hypothesize massive ambiguities: Chierchia, ambiguities in the nominal system, Krifka in the numeral system. However, if this type of ambiguity is permitted, according to these theories, the same type of variation that exists across languages could exist within a single language. As a result, the two theories make different predictions with respect to cross-linguistic variation: Krifka predicts idiosyncratic behaviour among the numerals, whereas Chierchia's theory is inconsistent with such a pattern.

This paper brings original data to bear on this question from Chol, a Mayan language spoken in southern Mexico, and Mi'gmaq, an Algonquian language of eastern Canada. We show that both languages demonstrate idiosyncrasies in the numeral system that are uniquely consistent with Krifka's theory. Furthermore, these results have interesting consequences for the mass-count distinction. As discussed in Wilhelm (2008), Krifka's theory, unlike Chierchia's, treats the classifier/non-classifier distinction as being theoretically independent of the syntactic mass-count distinction. We claim, however, that once classifier systems are treated as theoretically separate from the mass-count distinction, the mass-count distinction is more accurately described as a division between singular and non-singular denotations.

Nouns vs. Numerals: There are two main theoretical accounts of the contrast between languages with a rich classifier system and those without. One, defended by Chierchia (1998), maintains a uniform interpretation of the numerals but hypothesizes a difference in the nominal system. According to this theory, languages like English have two categories of nouns, one that is directly compatible with numeral modification (so-called *count nouns*) and another that is not (*mass nouns*). Languages like Mandarin have only one category of noun, and this category is not directly compatible with numeral modification. Classifiers are needed to convert nouns into a form that can combine with numerals. See (1), where *liang* is Mandarin for 'two' and *ge* is a classifier.

(1) Chierchia-like Numerals (simplified)
$[\![\textit{two/liang}]\!] = \lambda P : \forall x \in P(ATOM(x)).\mu_{\#}(P) \geq 2$
$[\![\textit{ge}]\!]$ is a function from kinds to sets of atoms

(2) Krifka-like Numerals (simplified)
$[\![\textit{two}]\!] = \lambda P : \forall x \in PATOM(x).\mu_{\#}(P) \geq 2,$
$[\![\textit{liang}]\!] = \lambda m \lambda P.m(P) \geq 2,\ [\![\textit{ge}]\!] = \mu_{\#}$

The other theory, defended by Krifka (1995) as well as Wilhelm (2008), hypothesizes that there are two different types of numeral interpretations cross-linguistically. There are numerals that have a measure function (or individuation function) as part of their semantic interpretations, and those that do not. The ones that do not, require the introduction of a syntactically independent measure function, see (2). Hence, this type numeral needs to combine with classifiers, whereas the other type does not. As noted by Krifka, there is very little evidence internal to English and Mandarin that would favour one theory over another.

Ambiguity: WA presents an interesting case study (Donabédian 1993). Unlike English or Mandarin, the presence or absence of a classifier is completely optional. For example, the numeral *yergu* 'two' can combine with *dəgha* 'boy' directly, see (3), or via a classifier, see (4).

(3) yergu dəgha
two boy

(4) yergu **had** dəgha
two CL boy

If both the noun and numeral have a univocal (unambiguous) interpretation, then neither theory can account for this data. However, if ambiguity is permitted, both theories can explain this optionality, although via completely different means. Chierchia could hypothesize that the noun *dəgha* is ambiguous, having one meaning that permits the noun to combine directly with numerals and another that requires a classifier. Krifka could hypothesize that the numeral *yergu* is ambiguous, having one meaning that

incorporates a measure/individuation function and another that does not (see Borer 2005 for a similar proposal). Data within WA itself, however, does not conclusively favour one theory over the other.

Chol and Mi'gmaq: Although the noun-centred and numeral-centred analyses largely make the same predictions in languages like WA, where classifiers are optional, the two theories make different predictions with respect to other languages. For example, the numeral-centred theory would predict the possibility of idiosyncratic patterns in the numeral domain, where some numerals incorporate a measure function and others do not. The noun-centred theory is inconsistent with such a pattern. Mi'gmaq bears out the predictions of the numeral-centred account: numerals 1–5 do not appear with classifiers, while numerals 6 and higher must. Compare the forms in (5) and (6): in (5a) the numeral *na'n* 'five' combines directly with the noun and even acquires nominal agreement morphology, like other modifiers in the language. The classifier *te's* is impossible (5b). In contrast, the numeral *asugom* 'six' cannot combine directly with a noun (6a) but rather must appear with the classifier *te's* (6b).

(5) a. na'n-ijig jinm-ug
five-AGR man-PL

b. * na'n **te's**-ijig jinm-ug
five CL-AGR man-PL

(6) a. * asugom-ijig jinm-ug
six-AGR man-PL

b. asugom **te's**-ijig jinm-ug
six CL-AGR man-PL

Chol is another language that demonstrates idiosyncratic behaviour in the numeral system. Although many older speakers still command the full Mayan base-twenty numerical system, Spanish numerals are increasingly used among younger speakers. These younger speakers generally know and use Chol numerals only for numbers 1–6, 10, 20, 40, 60, 80, 100, and 400, the latter used for counting during the corn harvest (Vázquez Álvarez 2011, 180). Otherwise they use number words borrowed from Spanish. As shown in (7), the Mayan numerals, like *cha`* 'two', require a classifier (which morphologically attaches to the numerals). In contrast, the Spanish-based numerals, like *nuebe* 'nine', cannot be used with classifiers, as shown in (8).

(7) a. cha`-**p'ej** tyumuty
two-CL egg

b. * cha` tyumuty
two egg

(8) a. * nuebe-**p'ej** tyumuty
nine-CL egg

b. nuebe tyumuty
nine egg

To account for the ungrammaticality of forms (5b), (6a), (7b) and (8a), Chierchia's theory would need to hypothesize that nouns in Mi'gmaq and Chol, like *jinmug* 'men' and *tyumuty* 'egg' are ambiguous, having one interpretation that requires classifiers and another that does not. However, if these nouns are ambiguous in this respect then the ungrammatical forms are unexpected. Under an ambiguity-in-nominals account either noun interpretation option should be available.

Consequences: The numeral systems in Chol and Mi'gmaq provide support for Krifka's account of classifier systems, in which classifiers are required by the numerals, not by the nature of nouns. As noted by Wilhelm, Krifka's account does *not* depend on there being a syntactic mass-count distinction in the nominal system. The need or lack of classifiers instead depends only on whether numerals incorporate their measure function or not. Whether the incorporated or unincorporated measure functions require their nominal argument to denote a *set of atoms* ("count") or a *kind* ("mass") relies on the nature of measurement, rather than on the presence or absence of classifiers. This brings into question how useful it is to identify a language as having or not having a grammatical mass-count distinction in the first place. Traditionally, the mass-count distinction was thought to involve a cluster of properties, including the distribution of numeral and quasi-numeral quantifiers as well as a contrast between singular and plural denotations. We conclude that this distinction instead reduces to whether a noun can be lexically interpreted as singular, *not* to a distinction based on a cluster of properties involving numerals and other quantifier distributions.

Select References: Chierchia, G. 1998. Reference to kinds across languages. *NLS* 6:339–405. **Krifka, M. 1995.** Common nouns: A contrastive analysis of English and Chinese. In *The generic book*, 398–411. U Chicago Press. **Wilhelm, A. 2008.** Bare nouns and number in Dëne Sųłiné. *NLS* 16:39–68.

Matthew Barros (Rutgers University)

Poster Session I
Friday 2:45 - 4:45

Else-modification as a Diagnostic for Pseudosluicing

Introduction: Sluicing is the ellipsis of TP in a Wh-question, leaving a Wh-phrase *remnant* overt:
1) *Jack ate something, but I don't know what* [$_{TP}$ …].
The ellipsis site in sluicing is standardly assumed to contain fully fledged syntactic structure which is not assigned phonetic content at Spell Out. A central issue examined in the literature on sluicing is what the elided structure may look like. The usual approach assumes that the elided TP in (1) is as in (2), where the interrogative CP consists of a Wh-question version of the antecedent (underlined).
2) <u>*Jack ate something*</u>*, but I don't know what*$_i$ [$_{TP}$ *Jack ate* t_i].
Such a view is consistent with the notion that ellipsis is subject to some form of syntactic identity condition (perhaps alongside a semantic one; cf. e.g. Chung 2011 for discussion). Nonetheless, alongside the possibility in (2), a growing body of work shows that the elided TP may be a cleft, departing more radically from the structure of the antecedent; a possibility dubbed *pseudosluicing* in Merchant (1998).
3) *Jack ate something, but I don't know what*$_i$ [$_{TP}$ *it was* t_i].
Merchant (2001) provides 10 empirical arguments aimed at showing that all sluicing cannot be reduced to pseudosluicing. Merchant's diagnostics are designed to rule out a pseudosluice source in a variety of contexts. In this talk, I present a new diagnostic which rules out the non-pseudosluice source, providing further support for the existence of pseudosluicing.
A diagnostic *against* pseudosluicing Merchant (2001) observes that sluicing is possible when the remnant is modified by *else* (4); *else*-modification of Wh-phrases in clefts is impossible (5), suggesting that the elided TP in sluicing with *else*-modified remnants cannot be a cleft (6).
4) ✓*Jack ate some cake, but I don't know what else* [$_{TP}$ …].
5) **Jack ate some cake, but I don't know what else* [$_{TP}$ *it was* t_i].
6) ✓*Jack ate some cake, but I don't know what else* [$_{TP}$ *he ate* t_i].
A new diagnostic *for* pseudosluicing In sluicing, the remnant usually corresponds to an indefinite DP in the antecedent, called its *correlate*. When the correlate is modified by *else* (7), only the pseudosluice parse for the elided TP is felicitous (8), suggesting that the elided TP in (7) must be a pseudosluice.
7) ✓*Jack left, and* <u>*someone else left*</u> *too, but I don't know who* [$_{TP}$ …].
8) ✓*Jack left, and* <u>*someone else left*</u> *too, but I don't know who*$_i$ [$_{TP}$ *it was* t_i].
9) #*Jack left, and* <u>*someone else left*</u> *too, but I don't know who*$_i$ [$_{TP}$ t_i *left*].
Analysis As for why (9) is infelicitous, I assume that asserting that one does not stand in the *know* relation to a question, Q, entails that one does not stand in the *know* relation to any partial answer to *Q* (cf. Romero 1998). Assuming a Karttunen (1977)-style semantics for questions, where a question denotes the set of propositions that jointly constitute the true answer to the question, a partial answer can be defined as any proposition that is or entails a proposition that is a proper sub-part of the question meaning. In the context in (9), the speaker asserts that they do not stand in the *know* relation to the question *who left*, entailing that they do not stand in the *know* relation to any partial answer to *who left*; this is inconsistent with having previously asserted that *Jack left*, which constitutes a partial answer to *who left.* This analysis predicts that else-modified correlates in contexts where the speaker is not committed to knowing a partial answer to the question should be felicitous; as (10) shows, this is borne out.
10) *Jack didn't leave, someone else did, but I don't know who left.*
The reasoning behind why (9) is infelicitous leads us to conclude that *Jack left* does not constitute a partial answer to the cleft question in (8), *who it was*. I proceed to show that this can be derived from extant assumptions about the semantics of *else* and clefts.
Cleft questions and Else-modified correlates Following von Fintel (1993), Culicover and Jackendoff (1995), I take *else* to be an anaphoric exceptive modifier; in (8), *else* is anaphoric to *Jack*, and excludes *Jack* from the domain of quantification for the indefinite correlate that it modifies (i.e. 'someone else' = 'someone other than Jack' in (8)). We can capture this compositionally by having *else* contribute an exception clause to the existential quantifier's restriction, which can be achieved by having *else* modify the NP restriction of the DP *someone*. A denotation for *else* is given in (11):
11) $[\![\text{else}]\!]^{M,g} = \lambda P_{<e,t>}\, \lambda x_{<e>}\, P(x) \wedge x \neq y_i$

Matthew Barros (Rutgers University)

Else-modification as a Diagnostic for Pseudosluicing

The indexed variable 'y_i' is assigned a value via an assignment function, g; in (8), g(i) = Jack. A derivation for *someone else* in (8) is given in (12). *Else* takes the NP it modifies and returns a property which constitutes the restriction for the determiner that composes with NP.

12) DP: $\lambda Q \exists x[person(x) \wedge x \neq y_i \wedge Q(x)]$

some: $\lambda P \lambda Q \exists x[P(x) \wedge Q(x)]$ NP: $\lambda z\ person(z) \wedge z \neq y_i$

one: $\lambda x\ person(x)$ else: $\lambda P\ \lambda z\ P(z) \wedge z \neq y_i$

I argue that the contribution of *else* to the correlate's meaning prevents *Jack left* from counting as a partial answer to the cleft question. This can be captured by appealing to an anaphoric link between the antecedent '*someone else left*' and the cleft question. I claim that the cleft's pronominal subject, *it*, provides this link. I analyze clefts as equative clauses, where the cleft pronoun *it* denotes a salient entity which is equated with the post-copular DP. In (8), this entity is made salient by the correlate, so that *it* denotes the entity associated with the discourse referent supplied by the correlate *someone else*. The cleft question asks for this entity's identity, so that *who it was* denotes a set of propositions of the form '*x was the non-Jack person that left*'. It follows that asserting that *Jack left* in (8) is consistent with not standing in the *know* relation to a partial answer to the cleft question. To summarize, the above discussion derives the paradigm in (7-9); else-modified correlates force a pseudosluice parse for the elided TP in sluicing.

Deriving the infelicity of else-modified Wh-phrases in clefts As for Merchant's (2001) diagnostic, exemplified in (4-6), the assumption that the cleft pronoun *it* is anaphoric to the discourse referent introduced by a correlate also derives the incompatibility of else-modification of the Wh-phrase in a cleft. The only available antecedent for the cleft pronoun is *Jack* in (5), which is also the only available antecedent for *else*, so that the cleft question can be paraphrased as 'who, besides Jack, is Jack?'. An alternative possibility exists; in a context where it is understood that Jack was not the only person that left, we might expect the cleft question '*who else it was*' to be capable of asking for the identity of non-Jack individuals who left. In this context, we have an implicit antecedent for *it*; however, as noted in Merchant (2001), implicit correlates do not license clefting in sluicing contexts, (13).

13) *Jack is jealous *(of someone), but I don't know who it is.*

Conclusion When a speaker is committed to knowing a partial answer to a sluiced question, else modified correlates force a pseudosluice parse for the elided TP. This observation provides additional empirical support for the existence of pseudosluicing, and is motivated independently by considerations about the licensing of questions in discourses and semantic differences between cleft and non-cleft questions. In the talk, I provide additional empirical support for the claim that clefts are best analyzed as equative, a conclusion prefigured in Mikkelsen (2005) and Den Dikken (2009), which claim that clefts are specificational in nature, and Heycock and Kroch (1998), which argues convincingly that specificational clauses are a species of equative clause. This conclusion is also shown to derive Merchant's (2001) observation that else-modification of cleft Wh-phrases is infelicitous (as in (5)). Finally, it is worth noting that Merchant's (2001) diagnostics are only applied to *truncated clefts* (i.e. clefts with implicit relative clauses); examples like (5) improve dramatically with *full clefts*, as in (14):

14) *Jack ate some cake, but I don't know what else it was that he ate.*

In the talk, I provide an account of this asymmetry between full and truncated clefts, and show that Merchant's diagnostic and the new diagnostic proposed here both extend to full clefts as well.

Chung '11 Syntactic identity in sluicing: how much and why, to appear *LI* **Culicover and Jackendoff '95** Something else for the Binding Theory, *LI* **Heycock and Kroch '98** Inversion and equation in copular sentences, *Papers in Linguistics*, volume 10. ZAS, Berlin **Karttunen '77** Syntax and semantics of questions, *LI* **Merchant '98** Pseudosluicing: elliptical clefts in Japanese and English, *Papers in Linguistics*, **10** ZAS, Berlin **Merchant '01** *The Syntax of Silence*, PhD Thesis, UC Santa Cruz. **Mikkelsen '05** *Copular Clauses*, John Benjamins **Romero '98** *Focus and Reconstruction Effects in Wh-phrases*, PhD Thesis, UMassAmherst **von Fintel '98** Exceptive Constructions, *NLS*

Michael Becker (Indiana University)
& Maria Gouskova (New York University)

Friday 11:15

Source-oriented generalizations as grammar inference in yer deletion

Introduction. In constraint-based theories and schema-based theories, markedness constraints and schemas express generalizations that are *product-oriented*: a process applies if the output satisfies certain requirements (Bybee & Slobin 1982, Bybee & Moder, 1983, Bybee 2001). In rule-based grammars, generalizations are *source-oriented*: a rule applies to inputs that have a certain phonological shape (Albright & Hayes 2003). In Russian, for example, mid vowels ("yers") are deleted from the last syllable of some stems when a vowel-initial suffix is added, but high vowels are never deleted, e.g. [mox ∼ mx-a] 'moss NOM/GEN', *[mux ∼ mx-a] (Lighner 1965, Halle 1973, Yearley 1995, inter alia). The product of the deletion lacks the vowel; the generalization has to be stated over the source of the derivation.

In this paper, we show that deletion of a yer (a mid vowel) in Russian is subject to both source-oriented and product-oriented generalizations. We model the result using multiple constraint-based grammars, capturing an opaque generalization using phonotactic grammars learned over subsets of the lexicon.

The Russian lexicon. Yer deletion is governed by several product-oriented generalizations. For example, when yers are deleted, resulting CCC clusters predominantly have a medial obstruent, e.g. [kastʲor ∼ kastra] 'fire NOM/GEN'. Deletion is normally blocked if it puts a sonorant between consonants, e.g. [mudr̪ets ∼ mudr̪etsa] 'wise NOM/GEN', *[mudr̪tsa] (Yearley 1995, Gouskova & Becker to appear).

On the other hand, there is a constraint on the source of deletion: yer deletion can create tri-consonantal clusters, as in [kastʲor ∼ kastra], but only if the base ends in a simple coda, not a complex coda, *[kasotr ∼ kastra]. This is a source-oriented generalization, since once the yer vowel is deleted, the produced cluster no longer retains the source syllabification.

Experiment. To test whether these generalizations are productive, we used a "wug test" (Berko 1958). A group of 115 Russian speakers each rated 48 nonce words, created from a pool of 403 consonant combinations (∼14 responses per consonant combination). Each nonce word was presented in the nominative base form, e.g. [s̪om], and the participant rated it on a scale of 1–5. Then, two genitives were shown, the faithful [s̪oma] and the yerless [s̪ma], in random order, and the participant gave each genitive a binary judgment as acceptable or unacceptable. The binary judgments of the yerless genitives are plotted in Figure 1 by the shape of the base.

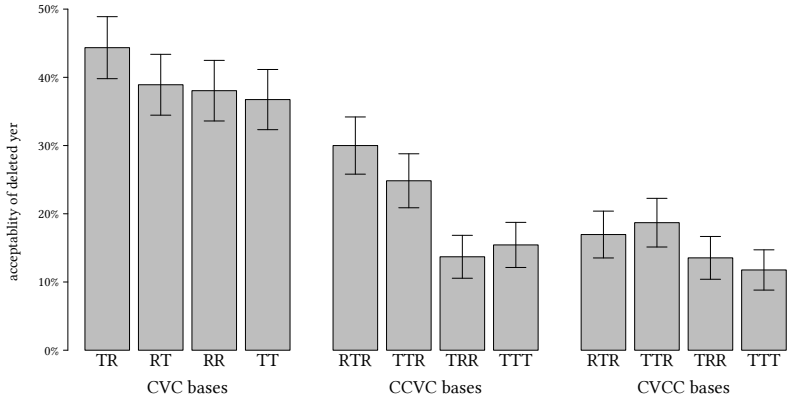

Figure 1: Acceptability of yerless genitives, organized by the cluster position and sonority profile. T=obstruent, R=sonorant.

As Figure 1 shows, the participants found deletion most acceptable when it created TR, RTR & TTR clusters (ending in an obstruent followed by a sonorant), confirming the productivity of this product-oriented generalization. They also preferred deletion that created CC clusters over CCC clusters (s̪om ∼ s̪ma > ps̪om ∼ ps̪ma). Among the CCC clusters, they preferred clusters that originated from bases with a simple coda over those with a complex coda (ps̪om ∼ ps̪ma > pos̪m ∼ ps̪ma), confirming the productivity of this source-oriented generalization. All of these effects were highly significant ($p < .0001$) in a mixed-effects logistic regression model using the *lme4* package in R.

Analysis. Russian speakers accept yer deletion not only based on the goodness of the created product, but also on the plausibility of the base as a yer word. We propose that once speakers identify words that undergo a process, such as vowel deletion, these words are separated from the general lexicon, and trigger the formation of a new constraint-based grammar. The lexicon is partitioned, and phonotactic generalizations are learned on each partition separately (cf. Ito & Mester 1995, Zuraw 2000, Pater 2006, 2008, et seq).

In Russian generally, complex codas are quite common, i.e. the constraint *COMPLEXCODA has a low weight/ranking. Among yer words, however, complex codas are not allowed; learning a separate phonotactic grammar for the yer words allows *COMPLEXCODA to remain high for those words. When the speakers have two sublexicons/grammars, a new word needs to be associated with one of them. Given a word like [poʂm], it is quite acceptable as a word of Russian generally, and therefore [poʂma] is an acceptable genitive. However, [poʂm] is unacceptable as a yer word due to its complex coda, thus making [pʂma] an unacceptable genitive. This is a *grammar inference* mechanism: when the speakers judge [poʂm ∼ pʂma], they need to decide how likely this paradigm is given the yer grammar. Given Bayes' theorem, this likelihood is proportional to the likelihood that the yer grammar assigns to the paradigm. Since the yer grammar has a high-ranking *COMPLEXCODA, the yer grammar assigns a low probability to the base [poʂm], and therefore also to its genitive [pʂma]. There is nothing in the yer grammar that prohibits the produced cluster in [pʂma]; the generalization is source-oriented, and it is expressed by the grammar inference mechanism.

This mechanism can also extend to other phenomena, such as the propensity of English ablauting verbs (e.g. *drink* ∼ *drank*) to end either in a velar (*sneak, dig*) or in a nasal (*swim, win*), but ideally both – a velar nasal (Albright & Hayes 2003). These preferences can be captured with a separate phonotactic grammar that covers just these verbs. The multiple phonotactic grammar approach can also offer a solution to otherwise puzzling results, such as the tendency in the Hungarian dative to prefer the [nɛk] allomorph with bases that end in a complex coda, or a sibilant, or a coronal sonorant (Hayes et al. 2009).

Learning simulation. To diagnose which of the generalizations that speakers extend to nonce words were source-oriented and which were product-oriented, we used the UCLA Phonotactic Learner (Hayes & Wilson 2008), trained on a list of 1,902 real yer words from Zaliznjak's (1977) dictionary, and tested on the same nonce words that the participants judged. When the learner was trained and tested on the nominative sources, it learned a constraint against complex codas, but it overestimated the acceptability of TRR items. When the learner was trained and tested on yerless genitives, it failed to find a difference between simple and complex codas, but it correctly found the preference for RTR and TTR clusters. Trained this way, then, the phonotactic learner can identify generalizations that are present only in the source or only in the product. The two grammars were combined (simply adding their penalties), yielding a grammar that captured both kinds of generalizations.

Conclusion. We identified several generalizations about the distribution of yer deletion in Russian, and showed that at least one is source-oriented. The existence of source-oriented generalizations has been controversial (Bybee 2001, Becker & Fainleib 2009, Kapatsinski 2011), and there is some evidence that people have a bias against learning such generalizations. This paper shows that they are learned by speakers.

Source-oriented generalizations such as the limitation of deletion to simple codas are not a problem for rule-based theories: a rule such as $\mathrm{V} \rightarrow \varnothing \ / \ \mathrm{C} \ \_\_ \ \mathrm{C} + \mathrm{V}$ would work. But the analysis would be ill-equipped to model product-oriented generalizations, such as the preference for TR clusters in both CC and CCC outputs, while RT, RR, and TT clusters are all equally acceptable.

The constraint-based phonotactic grammars we use are product-oriented, but they successfully capture the generalizations in the data by learning separate phonotactic grammars for subparts of the lexicon, using existing and well-understood tools. The partitioning of the lexicon is principled, as it is based on the paradigmatic behavior of the lexical items involved. When the speaker encounters a novel word, the grammar inference mechanism assigns it to the most likely sublexicon, and this inference expresses the observed source-oriented generalization.

Maria Biezma & Daniel Siddiqi (Carleton University)
& Andrew Carnie (University of Arizona)

Counterfactuality in Non-Standard Subjunctive Conditionals

A. Introduction: This paper investigates differences in pragmatic inferences arising from conditionals across standard and non-standard varieties of English. We show how the availability of a richer set of morphosyntactic options in non-starndard varieties explains differences in the properties of pragmatic inferences.

B. The phenomenon: Standard English expresses subjunctive conditionals in structures like (1a) (SC). Non-standard varieties allow two additional alternatives (NSSCs) seen in (1b) & (1c) (which appear in English when the subjunctive voice disappears (15th C)).

(1) a. If Sarah had eaten bread, she would have had an allergic reaction [SC]
b. If Sarah had've eaten bread, she would have had an allergic reaction [NSSC]
c. If Sarah would've eaten bread, she would have had an allergic reaction [NSSC]

NSSCs are usually identified with a less prestigious dialect but otherwise no difference has been pointed out between NSSCs and SCs. However, a survey of 13 speakers of NSSCs varieties examining examples like (2) shows that speakers of NSSCs dialects are aware of a meaning difference between NSSCs and SCs.

(2) The family doctor is talking to Sarah's parents trying to find out why Sarah has a rash on her skin:
a. If Sarah had eaten bread, she would have had an allergic reaction, so she probably ate bread
b. If Sarah had've/would've eaten bread, she would've had an allergic reaction, so she probably ate bread

We follow [1] in treating counterfactuality in SCs as an implicature that can be canceled: given SC *If p, q*, the counterfactual inference is that $\neg p$. In (2) the statements explicitly contradict such an inference. As expected given [1], participants accepted the (a) version, canceling the implicature. However, all participants rejected the (b) versions (there was no difference between the two varieties of NSSCs). The conclusion is in (3):

(3) **Novel empirical observation:** Given NSSC *If p, q*, the counterfactual inference $\neg p$ ('counterfactuality') cannot be canceled (contrary to what we find in SCs).

Theoretical Proposal: We propose a semantic-pragmatic account of (3) based on the idea that NSSCs embed a simple subjunctive ([4]) in the antecedent clause and principles of pragmatic economy.

C. Preliminaries: We adopt [7]'s morphosyntactic arguments that *had* in (1b) and *would* in (1c) are modals and not vacuous words (contra [3, 6, 8]) (indeed, since there is no difference between the two varieties of NSSCs we treat them as the same modal and mostly exemplify with *would*).

D. The puzzle: In line with [1], we characterize counterfactuality in SCs as an implicature. Following [5] (see also [2]) we consider it an anti-presupposition triggered by the use of *would* vs. *will* bundled together with the choice of aspect. If counterfactuality were an implicature in NSSCs as well, we would naturally expect it to also be cancelable, contrary to our observations. We argue for an implicature analysis and derive the difference in cancelability from the fact tnat NSSCs have a simple subjunctive (SISU) in the antecedent whereas SCs have a regular indicative clause. **D1. Simple subjunctives:** An example of SISU is given in (4).

(4) Your brother would have passed the exam [SISU(p)]
[p =*that your brother passes the exam* = the 'pendant']

We adopt/adapt the quantificational modal analysis of SISUs in [4]: *SISU(p)* is true iff in the most similar worlds to the actual world in which the necessary pre-conditions for p ($Prec_p$) are satisfied, p is true (roughly) [(SISU(p) = *would*$(Prec_p)(p)$)]. We also follow [4] in claiming that SISUs are distinct from SCs (either with overt or discourse-given antecedents): (i) Necessary vs. sufficient conditions: The (implicit) restrictors in SISUs are necessary preconditions (*Prec*) for the truth of the pendant, whereas in SCs restrictors are sufficient conditions. (ii) Differences in implicatures: As in SCs, the restrictor in SISUs is implied to be false. Thus, SISUs imply that $Prec_p$ are false (see [4]) (we extend [5] to claim that the counterfactual implicature in SISUs is an antipresupposition arising from the competition between the SISU (*would* + *perfect aspect*) and the plain indicative). Since the preconditions are *necessary* conditions for the truth of the pendant, if the preconditions are false, the pendant is also false. However, in negated SISUs, the negated pendant is taken to be true ([4]):

(5) John would not have bought a Japanese car

As [4] argues, in (5) it is implied to be true *that John did not buy a Japanese car*: $\neg$*SISU*(p) implies $\neg p$

D2. Differences in truth-conditions between NSSCs and SCs: The differences in the make up of the antecedent in NSSCs and SCs bring about different truth conditions. While the SC *If p, q* claims that in the p-worlds

most similar to the actual world, q is true (roughly, a Lewis-Stalnaker type analysis), NSSC *If* p, q impose a further condition on the domain, quantifying over the p-worlds most similar to the actual world in which the necessary preconditions of p guarantee the truth of p. The claim is that in those worlds, q is true. Hence, overall, NSSCs are less informative than SCs (the domain of quantification of SCs include p-worlds in which $Prec_p$ guarantee the truth of p, but also p-worlds in which the $Prec_p$ don't guarantee the truth p).

D3. Differences in implicatures between NSSCs and SCs: The proposal that NSSCs have a SiSu in the antecedent clause allows us to predict differences between NSSCs and SCs:

(6) a. Truth-conditions for SCs: *would* $[p]_{\text{restrictor}}$ $[q]_{\text{nuclear scope}}$
b. Implicatures ($\rightsquigarrow$) arising from SCs being subjunctive conditionals (falsity of the antecedent): $\rightsquigarrow \neg p$

(7) a. Truth conditions for NSSCs: *would* $[\text{SiSu}(p)\ ]_{\text{restrictor}}$ $[q]_{\text{nuclear scope}}$
b. Implicatures arising from NSSCs being subjunctive conditionals (falsity of the antecedent):
$\rightsquigarrow \neg\text{SiSu}(p)$, hence, $\rightsquigarrow \neg p$ (similar to (5))
c. Implicatures arising from simple subjunctive in NSSCs:
i. $\rightsquigarrow \neg Prec_p$ (falsity of necessary pre-conditions for pendant)
ii. Since $Prec_p$ is necessary for the truth of p, $\neg Prec_p \longrightarrow \neg p$

Intuitively, SCs suggest that p is false, whereas NSSCs go a step further, suggesting that even the necessary conditions for p are false.

E. Canceling implicatures in subjunctive conditionals: E1. SCs: Given the SC-claim *If* p, q, the counterfactual implicature ($\rightsquigarrow \neg p$) can be canceled by claiming that p is true (2a) [or, alternatively, by claiming that q is true (Anderson examples) and assuming that it is only if p is true that q is true, (conditional perfection), which leads to the truth of p]. **E2. NSSCs:** Given the NSSC-claim *If* SiSu(p), q, claiming also that p is true does not directly conflict with the SiSu-implicature $\rightsquigarrow \neg Prec_p$. However, the SiSu-implicature entails $\neg p$ (see (7c-ii)), which contradicts the claim that p. So, given the conflict with the SiSu-implicature, why doesn't the claim that p is true cancel $\rightsquigarrow \neg Prec_p$? To understand this we must compare the effects of SCs and NSSCs. The truth-conditions of the SC-claim *If* p, q and the NSSC-claim *If* SiSu(p), q are different. However, if either conditional is followed by p, the conversational common ground will end up including the propositions corresponding to $Prec_p$, p and q (the informational impact of the sequences ends up being the same). The speaker was taken to be justified in using a less informative and more complex construction (both in terms of morpho-syntax and in terms of the pragmatic implicatures that are triggered), a NSSC, because by doing so s/he further marked the propositions $Prec_p$ (and p) as false. However, given the sequence NSSC+p, using the more complex form did not result in any gain (the meaning for which NSSC is specialized was not relevant after all). There is a conflict between the 'move' made by a speaker in choosing the NSSC and the move made in claiming p. The speaker is not allowed to get away with this uneconomical use of a less informative and more complex structure given that exactly the same results could be achieved with a more informative and less complex construction. Since speakers of NSSC dialects have available the SC form, they should choose it if, in the end, they wish to claim is that p is true. Listeners refuse to cancel $\rightsquigarrow \neg Prec_p$ because it is a pragmatic contradiction. A principle of pragmatic economy and discourse rationality is at work. Cancelling $\rightsquigarrow \neg Prec_p$ would amount to characterizing the speaker as irrational.

F. Conclusion: The availability of a richer set of morpho-syntactic options in non-standard dialects provides an ideal vantage point from which to investigate counterfactuality implicatures in conditionals. We have shown that not all implicatures behave alike. Principles of pragmatic economy come into play to seemingly hard-wire certain implicatures in view of the total range of alternative constructions available to the speakers of a particular dialect. And, as we have shown (contra to other work), speakers of non-standard dialects are very aware of the differences, making conscious and clear choices when uttering a SC or NSSC.

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Poster Session I
Friday 2:45 - 4:45

Movement vs. long distance Agree in raising: disappearing phases and feature valuation

Synopsis This paper proposes that cross-linguistic differences in the distribution of subjects in raising constructions follow from whether or not there are phase boundaries between matrix T and the highest subject position in the embedded clause. Languages like (1a) are shown to require movement of the embedded subject, whereas languages like (1b) allow the subject to be licensed in situ via Agree with T. We argue that (1a) is the default structure predicted under a dynamic phase approach, and that (1b) is derived by phase extension due to *v*/V-raising and a particular type of selection of the raising complement.

(1) a. [$_{TP}$ SUBJECT T [$_{PHASE}$ … *seem* … [$_{PHASE}$ ~~SUBJECT~~ …] Movement-language
b. [$_{TP}$ T+*v* … *seem* … SUBJECT …] Agree-language

Agree vs. movement languages While infinitive-internal subjects are prohibited in English raising infinitives such as (2a), similar constructions are possible in Gr(eek), Ro(manian), Sp(anish) (Alexiadou, Anagnostopoulou, Iordachioaia & Marchis [AAIM] 2010, To appear), as well as Hu(ngarian) (and other languages; Szabolcsi 2009), see (2b-d). The above authors show that raising constructions in these languages (GrRoSpHu) have the following properties: the subject can occur within the embedded subjunctive (GrRo) or infinitive (SpHu; in Hu, focused XPs must precede the V they are associated with; since the subject in (2d) follows the matrix V, but precedes the embedded V, this word order is evidence for the subject occurring within the infinitive); it can be an R-expression (i.e., there is no co-indexed matrix *pro*); and it obligatorily agrees with the matrix raising verb.

(2) a. *There stopped {(the) teachers} to {(the) teachers} scold the children.
b. Stamatisan/*stamatise [na malonun **i daskali** tus mathites]$_{SUBJ}$ Gr(eek)
stopped.3PL/*3SG [SUBJ scold.3PL **the teachers** the students]$_{SUBJ}$
'The teachers stopped scolding the students.' [AAIM, To appear: (36)]
c. Dejaron/*Dejó [de reñir **los profesores** a los alumnos]$_{INF}$ Sp(anish)
stopped.3PL/*3SG [INF scold the teachers ACC.DOM the students]$_{INF}$
d. Elkezdtek/*Elkezdett [**csak a fiúk** dolgozni éjszaka]$_{INF}$ Hu(ngarian)
began.3PL/*3SG [**only the boys** work.INF at.night]$_{INF}$
'It began to be the case that only the boys work at night' [Szabolcsi 2009: 18]

Furthermore, embedded subjects in GrRoSpHu must take low scope ((2d) cannot mean 'Only the boys began to work at night'), and cannot establish a (covert) c-command dependency with matrix elements (such as an agreeing modifier, (3a); see AAIM for scope). Overt movement, (3b), as well as backward control, (3c), allow such covert dependencies (for space reasons we only illustrate this for Greek). In this respect, GrRoSpHu differ from Adyghe (Polinsky and Potsdam 2006, 2012), which also allows low subjects in raising constructions, however, these (PF) low subjects are interpreted in the matrix clause.

(3) a. Arhise (***pikni**) na skepazi **i skoni** ta epipla
started.3SG (*dense.FEM) SUBJ cover.3SG the dust.FEM the furniture
b. **I skoni** arhise (**pikni**) na skepazi ta epipla
the dust.FEM started (dense.FEM) SUBJ cover.3SG the furniture
'The dust started dense to cover the furniture'
c. Arhise **panikovlitos** na klidoni **mono o Janis** tin porta tu
Started.3SG panicking.MASC SUBJ lock only the Janis.NOM the door his
'Only Janis began in panic to lock his door' Backward control

We argue that the properties in (2)-(3) indicate that infinitive/subjunctive-internal subjects in GrRoSpHu neither overtly nor covertly raise to the matrix clause, but that the Case of the embedded subjects is licensed via Agree with matrix T (see e.g., Alboiu 2006, Alexiadou & Anagnostopoulou [A&A] 1999 for the claim that subjunctive T does not license nominative). In contrast, in languages such as English (and Adyghe) no such Agree relation can be established (see below), and unmoved embedded subjects fail to receive Case. The derivation only succeeds if subject movement takes place (which can involve the pronunciation of the lower copy as in Adyghe).

(4) T [$_{vP}$ *v* [$_{VP}$ V$_{raising}$ [$_{Infinitive/subjunctive}$ … SUBJECT]]] Agree: ✓ GrRoSpHu; *EnAd

Dynamic phase approach Bošković (2010) and Wurmbrand (2011, To appear) propose (following Bobaljik and Wurmbrand 2005) that phasehood is determined contextually: the highest projection of a

cyclic domain (regardless of size or label) constitutes a phase, where cyclic domains are defined as the extended projection of VP (e.g., *v*P) and the extended projection of TP (e.g., CP). This predicts that passive and unaccusative *v*Ps/VPs as well as raising infinitives constitute phases (Legate 2003 for the former). According to this approach, raising constructions then involve two phase boundaries between matrix T and the embedded subject position, cf. (5): the extended VP projection (*v*P or AspP) and the highest projection of the infinitive (XP for simplicity here). We propose that (5) is the structure of raising infinitives in English, whereas Agree languages involve processes that eliminate (or extend) these phase boundaries to the matrix TP.

(5) $[_{TP}$ SUBJ T $[_{\mathbf{vP=PHASE}}$ ~~SUBJ~~ ③ $[_{VP}$ *seem* $[_{\mathbf{XP.INF=PHASE}}$ ~~SUBJ~~ ② $[_{vP}$ ~~SUBJ~~ ①…]]]]]

English raising The structure in (5) entails, as desired, that matrix T can neither Agree with an embedded subject in situ (position ①) nor a subject in the embedded Spec,XP (position ②), cf. (2a), Furthermore, *there*-constructions cannot involve Agree. We follow Hazout (2004a, b), who argues that there is no Agree relation between matrix T and the associate in *there*-constructions, but that the 'associate' is licensed in a subject (*there*)—predicate (associate) configuration. Infinitive-internal subjects are restricted to existential constructions such as (6) in English, and agreement with the *there*-associate is optional (see Koopman 2004). This contrasts sharply with the properties of GrRoSpHu and would be unaccounted for if English also involved an Agree relation between T and the embedded subject.

(6) Essentially there seems/seem to be five compelling issues that…

Lastly, (5) predicts that raising infinitives are locality domains for movement, and movement must proceed through the edges of both XP_{INF} (position ②) and matrix *v*P (position ③). Evidence comes from binding, reconstruction, and scope. Following Lebeaux (1995), Fox (1999, 2000), Q(uantifier) R(aising) is impossible out of English raising infinitives, which Wurmbrand (To appear) attributes to the phasal status of raising infinitives and Scope Economy, which prohibits successive cyclic QR. Case-driven movement of the subject is allowed, however, it must pass through the edges of both XP_{INF} (position ②) and matrix *v*P (position ③). The former is illustrated by the binding properties in (7) (Pesetsky and Torrego 2007 among others). Evidence for movement through position ③ is provided by the bound variable interpretations in (8), which are possible even under the scope options given (Sauerland 2003).

(7) a. [John seems to Mary $[_{\mathbf{XP}}$ ~~John~~ to appear to himself $[_{vP}$ ~~John~~ to be…]]]
b. *[Mary seems to John $[_{\mathbf{XP}}$ ~~Mary~~ to appear to himself $[_{vP}$ ~~Mary~~ to be …]]]

(8) a. Every child$_i$ doesn't ✓ seem to his$_i$ father [*vb bd to be smart] ¬ » ∀
b. A boy$_i$ doesn't ✓ seem to his$_i$ father [*vb bd to be a loser]. ¬ » ∃

Disappearing phases First, AAIM (2010, To appear) note that the Agree-languages allow VSO orders with VP-internal subjects as well as EPP licensing via V-movement (A&A 1998). Combining these properties with approaches that assume that movement of certain phase heads extends the phase to the higher projection (den Dikken 2007, Gallego 2005, 2010, Gallego and Uriagereka 2006), immediately accounts for why the matrix *v*P/VP is not a phase, and T can see below VP in GrRoSpHu. Note that only *pro*-drop related *v*/V-raising extends the phase. For example, French, which has V-raising but lacks *pro*-drop, behaves like English regarding subject raising. Updating the A&A (1998) analysis, we propose that GrRoSpHu have *v*/V-raising, which values φ-features on T, thereby allowing null subjects, while in French V-raising only invovles a T-feature relation between *v*/V and T, and T's φ-features require an additional DP to move to Spec,TP. Crucially, *v*/V-raising extends the *v*P-phase to TP only when there is φ-feature valuation. Second, Wurmbrand (To appear) argues that subjunctives and infinitives with a specific selected tense value (e.g., irrealis) involve an obligatory selectional valuation relation between the matrix V and the highest head in the embedded clause, which extends the phasehood of the top embedded projection. The same mechanism applies to subjunctives in GrRo, i.e., the subjunctive projection looses phasehood, as well as in Spanish, given that the specific infinitival marker (*a*, *de*…) is selected by the matrix verb. Lastly, we propose that subject agreement in (2) is established via a feature sharing relation (Pesetsky and Torrego 2007) between matrix V (moved to T) and the top T-*v*-V head of the infinitive/subjunctive, which in turn Agrees with the subject. We propose that feature sharing is possible only between heads with identical content (in this case T and *v*/V in both positions). This derives Szabolcsi's (2009) observation that only languages that have V-movement also in infinitives/subjunctives are Agree-languages.

Spanish secondary stress without gradient alignment

Recent theories of metrical structure differ starkly in whether feet can be aligned gradiently (McCarthy & Prince 1993, Gordon 2002, Hyde 2002) or only categorically (Kager 2001, 2005, McCarthy 2003, Buckley 2009). Particularly challenging for categorical theories are apparent cases of the initial-dactyl effect combined with End Rule Right. Here all feet align rightward except for the leftmost (1-3). In long words, medial feet have to be forced rightward, but they are not adjacent to an edge and categorical alignment cannot determine their placement. If the leftmost foot is the main stress (End Rule Left), then this fact can be used to force a lapse adjacent to that main foot, generating the effect without gradient directionality (Kager 2001). But certain languages show an initial-dactyl effect with a final main foot, in which case the positioning of the lapse cannot be controlled in this way.

A solution in some cases may be reference to cyclicity or underlying stresses in loanwords, as in Indonesian *(àme)ri(kàni)(sási)* 'Americanization'; this initial-dactyl pattern has been reported only in Dutch borrowings. In a similar but productive Spanish pattern, the medial secondary stress in (1) can be described by a traditional cycle or by output-output faithfulness (Benua 1997), based on *(gràma)ti(cál)* 'grammatical'. But Hyde & McCord (2012) show that forms like those in (2) cannot be handled by faithfulness to stress on a previous cycle (or to a morphologically contained surface form).

(1)	*(gràma)ti(càli)(dád)*	'grammaticality'
(2)	*(màte)ma(tìci)(dád)*	'mathematicity'
	(nàtu)ra(lìza)(ción)	'naturalization'
	(Tlàtla)u(quìte)(péc)	municipality in Puebla state, Mexico

The words in (2) lack the necessary internal constituents for a cyclic account; for example, the base form *(màte)(máti)co* 'mathematical' wrongly predicts **(màte)(màti)ci(dád)*, and loanwords have no internal cycle. Hyde & McCord claim that these data show the need for gradient directional alignment. It turns out, however, that a more complete account of Spanish stress makes such gradience unnecessary.

Several descriptions of Spanish secondary stress (Harris 1983, Roca 1986) report two variants: one, more colloquial, that follows the initial-dactyl pattern (3), and another, more formal, in which feet are fully aligned to the right (4). Harris reports this as one of several "firmly established" generalizations regarding Spanish stress. (Hyde & McCord mention the second pattern, but do not analyze it.)

(3)	*(gène)ra(tívo)*		(4)	*ge(nèra)(tívo)*	'generative'
	(gràma)ti(càli)(dád)			*gra(màti)(càli)(dád)*	'grammaticality'
	(Cònstan)ti(nópla)			*Cons(tànti)(nópla)*	'Constantinople'
	(cònstan)ti(nòpo)(lìza)(ción)			*cons(tànti)(nòpo)(lìza)(ción)*	'Constantinoplization'

In addition, secondary stress interacts with phrasal context in a way that requires a further dimension to the analysis. In (5) the initial dactyl is found across a phrase (Navarro Tomás 1977); and in (6), word-internal footing will pattern like (4) if a syllable is added to the left within the phrase (Roca 1986).

(5)	*(sòbre) la (frénte)*	'on the front'
	(pòr la) ma(ñána)	'in the morning'
(6)	*(èn Cons)(tànti)(nópla)*	'in Constantinople'
	(là cons)(tànti)(nòpo)(lìza)(ción)	'the Constantinoplization'

I show in this paper that a fuller analysis taking these facts into account is not only more empirically adequate, but also eliminates the argument for gradient directionality in (2).

The essential insight is that the formal pattern in (4), with right-alignment of all feet, characterizes the lexical derivation. At the phrasal level, a new trochaic foot is left-aligned with a prosodic phrase that has been constructed over an XP. In some cases, this new foot does not disrupt existing structure (5-6). But if the lexical word is initial in the prosodic word, as when a word occurs in isolation (3-4), there is variation in whether the lexical foot structure is fully retained. In colloquial style, the left-aligned foot overrides

faithfulness to the secondary stresses from lexical foot structure; but in formal style, faithfulness wins. Of course, higher faithfulness must hold for the main stress, since it is not shifted phrasally in short words.

Any serious theory of phonology requires some account of the difference between lexical and phrasal patterns. Within the general constraint-based approach that Hyde & McCord employ, this could involve two ordered Gen operations, in the style of Stratal OT (Kiparsky 2000, Bermúdez-Otero 2011); or it could be implemented as a single input-output derivation that includes reference to the stresses of words in other contexts (Benua 1997). This means that, while Hyde & McCord are correct that faithfulness to morphologically defined bases such as *(màte)(máti)co* will not generate the Spanish data with categorical alignment, the answer nonetheless lies in a faithfulness that they do not consider, that between the lexical and phrasal components, or between a word and its realization in a different output context.

The literature has often been vague or uncertain about the status of secondary stresses in Spanish. Although the pattern of variation described here is valid for at least some speakers, questions remain. For example, published descriptions are not clear on the status of a potential output such as *en (Cònstan) ti(nópla)*, but this variant form can easily be generated by a different prosodic word structure — *en* might be adjoined or incorporated — or by aligning the phrase-level foot with the inner prosodic word rather than the larger prosodic phrase. This choice would then be affected by pragmatic or stylistic conditions.

If there are particular dialects, or individual grammars, of Spanish in which the "formal" stress pattern is completely non-existent, this simply means that for such speakers phrasal left-alignment is obligatory (i.e., alignment dominates faithfulness without variation). In any theoretical model that includes both a lexical and a phrasal representation — or the correspondence equivalent — this derivation will be available to the learner. In a theory that also permits gradient directionality, a form such as *(màte)ma(tìci)(dád)* has two possible derivations, and the power of gradient alignment is redundant and excessive.

The existence of phrasal alignment does change the typological predictions of Kager (2001), who relies on a single step of metrical evaluation for his claims. But the complexities of the world's stress systems suggest that these predictions are too restrictive and cannot be sustained (Buckley 2009). I propose that we exploit the already necessary power of the lexical / phrasal distinction, independently motivated by decades of research. Under this analysis, the metrical system itself remains more restricted, without resorting to the computational and formal complexity of gradient alignment.

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Judge-dependence in degree constructions

The puzzle I will address is illustrated in (1-3):

(1) a. John **finds** this cake tasty.
b. John **finds** the Dom Tower tall.

(2) a. I find apples tasti**er** than bananas.
b. ??I find John tall**er** than Mary.

(3) a. Roller coasters are fun **for John**.
b. *The Dom Tower is tall **for John**.

(1) suggests that dimensional adjective (DA) *tall* is judge-dependent (according to one of the diagnostics), just like predicates of personal taste (PPTs), say, *tasty* (Richard 2004; Anand 2009). (2) suggests that it's not the DA itself that is judge-dependent, rather it's its positive form, because comparative forms of DAs fail this test (2b) (Saebo 2009; Kennedy 2010; Paenen 2011). Moreover, (3) shows that the positive form of *tall* is not judge-dependent in exactly the same way as PPTs are: for example, it does not take an overt judge *for*-phrase. How can one account for the judge-dependence of *tasty* and *tall* in a way that would predict the contrasts in (2) and (3)?

I will argue that while PPTs are intrinsically judge-dependent, the judge-dependence of DAs is an indirect result of its positive form being interpreted with respect to a judge-dependent modal standard. I will show this by comparing subjective positive DAs to (other) modal degree constructions. Moreover, I will argue that the judge-dependence of DAs is of a different nature than that of PPTs.

PPTs give rise to statements whose truth is a matter of opinion rather than a matter of fact (*Roller coasters are fun* vs. *Tolstoy wrote "War and Peace"*), a property that manifests itself in a number of ways: PPTs give rise to FAULTLESS (SUBJECTIVE) DISAGREEMENT (Kölbel 2004; Lasersohn 2005 a.m.o.), embed under subjective attitude verbs like *find* (Saebo 2009), co-occur with judge *for*-/*to*-phrases (Lasersohn 2005, 2009; Stephenson 2007a, 2007b; Pearson 2011; Paenen 2011 a.m.o.). The two competing classes of theories of PPTs differ w.r.t. the way they introduce the judge, i.e. the opinion-holder: **relativist** theories introduce a judge parameter as part of index of evaluation (Lasersohn 2005; 2009); **contextualist** theories make the judge an argument of a PPT that can be filled in contextually (Stojanovic 2007; Stephenson 2007ab). The relevant meanings are given in (4):

(4) a. $[\![\text{tasty}]\!]^{c;\,w,t,j} = [\lambda x_e\,.\,x \text{ tastes good to } j \text{ in } w \text{ at } t]$ RELATIVISM
b. $[\![\text{tasty}]\!]^{c;\,w,t} = [\lambda x_e\,.\,[\lambda y_e\,.\,y \text{ tastes good to } x \text{ in } w \text{ at } t]\,]$ CONTEXTUALISM

The recent literature discusses reasons to prefer an analysis like (4b) over an analysis like (4a) for PPTs. First of all, Stephenson (2007a) argues that the relativistic stance is at odds with the fact that the preposition that introduces the judge (*for* or *to*) is idiosyncratically selected by the predicate. Second, Paenen (2011) uses syntactic tests for argumenthood (based on Fults 2006) to argue that the judge PP is an argument. Finally, PPTs have been argued to impose a **direct sensory experience** requirement on its judge ('experiencer') argument, which suggests a particular type of thematic relation between the predicate and the judge: "If I have good reason to believe that shortbread is tasty, say because a reliable expert has told me so, I might say, *Apparently, shortbread is tasty*, but not, *Shortbread is tasty*" (Pearson 2011). See also (Anand 2009) about overt *for*-phrases:

(5) *Discussing a made to order entree at a much-favored restaurant.*
Whatever she's making, it {will be,#is} tasty for me.

This requirement is even more clearly seen in Japanese, as it has a 1st person constraint on the experiencers of direct perception predicates (Kuno 1973, Kuroda 1965, Tenny 2006, McCready 2007) – a constraint that also holds for PPT judges (an evidential like *ni tigainai* 'no mistake' would save the 3rd person judge):

(6) watasi/*John-ni-wa kono keeki-wa oishii
I/ John-DAT-TOP this cake-TOP tasty
'This cake is tasty to me / to John'

Arguably, the direct experience requirement would be naturally explained if the judge is treated as an (experiencer) argument of the PPT predicate, which has its own idiosyncratic selectional restrictions.

Introducing non-PPT judge-dependence, I first consider the positive form of DAs. Apart from the telling data in (1b), it gives rise to faultless disagreement (Richard 2004; Anand 2009; Kennedy 2010; Paenen 2011) and can be used exocentrically (Anand 2009), just like PPTs. (Saebo 2009) introduces a judge argument into the semantics of the POS morpheme in exactly the same way as for PPTs (**z** for judge, **s** for standard, **g** for measure function):

(7) $[\![\text{POS}]\!]_{t,v} = \lambda g\ \lambda x\ \lambda \mathbf{z}.\ g_{t,v}(x) \geq \mathbf{s}_{t,v}(\mathbf{z})(g)$ (= Saebo 2009:(47))

I will argue instead that judge-dependence of positive dimensional adjectives is more clearly seen from a relativist perspective. First, POS, unlike PPTs, doesn't take judge *for*-phrases (3b) (the only option being a sentence-initial *for*-phrase separated by a comma intonation: *For someone like me, this bag is heavy*). Moreover, the direct experience requirement does not hold for a POS judge, illustrated here with Japanese:

(8) watasi/John-ni-wa kono kaban-wa omoi
I/John-DAT-TOP this bag-TOP heavy
'For me / For John, this bag is heavy'

Other judge-dependent degree constructions. We saw above that comparative DAs are not judge-dependent. It is not generally the case, however, that degree constructions based on DAs are 'objective'. In particular, it turns out that DA-based constructions involving a root 'normative' modality (which is known to be judge-dependent) are subjective. Examples of this are: *too*-construction, as in *This book is too long* (see Meier 2003, von Stechow et al. 2004 for a modal analysis), 'functional standard' construction, as in *This book is a bit long for a 3-yo* (Kagan and Alexejenko 2010; Bylinina 2011), and 'nominal attributive-with-infinitive' construction (nominal AIC), as in *This is a long book to assign* (Fleisher 2011). All these are judge-dependent, as seen from their ability to give rise to faultless disagreement, exocentric uses, and embeddability under *find* (we use the *find*-test again for illustration):

(9) a. Mary finds this car {too / a bit} expensive to buy now. 'TOO' / FUNCTIONAL STANDARD
b. Mary finds 'Middlemarch' a long book to assign. NOMINAL AIC

What these constructions have in common is root 'normative' modality, which is known to be judge-dependent, see (Saebo 2009) for an example of an entry for *ought* with a judge as an argument:

(10) $[\![\text{ought}]\!]_v^{f,g} = \lambda\phi\lambda\mathbf{z}.\ O_v^{f,g(\mathbf{z})}(\phi)$ (= Saebo 2009: (54))

I will show that judge-dependence of modal degree constructions is different from that of PPTs in exactly the same ways as POS is different from PPTs – judge *for*-phrases are only sentence-initial (I will argue that sentence-internal *for*-phrases in these constructions should be analyzed as subjects of the infinitival clause) and the direct sensory experience requirement does not hold (the Japanese 1st person constraint does not hold in these constructions). Again, this points to a direction of an analysis of 'normative' judge-dependence which would be different from PPTs – namely, the relativist analysis.

I propose that all the cases of non-PPT judge-dependence that I have discussed boil down to normative (or bouletic) modality. Judge-dependent positive forms of DAs get interpreted with respect to a modal standard.

I take the semantics for a positive morpheme as developed in (Kennedy 2007):

(11) $[\![\text{POS}]\!] = \lambda C_{<et>}\, \lambda P_{<ed>}\, \lambda x_e.\ \ P(x) \text{ !> } \mathbf{norm}(P)(C)$
C = comparison class, !> = significantly exceed

Norm is thus a function that takes a measure function and a comparison class set as its arguments, and gives a degree as its output:

(12) $[\![\mathbf{norm}]\!] = \lambda C_{<et>}\, \lambda P_{<ed>}.\ \mathbf{norm}(P)(C)$

I suggest that a modal norm differs from the extensional one in that it takes modal counterparts of the members of the comparison class into consideration when defining the standard degree. The (contextually salient) proposition ***p*** restricts the set of worlds to consider. What this proposition would be is a matter of what the context is like (from the most general 'good states of affairs' from the speaker's perspective – to the particular purposes or wishes in mind):

(13) $[\![\mathbf{norm}_{modal}]\!] = \lambda C_{<et>}\, \lambda P_{<ed>}.\ \mathbf{norm}(P)(\lambda x.\ \exists w \in \boldsymbol{p}\ \exists y\ [\ y \sim_w x\ \&\ y \in C\ ])$

The modal in question is relativistically judge-dependent, in contrast to a PPT, which is contextually judge-dependent. This difference accounts for the puzzling data in (3).

Finally, I address the slight contrast reported in Kennedy (2010) between PPTs under *find* (perfectly acceptable) and positive forms of gradable adjectives (slightly degraded):

(14) a. Anna finds her bowl of pasta tasty/delicious/disgusting.
b. ??Anna finds her bowl of pasta big/large/small/cold.

Taking this contrast seriously leads to the following hypothesis: in order to appear in subjective contexts, POS needs to undergo a 'modal shift' to get interpreted with respect to a modal standard, which is a costly operation that results in decrease of acceptability.

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Distance Distributivity and Pluractionality in Tlingit (and Beyond)

1. Introduction Based upon original data gathered from fieldwork, this paper develops a formal semantic analysis for distributive numerals in Tlingit, a highly endangered language of Alaska. Such numerals enforce a distributive reading of the sentence, and thus are one instance of the broader phenomenon of 'distance distributivity' (Zimmermann 2002). I show that this semantics also provides fruitful analyses of distance distributivity in other languages. It can account for certain locality effects noted for distance distributives in Korean and German (Zimmermann 2002, Oh 2005), as well as an intriguing puzzle regarding distributive numerals and pluractionality in Kaqchikel (Henderson 2011). Finally, I show how the analysis can be extended to the well-known case of English 'binominal each'.

2. Distributive Numerals in Tlingit When a numeral in Tlingit bears the 'distributive' suffix *–g̲aa*, the resulting expression has all the hallmarks of a 'distributive numeral' (Gil 1982, Choe 1987, Oh 2005, Balusu 2006, Henderson 2011). As shown below, unlike unmarked numerals (1), distributive numerals in Tlingit do not permit 'collective' or 'cumulative' readings, only distributive ones (2).

(1)	A<u>x</u>	<u>k</u>aa	yátx'i	[**nás'k**	<u>x</u>áat]	has aawasháat.
	my	male	children	**three**	fish	3plS.3O.caught

'My sons caught three fish.' (Cumulative or Collective Reading OK)

(2)	A<u>x</u>	<u>k</u>aa	yátx'i	[**nás'gigáa**	<u>x</u>áat]	has aawasháat.
	my	male	children	**three.DIST**	fish	3plS.3O.caught

(i) 'My sons caught three fish each', OR (ii) 'My sons caught three fish each time'

Furthermore, as the dual translations under (2) suggest, Tlingit sentences containing distributive numerals seem at first to be ambiguous. As in many languages with distributive numerals, such sentences can describe two distinct kinds of distributive scenarios: (i) a 'participant-distributive' scenario where the distribution is over some plural entity (three fish to each son), and (ii) an 'event-distributive' scenario where the distribution is over some plural event (three fish to each catching event) (Gil 1982, Choe 1987, Zimmermann 2002, Oh 2005, Balusu 2006).

Despite this apparent ambiguity, I put forth a univocal semantics for Tlingit distributive numerals. Under this analysis, sentences like (2) are not truly ambiguous, but simply have rather broad truth-conditions, which hold both in participant-distributive and event-distributive scenarios. The analysis is shown to predict a variety of further, more subtle features of distributive numerals in Tlingit, including the fact that the apparent ambiguity in (2) does not hold for all sentences; some structures containing distributive numerals are true only in event-distributive scenarios (3).

(3)	**Dá<u>xg</u>aaná<u>x</u>**	shaax'wsáani	**nás'gigáa**	keitl	has aawashúch.
	two.DIST	girls	**three.DIST**	dog	3plS.3O.bathed

'Each time, two girls bathed three dogs'. [No other interpretation possible]

3. Formal Semantic Analysis The proposed semantics assumes the general framework presented in Kratzer 2008. All natural language predicates are assumed to be cumulative, (4). As in related work, I mark metalanguage predicates with an asterisk '*', simply as mnemonic indicating their cumulativity.

(4) If P is a lexical item of natural language, then if $[[P]](x_1)\ldots(x_n) = T$, and $[[P]](y_1)\ldots(y_2) = T$, then $[[P]](x_1+y_1)\ldots(x_n+y_n) = T$

As in much work, lexical verbs are cumulative relations between events and entities (5a), as is the little-*v* functional head (5b). Thus, a sentence like (1) with a plain numeral will have the LF in (6a) and therefore the truth-conditions in (6b), which hold in either collective or cumulative scenarios.

(5) a. [[catch / has aawasháat]] = $[\ \lambda x_e : \lambda e_\varepsilon : *catch(e)\ \&\ *Theme(e) = x\ ]$

b. [[*v*]] = $[\ \lambda x_e : \lambda e_\varepsilon : *Agent(e) = x\ ]$

(6) a. $[_S\ \exists e\ [_{vP}\ [_{DP}$ A<u>x</u> <u>k</u>aa yátx'i] $[_{vP}\ v\ [_{VP}\ [_{DP}$ **nás'k** <u>x</u>áat] has aawasháat] …]

b. $\exists e\ .\ \exists x\ .\ *fish(x)\ \&\ |x| = 3\ \&\ *caught(e)\ \&\ *Agent(e) = \sigma_x.*my.son(x)\ \&\ *Theme(e) = x$

In addition to these common assumptions, I will introduce the metalanguage predicate 'Participant' (7a), as well as a special version of the maximality operator 'σ', which applies to pairs (7b).

(7) a. Participant(e,*x*) *iff* x bears a 'theta relation' to e (*i.e.*, x is Agent / Theme / Goal of e)

b. $\sigma_{<x,y>}$. Q(x)(y) $=_{df}$ the pair $<\alpha,\beta>$ such that $<\alpha,\beta> \in$ *{<x,y> : Q(x)(y) }, and if $<\gamma,\delta> \in$ *{<x,y> : Q(x)(y) }, then $\gamma \leq \alpha$, and $\delta \leq \beta$

With these ingredients in place, the proposed semantics for Tlingit –*gaa* is as in (8).

(8) [[gaa]] = [λn_n : [$\lambda Q_{<et>}$: [$\lambda P_{<e,\varepsilon t>}$: [λe_ε: $\exists$x. Q(x) & P(x)(e) &
<e , x> = $\sigma_{<e',y>}$. y < x & |y| = n & e' < e & Participant(e',y)] …]

This semantics will derive the truth-conditions in (9b) for the LF in (9a).

(9) a. [$_S$ $\exists$e [$_{vP}$ [$_{DP}$ Ax kaa yátx'i] [$_{vP}$ *v* [$_{VP}$ [$_{DP}$ **nás'gigáa** xáat] has aawasháat] …]
b. $\exists$e . $\exists$x . *fish(x) & *caught(e) & *Agent(e) = σ_x.*my.son(x) & *Theme(e) = x &
<e , x> = $\sigma_{<e',y>}$. y < x & |y| = 3 & e' < e & Participant(e',y)

Thee formula in (9b) can be read informally as: there is a (plural) event e of my sons (cumulatively) catching some fish 'x', and 'x' can be divided up into triplets, each of which participated in some subevent of e. Consequently, (9b) holds in participant-distributive scenarios where each son catches three fish, as well as event-distributive scenarios where there are many events of my sons catching three fish. Importantly, while (2) is predicted to have this semantic flexibility, other sentences are not. For example, (3) will have the truth-conditions in (10), which only hold in event-distributive scenarios containing many events of two girls bathing three dogs.

(10) $\exists$e . $\exists$x . *girl(x) & $\exists$z . *dog(z) & *bathe(e) & *Agent(e) = x & *Theme(e) = z &
<e , x> = $\sigma_{<e',y>}$. y < x & |y| = 2 & e' < e & Participant(e',y) &
<e , z> = $\sigma_{<e',y>}$. y < z & |y| = 3 & e' < e & Participant(e',y)

4. Application to Other Languages Distributive numerals in Korean appear to be subject to an interesting locality condition (Choe 1987, Oh 2005): sentences containing distributive numerals in subordinate clauses (11) do not permit readings where the distribution is over a participant in the matrix clause (12). Similar facts have also been reported for German (Zimmermann 2002).

(11) Chemwentuli [aituli phwungsen-hana-**ssik**-ul saessta] malhaessta
store.clerks children balloon-one-**DIST-ACC** bought said
'The store clerks said that the children bought one balloon each / each time.'

(12) Not a Reading of (11): 'Each store clerk said that the kids bought one balloon'

If the suffix *ssik* is given the semantics in (8), these facts follow. The truth-conditions predicted for (11) will not hold in (12). Furthermore, QR of *phwungsen-hana-**ssik**-ul* into the matrix clause will yield a 'de re' reading that is not compatible with (12) (and will violate clause-boundedness of QR). In addition to the facts in (11)-(12), the semantics in (8) predicts an interesting interaction between distributive numerals and pluractional verbal suffixes in the Mayan language Kaqchikel (Henderson 2011).

5. Extension to English Binominal Each As is well-known, English binomional each (14a) differs from distributive numerals in that it cannot describe event-distributive scenarios (14c).

(14) a. My sons caught [three fish **each**]
b. Verifying Scenario: Each son catches three fish.
c. Not a Verifying Scenario: My sons (together) catch three fish each time.

A small change to our semantics in (8) will produce exactly this result. Following Zimermann (2002), English binominal each contains a null pronoun, which must be bound (15a). Binominal *each* takes the referent of this pronoun as argument, but is otherwise identical to *gaa* (15b).

(15) a. Underlying Structure of Binominal Each: [[three [each pro_i]] fish]
b. [[$each_{binom}$]] = [λz_e : [λn_n : [$\lambda Q_{<et>}$: [$\lambda P_{<e,\varepsilon t>}$: [λe_ε: $\exists$x. Q(x) & P(x)(e) &
<e , x> = $\sigma_{<e',y>}$. y < x & |y| = n & e' < e & Participant(e',y) &
<e , z> = $\sigma_{<e',y>}$. y < z & |y| = 1 & e' < e & Participant(e',y)] …]

This semantics predicts that (14a) will be true *iff* there is a (plural) event of my sons catching some fish, and the fish can be divided up into triplets that participated in some subevent of the catching, and my sons can be divided into *atoms* that participated in some such subevent. Thus, (14a) will be true in a scenario like (14b), but not one like (14c).

Carlo Cecchetto (University of Milan-Bicocca)
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Friday 10:00

RELATIVE CLAUSES VS. CLAUSAL COMPLEMENTS OF NOUNS: REVERSING THE PICTURE

1. Relative clauses (RCs) and clausal complements of nouns (NCCs) give rise to temporary ambiguity in cases like (1-2).

(1) the claim that John made (is false) (2) the claim that John made (a mistake)

When there is a temporary structure ambiguity, the parser does not wait until the end of the sentence before analyzing it, but bets on one analysis. This is at the basis of so-called garden path effects, which involve re-analysis when the initial choice turns out to be wrong. In this talk we claim that we learn a lot about what influences the initial choice of the parser and about the status of RCs and NCCs in the grammar by finding out whether a speaker initially goes for the RC interpretation or for the NCC interpretation in sentences like (1) and (2). We tested the direction of the garden path effect (if any) in two experiments monitoring eyes movements in a self paced reading talk (28 participants each).

Experiment 1: Italian participants read 24 object RCs (3a) and the corresponding NCCs (3b). Seven nouns allowing for RC or NCC continuation were used. NCCs and RCs differ only in critical area 3. *Experiment 2*: participants read subject RCs (4a) and the corresponding NCCs (4b) with the same seven nouns. In both experiments, we manipulated within items whether the sentence was a RC or a NCC and each pair of sentences only differed in region 3. We submitted reading times measures (total reading times, first pass reading times and regressions measures) of regions 2, 3 and 4 to a series of mixed effects models. In all the models, the length (in characters) of the regions was included as a covariate. Additionally, for each noun we estimated the bias towards subject RC, object RC or NCC. Such biases were included in the regression analysis, in order to control for effects of frequency.

	1	2	3	4	5
(3a)	Il progetto che	il sindacato	sosteneva fra	gli operai	irritò la Confindustria
	the plan that	the Unions	supported among	the workers	annoyed the tycoons

"The plan that the Trade Unions supported among workers annoyed the tycoons"

	1	2	3	4	5
(3b)	Il progetto che	il sindacato	sostenesse	gli operai	irritò la Confindustria
	the plan that	the Unions	supported-SUB	the workers	annoyed the tycoons

"The plan that the Trade Unions would support the workers annoyed the tycoons"

	1	2	3	4	5
(4a)	Come sempre	l'insinuazione che	creava	scandalo	veniva dai giornali
	As usual	the insinuation that	created	scandal	came from the press

"As usual, the insinuation that fabricated a scandal came from the press"

	1	2	3	4	5
(4b)	Come sempre	l'insinuazione che	creassero	scandalo	veniva dai giornali
	As usual	the insinuation that	created-SUBJ	scandal	came from the press

"As usual, the insinuation that they were fabricating a scandal came from the press"

Results of Experiment 1: at region 3, first pass fixations and total times did not differ, but NCCs caused significantly more regressions than object RCs.

Results of Experiment 2: at region 3, first pass fixations and total times were significantly longer in NCCs than in subject RCs and furthermore there were more total regressions in NCCs. NCCs caused longer reading times in region 4 too, whereas, as expected, the two structures did not differ in region 2.

The consistency of measures in critical region 3 in Experiment 2 suggests that subjects are led down the garden path in NCCs, since they initially go for the RC interpretation. The same conclusion emerges from late measures in Experiment 1, as NCCs require re-analysis at region 3. So, a RC interpretation is initially chosen whenever a temporary ambiguity arises, both with subject and object RCs.

2. RCs are complex, since they contain a filler-gap dependency. Furthermore, there is consensus in the literature that object relatives are particularly hard to process. Since NCCs contain no gap, a natural assumption is that they are simpler. If so, why do subjects initially go for the most difficult structure?

A possible answer might be that frequency matters. But: frequency of what? We could determine that frequency biases of the 7 nouns towards subject RC, object RC or NCC had no effect whatsoever in experiment 1 and a negligible effect in experiment 2, as we will discuss. So, if frequency matters, this is the frequency bias of RCs as opposed to the frequency bias of NCCs. Of course, RCs are bound to be more frequent than NCCs, since each noun that admits a NCC can be modified by a RC, but clearly not

the other way around (in fact, only a small subset of nouns can take NCCs). So, frequency of the construction might seem to explain the initial preference for RCs and the garden path effect with NCCs. However, this cannot the end of the story. First, the explanation based on the frequency bias *of a grammatical construction* runs the risk of being circular (why is something difficult to parse? Because it is not frequent. Why is it not frequent? Because it is difficult to parse). Frequency can have a magnifying effect, but ultimately the asymmetry between the two constructions must be due to something else. Furthermore, RCs are supposed to be more difficult, due to the presence of a gap, so it is puzzling that they are chosen over an (alleged) simpler alternative. In the second part of the talk, we will show that this pattern makes sense at the light of Donati and Cecchetto's (2011) view of relativization and noun complementation.

3. First of all, under the raising analysis (Kayne, 1994, Bianchi 1999 a.o.), RCs are not adjuncts in the sense of phrase structure theory. According to Donati and Cecchetto's (2011) version of the raising analysis, RCs are really akin to head-complement configuration at the right level of abstraction. Under their account, the head in (5) is a lexical item which relabels the structure, hence nominalizing it, by virtue of its word status.

(5) $[_{D}$ The $[_{N}$ book that I saw [D ~~book~~]]

The fact that the head provides the label when it is internally merged with the RC makes relativization very similar to the configuration where a head provides a label when it is externally merged with its complement.

4 Donati and Cecchetto also argue extensively that nouns do not take complements, and that NCCs in general are not indeed complements despite their name, but late inserted adjuncts. Among the arguments they offer:

*a. Theta criterion exemption***.** So-called complements of nouns are never required for the structure to be acceptable, unlike the complements of transitive verbs.

b. Constituency Tests Standard constituent tests indicate that, while verb plus internal argument always form a constituent, noun plus alleged complement is not: a pronoun can replace the determiner+noun unit without replacing the alleged complement of the noun (6);

(6) *a.* Ho visto [il padre di Gianni] *b.* Ho visto quello di Gianni
I have seen the father of Gianni I have seen that of Gianni

c. Islands The distribution of island effects supports the hypothesis that nouns do not take real complements. While in the verbal domain there is an argument-adjunct asymmetry for extraction (roughly, only adjunct clauses are islands), in the nominal domain no asymmetry arises. Both RCs and NCCs are islands (cf. the Complex NP Constraint).

So Donati and Cecchetto reverse standard wisdom: they see complementation where other approaches see adjunction (RCs) and they see adjunction where other approaches see complementation (NCCs). Adopting this reversed perspective, the results of experiments 1 and 2 make sense, if the parser chooses the basic head-complement configuration over an adjunction configuration in case the incoming string is temporarily ambiguous between these two analyses. RCs are structurally similar to the very basic head-complement configuration, while the NCCs are more similar to the less central adjunction configuration.

5. We will conclude by discussing Chomsky/Lebeaux sentences (which are a problem for any version of the raising analysis), namely the fact that Principle C effects are supposed to be stronger in NCCs like (8) than in RCs like (9). Chomsky/Lebeaux's account relies on late insertion of RCs as opposed to NCCs, but this is incompatible with the view defended in this talk.

(8) ?? Which report that John$_i$ is incompetent did he$_i$ submit?

(9) ? Which report that John$_i$ revised did he$_i$ submit?

We will claim instead that both sentences display a weak Principle C effect under reconstruction, but (9) sounds more degraded because it involves a garden path effect on the top of the Principle C effect. This parsing explanation is more compatible with the fact observed by Lasnik 1998 that with other pair of sentences the Chomsky/Lebeaux contrast exemplified in (8) and (9) effaces.

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The Functional Category COM(PARISON) and its Double Complement Structure

Introduction and Preliminary Version of Suggestion: As for the structure of the underlined part in (1), at least three views have been suggested, as shown in (2a-c) where X = gradable {A/Adv} or {*many/much*}, and PP* = the *than* phrase. Under (2a) the degree word *more* (Deg) forms a unit with a gradable X(P); under (2b) it forms a unit with PP* which is to be obligatorily extraposed; and under (2c) it is considered to form a unit with X and also with PP* in a certain way, as shown in (2ciii).

(1) Mary is more beautiful [$_{PP*}$ than Judy (is)]. (phrasal or clausal comparative)

(2) a. [$_{ß}$ [*more* X(P)] PP*] (cf. Larson (1988), Abney (1987), Corver (1990,1997), Kennedy (2003),...)

b. (i) [$_{ß}$ [*more* PP*] X(P)]] ==> (ii) [$_{ß}$ [*more* t_i] X(P)]] ... PP*$_i$ (obligatory extraposition)
(cf. Chomsky (1965), Selkirk (1970), Bresnan (1973,1975), Carson (1977), Keenan (1987), Heim (2001), Kennedy (2007), Grosu and Horvath (2006); cf. also Klein (1980), Larson (1991), Izvoraski (1995a), Lechner (2004), ...)

c. (i) [$_{ß}$ *more* X] => (ii) [*more*$_i$ X]... *more*$_i$ (QR of *more*) =>
(iii) [*more*$_i$ X] ... [*more*$_i$ PP*] (late merger of PP*) (cf. Bhatt and Pancheva (2004))

The view in (2a) explains word order with no cost, and also explains (constituency test) data like (3-4), while the views in (2b-c) may not be able to properly explain them where PP* is considered obligatorily separated from the category ß.

(3) a. [Happier than she had ever been before], Sue picked up her suitcase and boarded the plane.
(cf. (48) in Napoli (1983))

b. Bill speaks [more fluently than Mary] but [less fluently than Nichole]. (where X = A or Adv)

(4) a. John gave [more books than he had given to Sue] to his best friend Peter.

b. [How many more records than Sue owns] will he buy? (where X = *many*)
(cf. (20b-c) in Corver (1993); cf. also (6b) and (8c) in Lechner (2001))

Korean data like (5a-b) also suggest that in Korean (a head-final language), the counterpart of the underlined part in (1) forms a unit and should be analysed as [$_{ß}$ PP* {*more/less*} X(P)], as in (2a).

(5) a. ku-nun [con-pota-nun te ppalukey] kulena [bil-pota-nun tel ppalukey] ttuynta
he-Top [John-than-Con more fast] but [Bill-than-Con less fast] run
'He runs [more fast than John] but [less fast than Bill].' (lit.)

b. A. ne-nun nwukwu-pota te ppalukey ttuy-nayo? B. [con-pota te ppalukey]-yo.
you-Top who-than more fast run-Q [John-than more fast]-is
A. 'Than whom do you run more fast?' (lit.) B. (It's) [more fast than John]. (lit.)

However, further Korean constituency test data show that the internal structure of the category ß in (2a) may be considered either (6a) or (6b): Data like (7) suggest that *te* ('more') forms a unit with X(P), as in (6a) (cf. (2a)), but data like (8) suggest that it forms a unit with PP*, as in (6b) (cf. (2bi)).

(6) a. [$_{ß}$ PP* [*te* X]] b. [$_{ß}$ [$_{α}$ PP* *te*] X] c. (6b) ==> ... PP*$_i$ ... [$_{ß}$ [$_{α}$ t_i *te*] X]

(7) con-nun bil-pota [te yuchanghakey] kulena [tel cikselcekulo] malhanta
John-Top Bill-than [more fluently] but [less frankly] says
'John says [more fluently] but [less frankly] than Bill.' (*te* + X(P); (6a))

(8) ku-nun [con-pota-nun (hwelssin) te] kulena [bil-pota-nun (hwelssin) tel] yuchanghakey malhanta
he-Top [John-than-Con far more] but [Bill-than-Con far less] fluently says
'He says [(far) more than John] but [(far) less than Bill] fluently.' (lit.) (PP* + *te*; (6b))

Given that Korean employs scrambling, data like (7) can also be explained under (6b) since PP* can be considered to be scrambled, as shown in (6c), but under (6a), data like (8) may not be explained in terms of scrambling: The string PP*-*more* can function as a unit only when X(P) is scrambled out of ß (cf. (9)), but unless PP* is postposed, X(P) or *te* ('more') can never precede PP* in Korean (cf. (10a-c)).

(9) (6a) ==> * ... X(P)$_i$ ... [$_{ß}$ PP* *te* t_i] (K)

(10) a. *X(P) - **PP*** - *te* (cf. (9)) b. **te* - **PP*** - X(P) c. **te* - X(P) - **PP***

To explain the unacceptable word orders in (10a-c) under (6b), the following can be suggested: *te* and X cannot be scrambled across PP* in Korean simply because they both function as heads, which implies that the projections ß and α in (6b) are the projections of X and *te*(Deg), respectively, and that PP* and DegP are the complements of *te*(Deg) and X, respectively, as shown in (11a-b) where [+g] = [gradable]. Since *more* always precedes X[+g] in English, the approach in (11a-b) can suggest that the *more*(Deg)-to-X[+g] head movement process applies in English, as shown in (11c), and as predicted under (11c), *more*(Deg) and X[+g] form a unit in English, as shown in (12a-b) (cf. also (7) and (6c)).

(11) a. [$_{XP[+g]}$ [$_{DegP}$ PP* *te*] X[+g]] (K; head-final)
b. [$_{XP[+g]}$ X[+g] [$_{DegP}$ *more* PP*]] (E; head-initial) c. [$_{XP[+g]}$ *more*$_i$ X[+g] [$_{DegP}$ t_i PP*]] (E)
(12) a. He speaks [more elegantly] but [less fluently] than John.
b. He is [more intelligent] but [less handsome] than John.

Final Version of Suggestion: Although word order and constituency data discussed so far can be properly explained under the approach in (11), a theoretical and/or empirical problem can be raised since a lexical category X[+g] like gradable A or Adv need be assumed to select a complement like DegP (which may have no relevant theta-role). In fact, as shown in (13a-b), in Korean and English, X[+g] may select a complement other than a DegP, and the complement appears in the complement position of X[+g].

(13) a. con-un bil-pota te **ku-lul** twulyewehanta (K)
John-Top Bill-than more **he-Acc** is.afraid
b. John is more afraid **of him** than Bill (is). (E)

To explain data like (13a-b), I first suggest that there is a functional category Comparison (=COM) whose features are [+comparison, +gradable, +/-incremental] (cf. *more/less*) which is different from the functional category Deg that selects only the *than* phrase (PP*). As for the nature of COM, I further suggest (14a-c): (14a) The functional category COM selects gradable XP[+g] and DegP (cf. the co-occurrence of a gradable X and a DegP (whose head selects PP*)). (14b) The complements of a functional category may be syntactically realized differently from those of a lexical category: Both DegP and XP[+g] appear in complement positions in the way shown in (15) where (i) COM1 and COM2 are projections of COM which are of the same (intermediate) level of projection while COM2 also functions as a maximal projection; and (ii) YP is a complement of X[+g]. (14c) The XP[+g] that is selected by COM is defective in that it lacks its Spec position so that it may not have its own degree modifier like *very* (cf. defective AP, AdvP, or *many/more* phrases; cf. also Izvoraski (1zvoraski (1995)).

(15) **A double complement structure**: [$_{COM2}$ [$_{DegP}$ PP* *te*] [$_{COM1}$ [$_{XP[+g]}$ (YP) X[+g]] COM(0)]] (K)

The structure in (15) implies that a functional category COM triggers a particular (shell) structure, which is eventually responsible for the sentence form of the comparative construction: In (15), COM is a null morpheme, which is linked to X[+g] via a X[+g]-to-COM head-linking process (for checking reasons); and data like (16), whose word order and constituency properties are expected under (15), confirm that the present shell/double-complement approach in (15) is on the right track.

(16) ku-nun [con-pota te [kunye-lul twulyewha]]-kena [bil-pota te [kuyne-lul cohaha]]-kena haci-nun anhnunta
he-Top [John-than more [**she-Acc** afraid.of]]-or [Bill-than more [**she-Acc** fond.of]]-or is-Con not
'He is not [more afraid **of her** than John] or [more fond **of her** than Bill].' (where X = A)

Under the present view (and Checking Theory), English comparatives can also be suggested to have a double complement structure given in (17) where two different morphological realizations are exhibited, which implies that the morphological realizations of COM and Deg may differ from language to language. Data like (18) also suggest that X[+g] moves to COM so that the string *more*+X[+g] may form a unit, excluding YP as well as PP*. The structure in (17a) predicts that *more*-XP and *more*-XP-PP* each form a unit, and the prediction seems to be borne out, as shown in (19a-b).

(17) a. [$_{COM2}$[$_{COM1}$ COM(*more*) [$_{XP[+g]}$ X[+g] (YP)]] [$_{DegP}$ Deg(0) PP*]] (cf. *more* - X - PP*)
b. [$_{COM2}$[$_{COM1}$ COM(0) [$_{XP[+g]}$ X[+g]-*er* (YP)]] [$_{DegP}$ Deg(0) PP*]] (cf. X-*er* - PP*) (E)
(18) John is [more surprised] and [more disappointed] **at the news** than Mary (is).
(19) a. John is [$_{COM1}$ more afraid **of her**] but [$_{COM1}$ less critical **of her**] than Tom (is). (cf. (12))
b. John is [$_{COM2}$ more afraid **of her** than Bill] but [$_{COM2}$ less afraid **of her** than Tom]. (cf. (3-4))

Further Empirical Advantages and Discussion: The present view has some further empirical advantages: First, the notion of double complement structure can be properly extended to explain the syntax of so-called result clauses (cf. Larson (1991), Abney (1987), and Baltin (1987)) as well as *as-as* sentences and superlative sentences. Second, some various properties of comparatives sentences shown in (20a-d) can be either predicted or plausibly explained: (20a) cases of multiple degree modification (cf. *much more beautiful/10 feet taller*; Kennedy and McNally (2005)); (20b) a possibility of the co-occurrence of *more* and *-er* (cf. Corver (2005)); (20c) cases of multiple *than* phrase (cf. Napoli (1983), Bhatt and Pancheva (2004), Kennedy and McNally (2005)); (20d) cases of multiple *more/-er* (cf. Corver (1993)).

During the discussion, while examining some apparent empirical problems (cf. (i) in fn.4. Corver (2005), for example), I also examine previous shell-approaches (cf. Larson (1991) and Izvoraski (1995)) to show that they have both empirical and theoretical problems (especially raised by Korean data).

The Locus of Person Feature, Agreement, and DP/CP Parallelism

Intro This paper investigates the structure of a nominal collocation composed of a non-possessive pronoun and a noun ([PRN-N]). I propose, based on Modern Greek (MG), that the pronoun in [PRN-N] occupies SpecDP, and show that the proposal can be extended to account for English and Korean. The proposal implies that the semantic person feature is encoded on D of pronominal DP, the subject-verb agreement is mediated by D, and DP resembles CP with respect to dislocation to the left-periphery.

Issue Based on English [PRN-N] in (1a), it has been hypothesized that the pronoun is the head D of [PRN-N] DP, as in (1b) (Abney 1987, Longobardi 2008, Panagiotidis 2002, Postal 1969, a.o.).

(1) a. **we**/**the**/***we the**/***the we** linguists b. [$_{DP}$ [**we**/**the** [$_{AgrP}$ [Agr [$_{NP}$ [linguists]]]]]]

The structure in (1b), however, fails to account for MG [PRN-N] in (2a), in which the definite article *i* 'the' must co-occur with the pronoun *emis* 'we', and the former cannot precede the latter, as in (2b).

(2) a. **emis** ***(i)** **glossologi** nikisame to epathlo. b. **i** **(*emis)** glossologi **(*emis)**
we the linguists won.1PL the award the we linguists we
'We linguists won the award.'

Proposal I propose, contrary to (1b), that [PRN-N] pronouns must be treated on a par with demonstratives, rather than definite articles. That is, pronouns are dislocated to SpecDP from SpecAgrP between DP and NP: [$_{DP}$ **pronoun** [D [$_{AgrP}$ $\mathbf{t_{pronoun}}$ [Agr [$_{NP}$ [N]]]]]], which bears an analogy to the syntax of MG demonstratives (Alexiadou et al., 2007).

Evidence First, demonstratives and pronouns are in complementary distribution in MG, as in (3). Given the well-known fact that a definite article must be present in the presence of a demonstrative in MG (Alexiadou et al., 2007), the ungrammaticality of (3) is not due to something else but to the co-occurrence of a pronoun and a demonstrative, which compete for the same position.

(3) **(*afti)** **emis** **(*afti)** i glossologi **(*afti)**
these we these the linguists these

Second, as exemplified in (4a), the deictic property of pronouns/demonstratives—but not definite articles—can be modified/reinforced by a reinforcer, and the presence of a reinforcer is dependent on the presence of pronouns/demonstratives. Given the role of reinforcers and the dependent relationship shown in (4a), I construe the pronoun/demonstrative-reinforcer collocation to be an instance of the modifier-modifiee relationship, as in (4b). This suggests that pronouns/demonstratives and a reinforcer form a phrase; an alternative hypothesis is ruled out that the pronouns/demonstratives take a DP as a complement (e.g., [$_{PrnP/DemP}$ [Prn/Dem [DP]]]), even though it can capture the word order fact in (2).

(4) a. [***(emis/afti)** **edho**] i glossologi b. einai [**poly** ***(exypnos)**]
we/these here the linguists is.M very smart
'we/these here linguists' 'He is very smart.'

Lastly, if pronouns are a sort of definite articles, pronoun spreading, like MG determiner spreading in (5a), is expected to be allowed. However, pronoun/demonstrative spreading causes ungrammaticality, as shown in (5b).

(5) a. **ta** tris **(ta)** vivlia b. **emis**/**afti** i **(*emis**/***afti)** tris **(*emis**/***afti)** glossologi
the three the books we/these the we/these three we/these linguists

Empirical Extensions The current analysis is empirically superior to the previous analyses like (1b). First, English [PRN-N] can still be accounted for. In non-Standard English, demonstratives/pronouns can be modified by a reinforcer, e.g., [[***(we**/***these)** *here*] *linguists*]. For the same reason noted for MG reinforcers, we can conclude that demonstratives/pronouns are phrasal and thus occupy SpecDP. As for Standard English, which does not allow for reinforcers, I assume SpecDP to be the position of English demonstratives (Alexiadou et al., 2007). The reason for the obligatory absence of a definite article in the presence of a pronoun/demonstrative is presumably due to the doubly-filled COMP filter.

Second, the current analysis can also capture the Korean [PRN-N] fact. Assuming Korean to be a D-final language as many others do, the previous analyses incorrectly predict [N-PRN] order in (6b) to be correct. In contrast, the correct order [PRN-N] in (6a) is derived if *wuri* 'we' is assumed to be in SpecDP, since the specifier position precedes the head regardless of the head-directionality.

(6) a. **wuri** enehakcatul b. *enehakcatul **wuri**
we linguists linguists we

Implications First, the current analysis speaks against the prevailing hypothesis about D of (non-)pronominal DP being the locus for the interpretable person feature (Panagiotidis 2002, Longobardi 2008, a.o.). Their main argument is based on the fact that the person feature of [PRN-N] is determined

by the pronoun and the assumption that the pronoun is the head D of [PRN-N]. However, this *D=person* hypothesis is rendered untenable since in [PRN-N] the pronoun is not the head D, as shown above. Alternatively, I argue that the person feature is only encoded in D of pronominal DPs, but not non-pronominal DPs. I, partially adopting Panagiotidis, assume $[_{DP}$ [D $[_{AgrP}$ [Agr $[_{NP}$ [N_e]]]]]] for pronominal DPs; D, Agr and N_e encode person, number, and gender feature, respectively; D enters the derivation with unvalued number/gender feature which are valued via Agree with Agr/N_e.

Second, under the current analysis, how the subject-verb agreement is implemented needs to be reconsidered. In (2a), for instance, the verb is inflected in accordance with the φ-features of the pronoun. If [PRN-N] is not headed by the pronoun, then φ-features of the pronoun cannot be reflected on DP via percolation. To get around this problem, I propose that it is DP-internal agreement between D and the pronoun (*AGREE1* in (7a)) that enables the subject DP to obtain the value of the φ-feature of the pronoun. T, then, agrees with the subject DP (*AGREE2* in (7b)). The mediated subject-verb agreement in (7a-b) can be implemented by adopting Pesetsky&Torrego's (2007) feature-sharing approach to agreement, since D functions as a probe in *AGREE1* and as a goal subsequently in *AGREE2*.

(7) a. $[_{DP1}$ pronoun [**D** $[_{AgrP}$ $\mathbf{t_{pronoun}}$ [Agr $[_{NP}$ …]]]]]$_{SUBJ}$ b. $[_{TP}$ DP1 [**T** $[_{vP}$ $\mathbf{t_{DP1}}$ [*v* $[_{VP}$ …]]]]]

AGREE1 *AGREE2*

Lastly, the pronouns/demonstratives movement to SpecDP patterns with *wh*-movement to SpecCP and thus constitutes new evidence in favor of DP/CP parallelism. Non-echo *wh*-questions in MG can be derived in two ways: (i) *wh* obligatory moves, as in (8a), and (ii) *wh* stays in-situ, as in (8b); (ii) is only allowed when the *wh* element is presuppositional and thus cannot be uttered 'out of the blue' (Vlachos 2010). Consider, then, (9a) and (9b). [PRN-N] pronouns and pre-article demonstratives are not presuppositional and thus always raise to SpecDP in (9a), while anaphoric (i.e., presuppositional) demonstratives stay in-situ in (9b) (the post-nominal position is derived by N raising).

(8) a. **pjon** pirovolise o astinomikos?
whom shot.3SG the policeman.NOM
'Who did the policeman shoot?'

b. o astinomikos pirovolise **pjon**?
the policeman.NOM shot.3SG whom
'Who did the policeman shoot?' [*presuppositional*]

(9) a. **emis**/**afti** i glossologi
we/these the linguists
'we/these linguists'

b. i glossologi **afti**/**(*emis)**
the linguists these/we
'these linguists' [*presuppositional*]

Interestingly, the similarity pertaining to the dislocation to SpecDP/SpecCP in a given language is attested in English and Korean (in which *wh*-movement has nothing to do with presuppositionality). In English, non-echo questions are formed by obligatory *wh*-movement; English [PRN-N] demonstratives/pronouns must move. Korean is classified as a *wh*-in-situ and *wh*-scrambling language; Korean [PRN-N] pronouns and demonstratives can either stay in-situ, as in (11a), or can be scrambled to SpecDP, as in (11b). The relative position of the adjectives with respect to the pronoun/demonstrative in (10-11) indicates whether the pronouns/demonstratives moved.

(10) a. **we**/**these** *smart* linguists b. **smart* **we**/**these** linguists

(11) a. *ttokttokhan* **wuri**/**ku** enehakcatul b. **wuri**/**ku** *ttokttokhan* enehakcatul
smart we/these linguists we/these smart linguists
'we/these smart linguists' 'we/these smart linguists'

Conclusion I proposed an analysis of [PRN-N] based on MG. I showed that the proposal can be extended to account for English and Korean data, and sheds a new light on the locus of person feature, agreement, and DP/CP parallelism.

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Barbara Citko (University of Washington) Friday 9:30
& Martina Gracanin-Yuksek (Middle East Technical University)

Wh-Coordination in Free Relatives

0. Coordinated wh-questions **(CWHs)** have received a lot of attention in recent years (Bîlbîie & Gazdik 2012, Citko & Gracanin-Yuksek 2012, Gracanin-Yuksek 2007, Gribanova 2009, Kazenin 2002, a. o.). Given the well-documented parallels between questions and relative clauses, a natural question to ask is whether analogous coordinated wh-phrases **(WHs)** exist within the domain of relativization. In this talk, we focus on free relatives **(FRs),** contrasting English with multiple wh-fronting languages such as Croatian or Polish. We establish, and provide an account of, three (to the best of our knowledge previously unnoticed) empirical generalizations.

I. *First*, while it has been noted before that multiple wh-fronting languages do not necessarily allow multiple free relatives (**FRs**) (cf. Citko 2009), as shown by the ungrammaticality of (1a) in Polish, it has not been noted that *free relatives with multiple coordinated wh-pronouns* **(CFRs)** do exist, irrespective of the availability of multiple wh-fronting in a language, as shown in (1b) for Polish and in (2b) for English.

(1) a.*Jan je **cokolwiek kiedykolwiek** Maria gotuje. b. Jan je **cokolwiek i kiedykolwiek** Maria gotuje.
Jan eats whatever whenever Maria cooks Jan eats whatever and whenever Maria cooks

(2) a.*John eats **what(ever) when(ever)** Mary cooks.
b. John eats **what(ever) and when(ever)** Mary cooks.

II. *Second*, we establish that English **CFRs** are subject to the same restrictions as **CWHs**. These were examined in detail by Gracanin-Yuksek (2007), who shows that English **CWHs** are only allowed with optionally transitive verbs such as *eat* (vs. *devour*) (3a-b), are impossible with two arguments (3c), and, finally, are possible with two adjuncts (3d).

(3) a. **What and when** does John *eat*$_{[\_\_(DP)]}$? b. ***What and when** does John *devour*$_{[\_\_DP]}$?
c. ***What and to whom** did John give? d. **When and where** did John cook?

Likewise, **CFRs** are possible only if *both* the matrix and the embedded verb are optionally transitive (as in (2b) above), but are impossible if either (or both) verbs are obligatorily transitive, as shown in (4a-b).

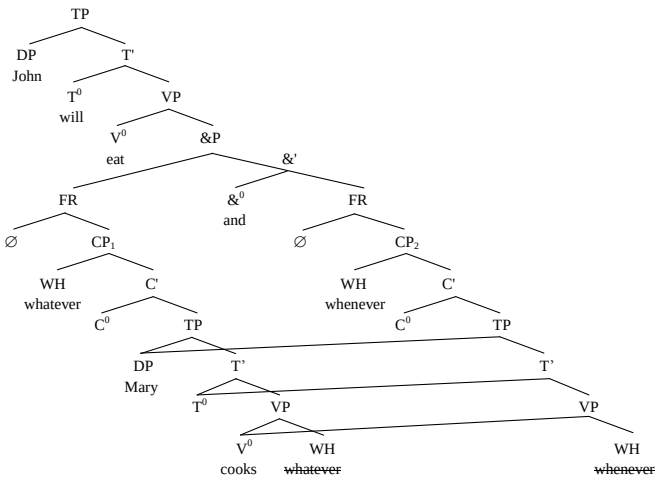
(4) a. *John eats$_{[__(DP)]}$ **what(ever)** and **when(ever)** Peter prepares$_{[__DP]}$.
b. *John devours$_{[__DP]}$ **what(ever)** and **when(ever)** Peter prepares$_{[__DP]}$.

Also, **CFRs** with two coordinated wh-arguments are out (5a), but those with two coordinated wh-adjuncts are fine (5b):

(5) a. *John cooked **whatever and to whoever** Bill gave.
b. John eats **wherever and whenever** Peter cooks.

To account for the parallelism between **CWHs** and **CFRs**, we propose (6) as the structure of CFRs in English, which parallels the structure of **CWHs** proposed by Gracanin-Yuksek (2007) and Citko & Gracanin-Yuksek (2012). We conclude that a **CFR** is well-formed only if the main clause can embed each **FR** conjunct independently without incurring a grammaticality violation (see Goodall 1987 and Fox 2000 for arguments that each component in a coordinate structure has to be independently well-formed). Since *John eats whatever Mary cooks* and *John eats whenever Mary cooks* are well-formed, (2b)/(6) is grammatical. By contrast, (4a) is out because even though *John eats whatever Peter prepares* is good, **John eats whenever Peter prepares* is not.

(6)



III. And *third*, we examine the behavior of **CFRs** in multiple wh-fronting languages like Croatian or Polish. Based on the data from English, one would expect the same restrictions to hold in both **CWHs** and **CFRs.** Interestingly, this ***not*** what we find. **CFRs** in multiple wh-fronting languages we have

inspected behave like those in English, regardless of the syntax of their **CWHs**. We take Croatian as an illustrative example; it differs from English in that it allows **CHWs** with obligatorily transitive verbs like *fix*, as well as **CHWs** with two arguments (compare the ungrammatical (3b) and (3c) in English with their grammatical Croatian equivalents in (7a-b)):

(7) a. **Što i zašto** Jan popravlja$_{[__DP]}$? b. **Što i kome** Jan pokazuje?
what and why Jan fixes$_{[__DP]}$ what and to-whom Jan shows
*'What and why does Jan fix?' *'What and to whom is Jan showing?'

Citko & Gracanin-Yuksek (2012) argue that the contrast between Croatian and English **CHWs** is due to the fact that, unlike English, Croatian is a multiple wh-fronting language and therefore allows fronting of two clausemate WHs, coordinated in the specifier of the C-head (through a mechanism such as sidewards movement (cf. Zhang 2007, 2009), as shown in (8).

(8) $[_{CP}\ [_{\&P}\ wh_1\ \&\ wh_2\ [_{TP}\ ....\ t_1 ...\ t_2\ ]\ ]$

Thus, given the grammaticalityof **CWHs** in (7a-b) above, it is *very* surprising that **CFRs** in which either the matrix or the embedded verb (or both) are obligatorily transitive, are out. (9a) shows that the **CFR** is out if the matrix verb is obligatorily transitive, regardless of the argument structure of the embedded verb. (9b) makes the same point for the embedded verb.

(9) a. * Jan ocjenjuje$_{[__DP]}$ **što(god)** i **kad(god)** Vid kuha$_{[__(DP)]}$ /priprema$_{[__DP]}$.
Jan evaluates$_{[__DP]}$ what(ever) and when(ever) Vid cooks$_{[__(DP)]}$ /prepares$_{[__DP]}$
*'Jan evaluates what(ever) and when(ever) Vid cooks/prepares.'

b. * Jan jede$_{[__(DP)]}$ /ocjenjuje$_{[__DP]}$ **što(god)** i **kad(god)** Vid priprema$_{[__DP]}$.
Jan eats$_{[__(DP)]}$ /evaluates$_{[__DP]}$ what(ever) and when(ever) Vid prepares$_{[__DP]}$
*'Jan eats what(ever) and when(ever) Vid prepares.'

We propose that the contrast between the grammatical **CHWs** in (7a-b) and the ungrammatical **CFRs** in (9a-b) is is due to the fact that a **CWH**, unlike a **CFR**, does not involve a CP external head. We propose that the monoclausal structure in (10), which is what the ungrammatical **CFRs** in (9a-b) would have to involve, is unavailable due to a more general constraint that rules out two relative pronouns in a relative clause modifying a single head, regardless of whether the relative pronouns are coordinated or not.

(10) *$[_{DP}\ HEAD_{1/2}\ [_{CP}\ [_{\&P}\ wh_1\ (\&)\ wh_2\ [_{TP}\ ....\ t_1 ...\ t_2]\ ]$

This constraint is operative in headed relatives as well, as shown by the ungrammaticality of (11a). On the Head Promotion account, (11a) would have to involve a case of unattested ATB movement of *non-identical* elements from a *non-coordinate* structure, as shown schematically in (11b).

(11) a. *student którego (i) któremu Maria przedstawiła.
student who.ACC (and) whom.DAT Maria introduced

b. $[_{DP}\ [_{CP}\ [c'\ [_{TP}$ Maria introduced *which student*$_{ACC}$ to *which student*$_{DAT}$]]]

IV. We thus predict that wh-constructions that are truly headless (even if they are not questions) should behave like **CWHs** rather than **CFRs**. We test this prediction on existential modal constructions, which have been argued by Izvorski (2000), (also Simik 2011, Caponigro 2003, a. o.) to be CPs (rather than free relative-like DPs), based on the fact that **WHs** in these constructions differ from **WHs** in **FRs** in that they are interpreted as indefinite and disallow *ever*. Interestingly, these, being truly headless, behave like **CHWs**: they are possible with obligatorily transitive verbs (12a), as well as with two arguments (12b).

(12) a. Imam **što (i) zašto** *popraviti*. b. Imam **što (i) kome** pokazati.
have.1SG what (and) why fix.INF have.1SG what (and) to-whom show.INF
'I have stuff to fix and people to fix it for.' 'I have stuff to show and people to show it to.'

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Jessica Coon (McGill University) Friday 6:30

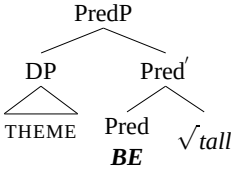
PREDICATION, PREDICATE FRONTING, AND WHAT IT TAKES TO BE A VERB

This paper looks at two unrelated languages which nonetheless share a range of properties: Chol, a Mayan language spoken in southern Mexico, and Tagalog, an Austronesian language of the Philippines. In this paper, I argue for a connection among the characteristics in (1).

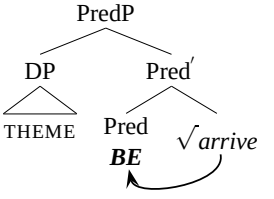
(1) a. predicate initial word order
b. lack of an overt copula
c. subjects of non-verbal predicates behave as unaccusative subjects

Following Bowers (1993), Baker (2003) and others, I adopt the proposal that predication requires a functional projection PredP (2–3). The Pred^0 head, glossed roughly as *BE*, combines first with a property-denoting root. The resulting predicate then combines with a theme argument. According to Baker (2003), verbal predicates like *arrive* (3–4) differ from NVPs (2) in that they undergo "conflation" (incorporation prior to vocabulary insertion) of a property-denoting root with a functional Pred^0 head, resulting in the VP shown in (4); see also (Hale and Keyser 1993). While Pred itself is a functional category, the result of conflation is a lexical category, V^0. NVPs do not undergo conflation and remain functional (2).

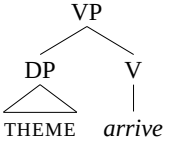
(2) NON-VERBAL PREDICATE



(3) "PRE"-CONFLATION



(4) VERBAL PREDICATE AFTER CONFLATION



I propose that "verbs" in Chol and Tagalog differ fundamentally from verbs in languages like English in that they do not form lexical categories via conflation (Hale and Keyser 1993; Baker 2003). Instead, they are built on top of the same functional PredP projections involved in non-verbal predication (e.g. via the addition of an eventive v^0 projection). I argue that all properties in (1) stem from the absence of a lexical vs. functional division between verbal and non-verbal predication. While this proposal accurately captures the range of data below, it also raises important questions, notably the role of the functional/lexical divide in the grammar and its connection to grammatical categories, as well as Baker's conception of *conflation*.

Data & background: Chol and Tagalog verbal and non-verbal predicates are given in (5) and (6). In both languages, predicates (underlined) precede subjects (bold-faced) whether verbal (a) or non-verbal (b). The (b) examples illustrate the absence of an overt copula. While this absence is not unusual cross-linguistically, many null-copula languages nonetheless exhibit an overt copula in *some* environments. For example, Russian and Arabic both have a null copula in present tense, but an overt one in the past. In Chol and Tagalog, however, matrix clauses *never* show a copula.

(5) CHOL
a. Tyi majl-i **jiñi wiñik**.
PRFV go-ITV DET man
'The man went.'
b. Maystroj **jiñi wiñik**.
teacher DET man
'The man is a teacher.'

(6) TAGALOG
a. Nag-aaral **ako**.
IMPF.NOM-study 1SUBJ
'I'm studying.'
b. Doktor **ako**.
doctor 1SUBJ
'I'm a doctor.' (Richards 2009b, 181)

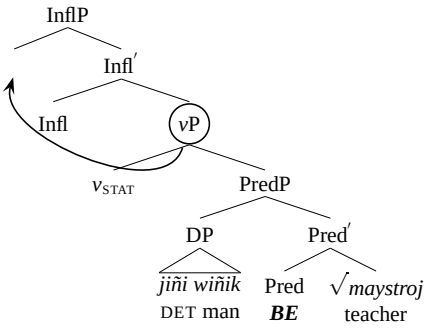
Sabbagh (2011) shows that subjects of adjectival passives—a class of NVPs in Tagalog—behave as unaccusatives with respect to a number of diagnostics. A similar state of affairs is seen in Chol: in the domain of verbal predicates, possessors may be extracted out of internal arguments (unaccusative subjects and transitive objects), but not out of external arguments (transitive/unergative subjects) (Coon 2009). Subjects of NVPs like (5b) behave as unaccusative subjects in this respect.

PREDICATION, PREDICATE FRONTING, AND WHAT IT TAKES TO BE A VERB

Given that subjects of NVPs are THEMES, like unaccusative subjects, this fact comes as a surprise only to those familiar with the fact that NVP subjects behave as *unergative* subjects in a range of other languages, for example Russian (Pesetsky 1982), Hebrew (Borer 1984), English (Levin and Rappaport-Hovav 1986), and Italian (Belletti and Rizzi 1981). In order to account for the unergative behaviour of NVP subjects in these languages, while still maintaining the UTAH, Baker (2003) capitalizes on the distinction between *functional* versus *lexical* categories, e.g. (2) vs. (4). In addition to using this to account for the different behaviour of NVP vs. unaccusative verbal subjects, Baker argues that the presence, in many languages, of a copula in NVP constructions falls out from this division: the head Infl^0 must attract a *lexical* category. Verbs may thus directly bear tense morphology, while NVPs may not: *John walk**ed***; **John talled*; *John **was** tall*. The copula, under this view, is a lexical element inserted above PredP to host tense morphology.

Proposal: The proposal that Chol and Tagalog lack conflation accounts for the differences above. **First**, all internal arguments will be specifiers of a functional projection, PredP, explaining the absence of differential behaviour of unaccusative and NVP subjects (1c). **Second**, the proposal that Infl^0 may attract only a *lexical* category (Baker 2003) accounts for the absence of V^0-to-Infl^0 movement; *there are no lexical verbs in these languages*. Instead, in order to establish a relationship with higher temporal elements, the entire predicate fronts to Spec,IP (1a). In Chol, for example, I propose that the property-denoting root undergoes head-movement (*not* conflation, i.e. post-insertion) up to v^0, placing the predicate before the THEME; next phrasal *v*P is attracted to Spec,IP. External arguments of transitives remain in situ, in a VoiceP projection above *v*P, resulting in VOS order. Note that this analysis requires a division between *conflation* and standard *head-movement* (Hale and Keyser 1993), with important consequences for the timing of insertion.

(7)



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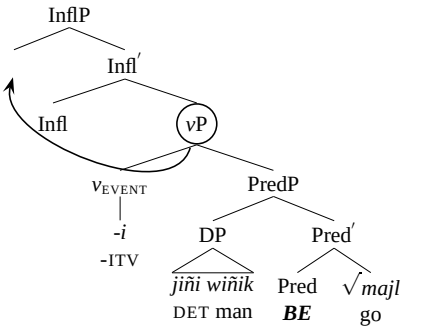

Third, as copula insertion in English is argued to be the driven by the requirement that Infl^0 attract a *lexical* element, and lexical verbs (including copulas) are simply unavailable in these languages, the consistent absence of a copula in NVPs is accounted for as well (1b).

Finally, this proposal connects to a fourth shared trait between the two languages: the questionable status of grammatical categories. At least since Charencey 1884, Mayanists have questioned the division between verbs and nouns (Seler 1887; Tozzer 1921; Bruce 1968). Similarly, the noun/verb distinction has been called into question in languages of the Austronesian family; see for example Lopez 1928, Seiter 1975, Capell 1964, and more recently, Kaufman 2009. Though I follow a range of recent work argues that at some level a distinction *must* be maintained between nominal and verbal categories (Lois and Vapnarsky 2006; Richards 2009a; Sabbagh 2009), the abundant work on this topic suggests a further point of comparison, as well as a possible extension to Salishan languages, which have are also predicate initial, lack a copula, and have been claimed to lack noun/verb distinctions (Jelinek and Demers 1994).

Select references: Baker, M. 2003. *Lexical categories: Verbs, nouns and adjectives.* Cambridge U. Press. **Bowers, J. 1993.** The syntax of predication. *LI* 24:591–656. **Coon, J. 2009.** Interrogative possessors and the problem with pied-piping in Chol. *LI* 40:165–175. **Hale, K. and S. Keyser. 1993.** On argument structure and the lexical expression of syntactic relations. In *The View from Building 20*, 53–109. MIT Press. **Sabbagh, J. 2011.** Adjectival passives and the structure of VP in Tagalog. *Lingua* 121:1424–1452.

Jean Crawford (University of Connecticut)

Poster Session I
Friday 2:45 - 4:45

Verbal passives in child English: Evidence from judgments of purpose phrases

Most maturational accounts for passive acquisition claim that the passives seen in early child speech are not adult-like verbal passives, but rather an adjectival construction with a simpler syntax (Borer and Wexler 1987, Babyonyshev et al. 2001). The Universal Phase Requirement (UPR, Wexler 2004) assumes children use resultative adjectival passive syntax (Embick 2004). The Argument Intervention Hypothesis (AIH, Orfitelli 2012) must assume that children's good performance on short and long actional passives is due to a syntax that does not have an intervening agent argument. Alternatively, Snyder and Hyams (2008) argue that children's syntax for verbal passives is intact, but passive movement will violate relativized minimality unless the context adds discourse features to one of the arguments to distinguish the chains (Rizzi 2004).

Verbal and adjectival passives in English can be disambiguated with purpose phrases (PPs). Verbal passives contain a syntactically represented implicit argument (IMP), which can license a PP (Roberts 1987). PPs are allowed with actives and verbal passives, but not with middle/inchoative constructions.

(1) a. John is breaking the candy bar to share with friends
b. The candy bar is being broken IMP PRO to share with friends
c. *The candy bar is breaking to share with friends

PPs are also not acceptable with adjectival passives because they do not have IMPs to control PRO:

(2) *The candy bar is unbroken to share with friends

If young children's passives are verbal, they should judge passives with PPs like (1b) as acceptable, just like they do (1a). If children's passives are adjectival and do not contain an intervening IMP, they should judge (1b) to be as unacceptable as (1c). As PP acceptability among the constructions is based on grammaticality judgment (GJ) data from adults, it seems appropriate to evaluate children's knowledge with a similar judgment task.

Twenty-one 4-6-year-olds participated in a targeted GJ task (Stromswold 1990, McDaniel and Cairns 1996, Hiramatsu 2000). After a training and pretest which focused on judging active and inchoative forms, children provided judgments for 5 verbs (*bake, break, grow, light, sink*) in 4 different constructions (active progressive, passive progressive, inchoative progressive, inchoative present). Each item was presented with a story emphasizing the object. Passives were the critical items. Paired *t*-tests showed children judged passives differently from both types of inchoatives (progressive inchoative: $t(1,20)=3.25$, $p=.004$, present inchoatives: $t(1,20)=5.59$, $p<.001$). A repeated measures ANOVA on all 4 constructions reveals a main effect of verb type (Greenhouse-Geisser $F(2.202,43.663)=33.660$, $p<.001$). Post-hoc pairwise comparisons (with Bonferroni correction) showed passives varied significantly from both types of inchoatives. The inchoatives did not vary significantly from one another. Like adult controls, passives also varied significantly from actives.

The results show that children use verbal passive syntax to comprehend passives, providing evidence against the UPR and AIH. The results provide preliminary evidence for Snyder and Hyams' proposal, though this account faces other challenges (Crawford 2012). Following Grillo (2008), I propose children's difficulties with passives may stem from constructing the complex event structure required for passives of activity and stative predicates.

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Roberta D'Alessandro (Leiden University)
& Tobias Scheer (University of Nice) Sunday 10:15

Modular PIC

Domains of phonological computation are phonologically relevant chunks of a linear string, i.e. strings that are computed by phonology in one go. Traditionally, there are two ways to define them: derivationally and representationally. The former perspective is represented by cyclic derivation (cycles in SPE, levels in Lexical Phonology) in earlier models of the architecture of grammar, and by strata (Stratal OT) or phases today. On the representational side, chunks are defined by prosodic constituents such as the Prosodic Word (Prosodic Phonology). Since the representational alternative was developed, in the early 80s, both ways of defining chunks are considered to coexist peacefully, and the division of labour is roughly defined by the word size: cycles determine chunks below the word level, while prosodic constituents define chunks of word size or larger. That is, Lexical Phonology is competent for strings of morphemes but cannot slice larger units because postlexical phonology is understood to be non-cyclic (Kiparsky 1982). Strings of words are therefore structured by prosodic constituency. This complementary distribution of competences is made explicit for example by Hayes (1989 [1984]).

In this paper we evaluate the impact of Chomsky's (2000 ff.) Phase Theory on the landscape of the phonological dichotomy just described. Two main points are made. First, phase theory does away with the idea that there are no derivationally defined chunks above the word level: the very essence of phase theory is to define chunks that are bigger than a word, and to send them to PF (and LF). In Chomsky's (2000) initial incarnation, *v* and C are phase heads defining chunks to be sent to PF that are larger than words. Phonology, then, is constantly fed by these syntax-determined chunks. While it is reasonable to assume that a computational system is shaped by its input conditions, it is not reasonable to have the chunking labour done twice, i.e. first by phases in syntax and then again by prosodic constituency at PF. The concept of phase emerged as a conceptual necessity (Uriagereka 1999, Chomsky 2000, M. Richards 2007). The same is not tenable for prosodic constituency, we maintain. Hence, a direct consequence of *syntactic* phase theory is to eliminate the *phonological* Prosodic Hierarchy. This is a case of intermodular argumentation, i.e. where properties of a given module referee competitors in another module (Scheer 2008, 2009; see also Nevins 2010, Arregi & Nevins 2012 for some intermodular parallelism debate). Prosodic constituency can only be justified if it does labour in phonology which could not possibly be handled by phases.

However, and this is our second point, in the recent evolution of the Prosodic Hierarchy (e.g. Kratzer & Selkirk 2007), prosodic constituents (so-called prosodic islands) are designed as being isomorphic with phases, rather than being distinct from them in identifying different domains. Once again, isomorphism of phases and prosodic units makes the latter redundant.

This situation is reason enough, we submit, to pursue a perspective where all chunk-defining labour is done by phases. We illustrate this approach through a case study from Ariellese, a dialect spoken in Eastern Abruzzo (Italy), where *Raddoppiamento Fonosintattico* (syntactic doubling, henceforth RF) is both lexically determined and syntactically conditioned. It is shown that as far as this phenomenon is concerned, phases and phonologically relevant domains are strictly isomorphic, and hence additional prosodic constituency is useless.

RF in Ariellese obtains between an auxiliary and a participle in passive, but not in active constructions [cf. *so* ***v****viste* ('I am seen') vs *so viste* ('I have seen')]. Biberauer & D'Alessandro (2006) show that this alternation is obtained in the syntax, under the condition that the auxiliary is a lexical RF trigger. Specifically, there is a phase boundary between *so* and *viste* in the active construction, by virtue of *v* being a phase head, but there is no phase boundary between *so* and *viste* in the passive, by virtue of *v* being defective, hence not a phase head. The phase boundary blocks RF, hence actives do not exhibit it. No phase boundary exists in the passive between *v* and the participle in V; hence RF can freely apply at PF. This is a straightforward case, we submit, in which a *syntactic* phase boundary determines a *phonological* domain.

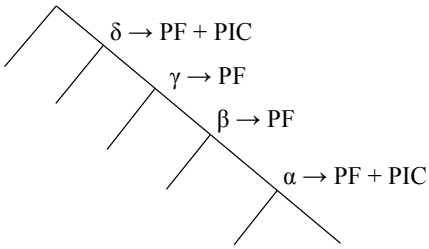
Having phases as the only defining device for both syntactically and phonologically relevant chunks has repercussions also on the syntax side: in order to be able to define all phonologically relevant chunks that occur cross-linguistically, phases need to be flexible. It is a trivial cross-linguistic observation that not all phases leave a phonological trace. In Ariellese, for example, the boundary between *v* and its complement blocks RF at PF, as we have seen, while the boundary between C and

its complement does not (*che sseme fitte,* that are done, 'that we have done'). In the overwhelming majority of cases, chunks that have been identified by phases on the syntactic side do not impact phonology in any way.

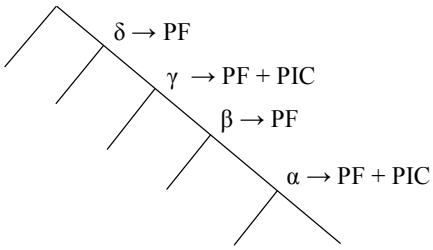
This means either that phases have no impact in phonology at all, and hence that phase theory is wrong, or alternatively that phonological computation is insensitive to its input conditions. For the reasons discussed, we are not inclined to follow the latter track. Much more promising, we submit, is a modification of phase theory according to the demands of phonology, which opens the way for a unified theory of chunk definition on both the syntactic and the phonological side. This can be achieved by what we call Modular PIC (*Phase Impenetrability Condition*, Chomsky 2001): rather than being automatically associated to every phase, a PIC may or may not hook on a phase. Since only the PIC, not the phase in itself, is responsible for freezing effects, phases that are endowed with a PIC at PF will leave a phonological trace, while bare phases (with a PIC only at syntax) will not. This is parallel to what we know from the interaction of morphology and phonology: some morphological boundaries are visible to the phonology (e.g. class two affixes in English: *párent-hood* where stress is computed only over the root), while others are invisible (e.g. class one affixes: *parént-al* where stress is computed over the entire word, which behaves just like if it were monomorphemic).

The take of Modular PIC is thus that phases exist independently of the PIC: a phase can be associated with a PIC on a parametric basis. Two languages may thus have the same phase skeleton, i.e. identical sets of phase heads, but differ with respect to which phase head is associated to a PIC at PF. This is shown in (1) below.

(1) language A:
phase heads α and δ are armed with a PIC at PF
phase heads β and γ have free rides at PF



language B:
phase heads α and γ are armed with a PIC at PF
phase heads β and δ have free rides at PF



This view is compatible with the original conception of phase theory where the set of phase heads is the same for all languages. Under (1), the phase skeleton is identical for both languages, and the only source of parametric variation is the way it is interpreted at PF (with or without a PIC). The system is also compatible with a view whereby the set of phase heads is subject to cross-linguistic variation (Gallego 2009, 2010). In this case there are two distinct sources of parametric variation: the phase skeleton itself and its interpretation at PF.

Note that Modular PIC also implies that the presence of a PIC for a given phase is specific to each of the three computational systems (modules) that are related by the phase skeleton: under (1), PICs *at PF* are depicted. Phases which leave no footprint in phonology, and hence to which no PIC is associated *at PF*, may well have a syntactic motivation for being armed with a PIC *in syntax*. This is the case for *v*P in English for example, where t-flapping is reported (e.g. by Nespor & Vogel 1986:46f, 224ff) to go into effect across *all* word boundaries no matter what the syntactic relationship of the words (provided the /t/ is word-final and intervocalic). The same should be true for the third computational system that is related by the phase skeleton, LF.

Heuristically, then, in a landscape with Modular PIC, two things need to be identified when a language is described: 1) the phase skeleton, 2) the association of a PIC to a given phase in syntax, at PF and at LF. Evidence for 2) are the footprints that are left behind: the presence or absence of a PIC for a given phase needs to be worked out for each of the three modules independently, and it needs to be based on evidence from that module alone. Evidence for 1) are the combined effects of 2): whenever there is a syntactic, a phonological or an LF footprint, there must be a phase head (armed with a PIC). The reverse, however, is not true: there can be phases that have no effects in a given module. Put differently, the set of phase heads that are armed with a (syntactic and/or a phonological) PIC are a proper subset of the phase skeleton.

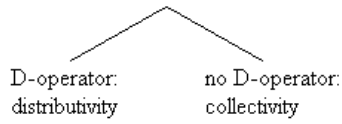
Hanna de Vries (Utrecht University) Poster Session II
Saturday 4:00 - 5:30

Lexical distributivity with group nouns and property indefinites

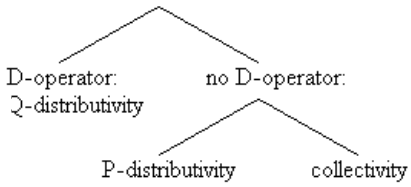
The most common approach to distributive sentences like *The girls laughed* – which is roughly equivalent to *Every girl laughed* – is to analyse them (following Link 1983) as involving covert quantification over the individual members of the plurality *the girls* by means of a distributivity operator. The quantifier-less approach of Scha (1981), which analyses distributivity in terms of the lexical semantics of the predicate, fails to account for more complex cases like *The girls drank a whole bottle of wine*.

Lexical distributivity and covert quantification are not mutually exclusive, but since the latter seems able to account for all the data, there seems to be no need to keep the former mechanism around. However, I argue that the D-operator approach does not account for all the data: certain data involving group nouns (like *the team*) are best analysed by means of a lexical distributivity mechanism. I present evidence that this lexical distributivity is not limited to one-place predicates, but extends to two- and three-place predicates. As a consequence, even the aforementioned *The girls drank a whole bottle of wine*, which is a classic argument in favour of a D-operator analysis, may be analysed in terms of Scha-style lexical distributivity.

P-distributivity and Q-distributivity. Suppose we have a sentence *S* of the form *X Pred*, where *X* is a plural, conjunction or group noun, and *Pred* is a predicate. An *interpretation* of *S* is *distributive* if we infer that [[*Pred*]](*x*) for every individual *x* in [[*X*]]; otherwise it is *collective*. In the D-operator approach, the different interpretations are each derived by a different semantic mechanism – covert quantification is responsible for the distributive interpretations, direct predication over the plural individual [[*X*]] is responsible for the collective ones. In my approach, the divison of labour is somewhat different: direct predication over [[*X*]] is responsible for collectivity *and some cases of distributivity*. Schematically:



Standard D-operator approach



Proposed approach

Here, Q-distributivity is the familiar operator-based distributivity; P-distributivity and collectivity are rooted in the lexical semantics of the predicate and our reasoning about parts and wholes with respect to the predicate meaning. Thus, *The girls laughed* is interpreted distributively because laughing is something only individuals are able to do, while *The girls are numerous* is interpreted collectively because being numerous is a property of collections, not of individuals (cf Scha 1984, Dowty 1987). P-distributivity is closely related to Carlson's (1977) treatment of kinds: according to Carlson, quantification over instantiations of higher-order entities is not required in order to be able to say something about such instantiations.

Distributivity with group noun subjects. The reason we need both a lexical and a compositional distributivity mechanism is the distributive behaviour of group nouns. P-distributivity is available with group nouns (e.g. *The class laughed*), but as the following data show, Q-distributivity is not (the available interpretations are given in terms of entailments; 'PPI' stands for 'predication over a plural individual', 'QD' stands for 'Q-distributive'):

(1) a. The team members are walking or cycling.
⇐ The team members are walking or the team members are cycling. (PPI)
⇐ Each of the team members is walking or cycling. (QD)
b. The team is walking or cycling.
⇔ The team is walking or the team is cycling. (PPI)

(2) a. The boys have the largest number of coins / have more coins than the girls.
⇐ The boys together have more coins than the girls. (PPI)
⇐ Each of the boys has more coins than the girls. (QD)
b. The boy team has the largest number of coins / has more coins than the girl team.
⇔ The boy team together has more coins than the girl team together. (PPI)

(3) a. The boys would be upset if Mr Smith kissed their mother.
⇐ The boys would be upset if Mr Smith kissed the boys' mother (PPI)
⇐ Each of the boys would be upset if Mr Smith kissed his mother (QD)
b. The class would be upset if Mr Smith kissed their mother.
⇔ The class would be upset if Mr Smith kissed the class's mother. (PPI)

This contrast between groups and plurals is easily accounted for under the common assumption that group noun denotations, unlike plural denotations, are atomic (Barker 1992, Schwarzschild 1996, parts of Landman

1989): their individual members are not accessible to the compositional semantics and hence cannot be quantified over. So the group noun sentences in (1b-3b), unlike their plural-subject counterparts (1a-3a), do not involve a quantifier that can take scope over the disjunction in (1) or the object quantifier in (2), or allow individual boys to bind the pronoun in (3).

Evidence for n>1-place P-distributivity. However, there is an apparent exception to this generalisation: sentences with a group-denoting subject whose direct or indirect object is an *a*-indefinite or numerical indefinite, like their plural-subject counterparts, have two interpretations:

(4) a. The first aid team members are wearing an orange vest / two blue socks.
b. The first aid team is wearing an orange vest / two blue socks.[1]
c. De leden van het EHBO-team dragen een oranje hesje. (Dutch)
d. Het EHBO-team draagt een oranje hesje.

All sentences in (4) are entailed by both the collective statement "There is an orange vest such that the team members are wearing it", and the distributive "Each of the team members is wearing an orange vest". On the first interpretation, the whole team is squeezed into a single vest; on the second, more salient one, each team member is wearing their own vest. If the indefinite is analysed as a generalised quantifier with existential force, the indefinite takes scope over the entire group and only the first interpretation will be available. So how to account for the contrast between (1-3) and (4) while preserving our account of the contrast between groups and plurals with regard to Q-distributivity? The answer: we analyse the distributivity in (4) as P-distributivity. I propose that the indefinite in (4b,d) denotes a property rather than a quantifier, an idea that has been used to account for a wide range of phenomena (*there*-sentences, McNally 1992; opaque verbs, Zimmermann 1993; light verbs, De Hoop 1996; and PPs, Mador-Haim & Winter 2007). Similarly to the analysis of opaque verbs in Zimmermann (1993), the predicate *is wearing* takes the object property as its direct argument, *enabling P-distributivity not only over the members of the subject group but also over the instantiations of the object property.* The result of this 2-place P-distributivity is that (4) is interpreted as a relation between instantiations of two higher-order entities: individual team members and individual shirts. (Note that the same happens with kinds and indefinite objects in e.g. *The lion has a mane.*)

There are two alternative explanations for the group distributivity data that do not require that the indefinite denote a property, but neither accounts for (all) the data. The first is group credit, which is a special case of the collective interpretation: *The team is holding up a trophy* can be true when only a single representative team member is actually holding the trophy, so according to the same reasoning, *The team is wearing an orange shirt* might be true even when the shirt-wearing is individual, because of a kind of metonymical extension of its collective interpretation. However, the group credit interpretation of *The team is holding up a trophy* persists under an existential paraphrase (*There is a trophy that the team is holding*), but the distributive interpretation of *The team is wearing an orange shirt* does not, indicating that the latter cannot be a special case of the former. The second alternative explanation is quantification over kinds: *There is a shirt that the team is wearing is* compatible with every individual team member wearing their own shirt, if we interpret *a shirt* as *a kind of shirt*. However, *Some*-indefinites can quantify over kinds as easily as *a*-indefinites can, but *The team is wearing some blue shirt* is not truth-conditionally equivalent to *The team is wearing a blue shirt*. The first requires that every member is wearing the same kind of shirt; the second can also be true if the team members are wearing different kinds of shirts.

Conclusions. I have shown evidence that there are two distributivity mechanisms, one lexical and one quantificational, and that the former (P-distributivity) is available with group nouns but the latter (Q-distributivity) isn't. I have also argued that P-distributivity extends beyond one-place predicates, and that this (together with the common assumption that indefinites may denote properties) explains an otherwise unexpected case of distributivity with group noun subjects.

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[1] Many varieties of English require a dependent plural here ('orange vests'), but for the speakers that accept (4a), (4b) is equally good. The Dutch examples are unproblematic.

Elan Dresher, Christopher Harvey & Will Oxford
(University of Chicago)

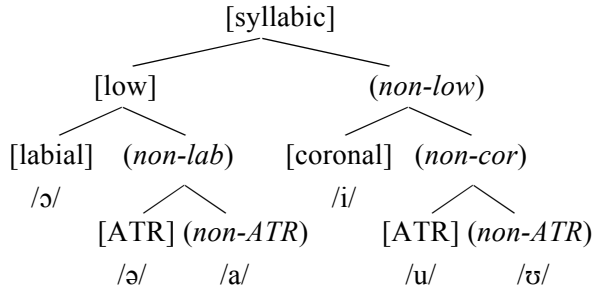
Contrast Shift as a Type of Diachronic Change

We argue that *contrast shift*, a change in the contrastive organization of the phonemic inventory of a language, is an important type of phonological change. The insight that phonological change may involve a reorganization of the phonemes of a language goes back to Jakobson (1931); to the extent that phonemes are contrastive units, contrast shift can be viewed as an inevitable consequence of a structuralist/generative approach to phonology. However, we argue that the true dimensions of contrast shift are revealed when we assume the hypotheses in (1):

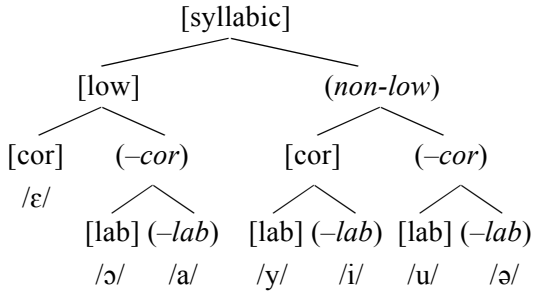
1. Hypotheses about contrastive features
   a. *The Contrastivist Hypothesis* (Hall 2007): Only contrastive features are active in the phonology.
   b. *The Contrastive Feature Hierarchy* (Dresher 2009): Contrastive features are assigned by language-particular feature hierarchies.

The hypotheses in (1) predict that contrast shift will have observable consequences for patterns of phonological activity. A simple example is a series of diachronic changes from Classical Manchu to modern Manchu dialects (Zhang 1996; Dresher & Zhang 2005). Classical Manchu had a six-vowel system governed by the contrastive hierarchy in (2):

2. Classical Manchu feature hierarchy:
   [low] > [coronal] > [labial] > [ATR]



4. Spoken Manchu feature hierarchy:
   [low] > [coronal] > [labial]



Zhang (1996) supports the contrastive features in (2) by noting the facts in (3):

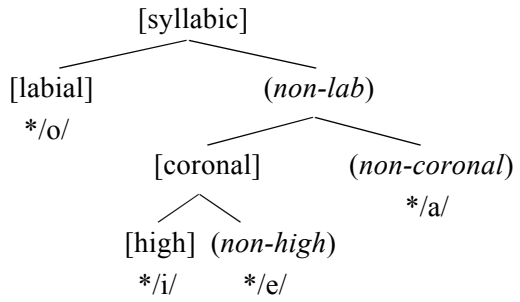
3. Phonological activity: Classical Manchu
   a. ATR harmony: triggered by /u, ə/, not /i/.
   b. /ə/ patterns as a low vowel.
   c. Labial harmony: triggered by /ɔ/, not /u, ʊ/.
   d. /i/ is the only [coronal] vowel.

5. Phonological activity: Spoken Manchu
   a. No ATR harmony
   b. /ə/ is high, with allophones [ɤ], [ɯ].
   c. Labial harmony: triggered by /u, ɔ/.
   d. New coronal vowels /ɛ/ and /y/.

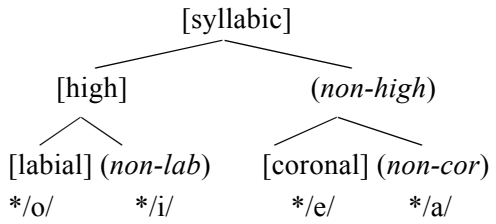
Following the Classical period a sequence of changes occurred. First, /ʊ/, already marginal, was lost completely. Now the [ATR] contrast would have been limited to /a/~/ə/, which was reanalyzed as a height contrast, with the consequences that /ə/ became a high vowel and [ATR] was no longer contrastive. Now /ə/ had to be distinguished from /u/, which took on a contrastive [labial] feature. This led to /u/ becoming active in labial harmony, and to the creation of a new [coronal, labial] vowel /y/, formed from the combination of /i/ and /u/. Although /ə/ and /u/ are common to both Classical and Spoken Manchu, their changes in contrastive status, illustrated by the tree in (4), led to the new phonological patterns in (5) in the modern Manchu dialects, exemplified here by Spoken Manchu (Ji et al. 1989, Zhao 1989).

Apart from the loss of [ATR] as a contrastive feature, the feature hierarchy of Manchu remained the same, and this conservatism is characteristic of the Manchu-Tungus family. However, contrast shift can also involve change in the hierarchical ranking of features. In a survey of diachronic changes in the vowel systems of Algonquian languages, Oxford (2012) shows the dramatic effects of such a change. He proposes that Central Algonquian has the vowel feature hierarchy in (6), which continues the Proto-Algonquian (PA) system. Oxford observes that two groups of changes are particularly common in Central Algonquian (7); these changes are consistent with (6) on the assumptions that (a) contrastive sisters are the most likely merger partners, and (b) palatalization is triggered by a contrastive feature, here [coronal]:

6. Central Algonquian feature hierarchy:
[labial] > [coronal] > [high]



8. Eastern Algonquian feature hierarchy:
[high] > [labial] > [coronal]



7. Mergers and palatalizations characteristic of the Central Algonquian languages
   a. */e/ regularly merges with */i/: Partial or complete mergers of short */e/ > /i/ occur in Fox, Shawnee, Miami-Illinois, Ojibwe-Potawatomi, and Cree-Montagnais-Naskapi. Long */eː/ completely merges with /iː/ in Woods Cree and Northern Plains Cree.
   b. Palatalization always includes */i/ as a trigger: PA */t, θ/-palatalization is triggered by */i, iː/; Montagnais */k/-palatalization is triggered by */i, iː, eː/; Betsiamites Montagnais /t/-palatalization is triggered by /iː/.

Oxford (2012) proposes that in Eastern Algonquian (EA) the feature [high] was promoted to the top of the hierarchy, as shown in (8). Though the features in play remain the same, the new order leads to dramatically different patterns of merger and palatalization (9):

9. Mergers and palatalizations characteristic of the Eastern Algonquian languages
   a. */e/ merges with or shifts to */a/: Partial or complete mergers of PA short */e/ or its PEA reflex */ə/ with */a/ occur in Abenaki, Mahican, Mi'kmaq, and Maliseet-Passamaquoddy; PEA long */eː/ shifts to /aː/ in Massachusett and merges with */a/ in Western Abenaki; long and short */e(ː)/ shift to /a(ː)/ in Cheyenne; and vowel harmony involves */e(ː)/ and */a(ː)/ in Arapaho.
   b. Palatalization is triggered by */e(ː)/ but *excludes* */i/: in Massachusett */k/-palatalization is triggered by PEA */eː/ but not /iː/; Cheyenne "yodation" (*/k/ > /kj/) is triggered by */e(ː)/ only.

More radical contrast shifts occur in the development of the Mansi and Khanty vowel systems from Proto-Ob-Ugric. Harvey (2012) shows that one can make sense of these changes by keeping track of the changes in their contrastive hierarchies, as revealed by changing inventories and patterns of activity. He argues that contrast shifts describe phonological events that can be shared and borrowed by neighbouring speech communities, and plotted as isoglosses. For example, front-back ([coronal] vowel harmony is retained in some Mansi and Khanty languages and lost in others. Harvey shows that harmony is lost in dialects where the ranking of [coronal] as a contrastive feature is lowered to the bottom of the hierarchy, and that this change appears to have originated in Northern Mansi and spread along the major regional rivers to both Mansi and Khanty dialects (which excludes the possibility of this being a genetic change).

As the Manchu-Tungus, Algonquian, and Ob-Ugric examples show, viewing phonological change in terms of contrast shift accounts for large-scale typological patterns that are hard to explain any other way. These developments in turn lend support to language-particular contrastive feature hierarchies as an organizing principle of individual phonological systems.

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Phonological Alternations Modulate Illusory Vowel Perception

Perceptual epenthesis of illusory vowels has been claimed to be driven purely by surface phonotactics and phonetic characteristics of segments (Dupoux et al. 2011). In fact, as we will show, it is also crucially modulated by the phonological alternations in a particular language.

Native speakers perceive illusory vowels when presented with sound sequences that do not respect the phonotactic constraints of their language (Dehaene-Lambertz, Dupoux & Gout 2000; Dupoux et al. 1999). More specifically, when a native speaker is presented with a word-medial consonant sequence that violates the phonotactic constraints in their language, an illusory vowel is perceptually induced in between such sequences thereby creating an illusory sequence that respects the syllable structure constraints of the language. For e.g., when a Japanese listener is presented with [ebzo], they may actually perceive [ebuzo] given that [bz] is an illicit consonant sequence in Japanese. Furthermore, Kabak & Idsardi (2007) argue that the relevant phonotactic constraints that drive such perceptual illusions are the syllable structure constraints of the language. With respect to the quality of the illusory vowel, Dupoux et al. (2011) argue that it is the phonetically minimal element, or the shortest vowel, in the language (/u/ in Japanese, and /i/ in Brazilian Portuguese). Their claim predicts that there can be at most one illusory vowel in a language. However, a more generous interpretation of their claim results in the prediction that there can be at most one illusory vowel per phonetic context. In this paper, we falsify both these predictions. We show that in some contexts, it is possible to induce more than one illusory vowel.

We claim that the quality of the illusory vowels is predicted straightforwardly by the phonological alternations in the language. While it is surely true that surface phonotactics and phonetic characteristics of segments have an effect on perceptual epenthesis, we propose that the quality of the illusory vowel depends on the phonological alternations in the language. Korean has a morpho-phonological process of /ɯ/ deletion in certain environments during morphological concatenation (Sohn 1999). This allows /ɯ/ to be a good vowel for perceptual repairs because it already varies with Ø (Null) in the surface representations. Furthermore, Korean has a process of palatalization of alveolar consonants before /i/; /t/ and /c/ neutralize to the [c] and /s/ surfaces as [ʃ] before /i/. Therefore, when the perceptual system encounters a palatal segment, there are two possible phonemic parses - it can either be from an alveolar phoneme, or from a palatal phoneme. If the perceptual system infers the phoneme to be a palatal segment, given the illicit syllabic context, the /ɯ/ vowel is induced for reasons mentioned above; however, if the perceptual system infers the phoneme to be an alveolar segment, then an /i/ vowel is induced in the illicit syllabic context, because the only way to get a surface [c] from an underlying /t/ is to have a following /i/. Given this, we expect that the same illicit palatal coda can induce both an illusory /i/ and an illusory /ɯ/.

We ran an AX task on 20 native Korean speakers, and 19 native American English speakers as controls, to ensure the effect was not driven by specific phonetic properties of the tokens themselves. We presented participants with pairs of nonce words of the form **eC_1V_1ma** [where, C_1 = t / s / c / ʃ; V_1 = i / ɯ / Ø (Null)]. All the tokens had stress on the first vowel, and were natural recordings by a trained phonetician.

We take confusability between pairs of words with and without vowels, indicated by lower A', to suggest the induction of an illusory vowel (A' ≈ 1 reflects little to no confusion between pairs).

Therefore, if [etmo] and [etumo] have an A' < 1, then the participant is probably inferring an illusory vowel in [etmo], at least some of the time.

A mixed ANOVA of A' revealed a main effect of language [$F(1, 37) = 16.042$, $p < .001$], a main effect of word pair [$F(11, 407) = 5.020$, $p < .001$], and an interaction of word pair by language [$F(11, 407) = 7.809$, $p < .001$]. We ran planned t-tests to compare A' values for each relevant word-pair between the two language groups (Figure 1). [NOTE: x-axis labels below represent the C_1V_1 portion of the word-pairs. When $V_1 = \emptyset$, word is represented with just C_1. ch = [c], sh = [ʃ], u = [ɯ].]

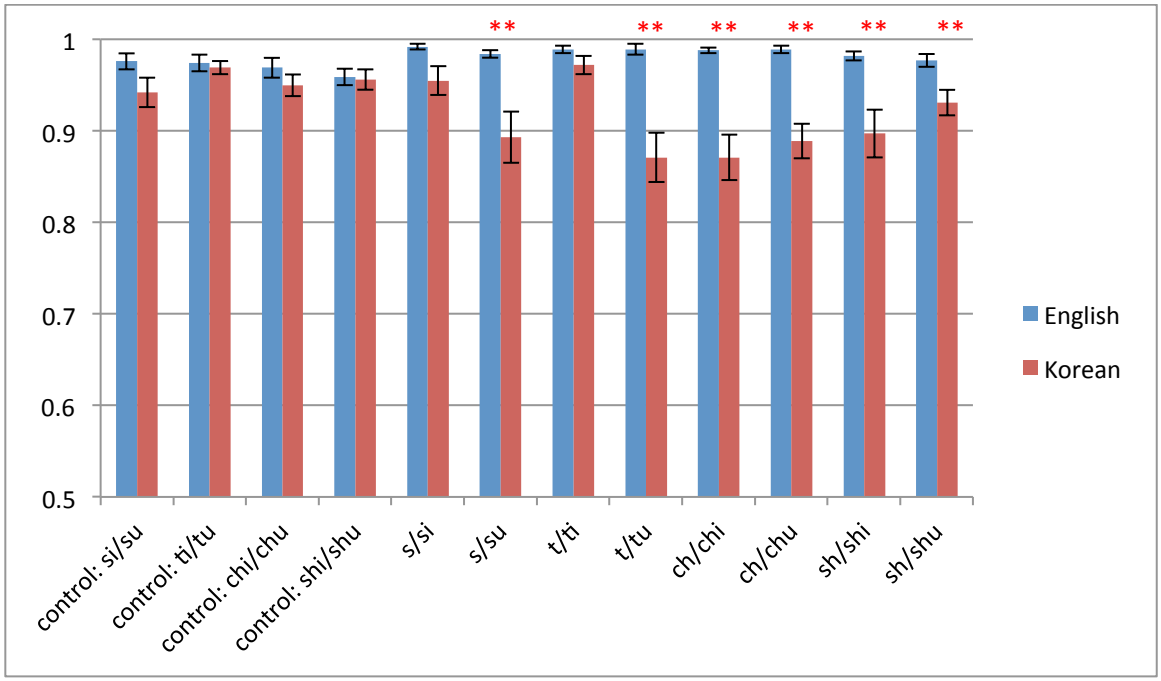

Figure 1: Average A' values for English and Korean listeners (error bars = 1 S.E.; ** = p < 0.01)

Contrary to Dupoux et al.'s (2011) predictions, and in support of our predictions, when presented with phonotactically illegal palatal coda consonants, Korean speakers perceived both illusory /ɯ/ and /i/. More generally, we show that phonological alternations, and by extension underlying representations, are crucial to the phenomenon of perceptual epenthesis.

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Diagnosing covert pied-piping

Sauerland and Heck (2003, S&H) show that Beck intervention effects occur within overtly pied-piped constituents. We present novel data showing that these intervention effects also affect covert pied-piping, contra Cable (2010). That is, when a focus intervener (Beck, 2006) is inside an in-situ *wh*-word's associated pied-piping constituent, it will block the interpretation of the *wh*-word, leading to ungrammaticality. We argue that these facts are best accounted for by (a) covert movement of *wh*-words for interpretation, with pied-piping through Cable's (2007, 2010) Q-theory of *wh*-movement, (b) interpretation of pied-piped constituents through focus alternatives (Horvath 2000, 2007; Krifka 2006; Cable 2007, 2010; a.o.), and (c) Beck's (2006) focus semantic account of intervention effects. We further argue that a careful look at such configurations leads to the conclusion that the size of overt pied-piping and covert pied-piping can differ—in particular, covert pied-piping in English does not allow P-stranding. Finally, we extend these findings to focus constructions and argue for a covert movement approach to in-situ focus interpretation (Krifka, 2006; Wagner, 2006).

Theoretical background: In Cable's (2007, 2010) Q-particle theory of *wh*-movement, a Q-particle (silent in English but overt in some languages) is adjoined to a particular *wh*-containing constituent, and "*wh*-movement" moves this QP. QPs containing more than just the *wh*-word lead to *pied-piping*. In English, in-situ *wh*-words in superiority-obeying questions merge with Q and covertly move to C (see also Pesetsky, 2000; Beck, 2006).

Previous work on intervention and pied-piping: S&H give German data showing that various interveners such as negative quantifiers cannot occur in an overtly pied-piped constituent (1). Cable (2010) presents the analogous contrast for English, reproduced in (2). (Interveners in **bold**, *wh*-words in *italics*.)

(1) Fritz möchte wissen [[✓ein /***kein** *wie* schnelles Motorrad] du fahren darfst]
Fritz wants know a / no how fast motorbike you drive may
'Fritz wants to know how fast a/*no motorbike you are allowed to drive.'

(2) [✓A/***no**/***few** picture(s) of *which* president] does Jim own ___?

S&H and Cable show that these intervention effects occur when an intervener is inside the pied-piped constituent (QP following Cable) and above the *wh*-word, schematized in (3). Intervention in this configuration is unexpected by Beck (2006), but is amenable to a similar focus-semantic explanation, since the pied-piped constituents are interpreted via focus-alternative computation within the QP (Cable, 2010; cf. Horvath, 2000, Krifka, 2006).

(3) * $[_{QP}$ Q … **INTERVENER** [… *wh* …] $]_i$ … t_i …

Intervention in covert pied-piping: As the interpretation of in-situ *wh*-words can involve covert movement (Karttunen, 1977; a.o.), we would like to know (a) whether *covert* movement also triggers pied-piping and, if so, (b) whether the size of covert pied-piping is the same as overt pied-piping. The multiple *wh*-question in (4) provides some evidence:

(4) *Who*'s read ✓a/✓some/✓the/***no**/***few** book(s) from *which* library?

Note in particular that this is a superiority-obeying question and, in general, negation intervening between the complementizer and the in-situ *wh*-word is grammatical (5). Ungrammaticality arises precisely when the intervener is within the DP [D books from *which* library] that is a pied-piping constituent corresponding to *which*.

(5) ✓ *Who* has**'nt** read a/any/some/the book(s) from *which* library?

This contrast thus does not fall under Beck's (2006) analysis of intervention effects between C and an in-situ *wh*. It does, however, fall under the extension of Beck to intervention within QPs (schema in 3), assuming that covert movement also triggers pied-piping via Q-particles. *As Q's function is to mark the constituent that is targeted for movement, the contrast in (4) provides an argument for covert pied-piping in the interpretation of wh-in-situ.*

Diagnosing the size of overt and covert pied-piping: As noted by Huang (1982), PP-complements are easier to extract from within a DP than PP-adjuncts are (6–7).

(6) * [From *which* library] have you read [a book ___]?
(7) ✓[Of *which* president] have you met [a relative ___]?

Under the Cable Q-theory, these different options for pied-piping correspond to different positions that the Q-particle can adjoin to. (Note that the entire DPs "a book…" or "a relative…" in (6–7) are also possible pied-piping constituents.) (8–9) show possible attachment sites for the Q-particle for DPs as in examples (6–7).

(8) (✓Q) D book (*Q) from (✓Q) *which* library
⇒ pied-piping options: ✓[D book from *which* l.], *[from *which* l.], ✓[*which* l.]
(9) (✓Q) D relative (✓Q) of (✓Q) *which* president
⇒ pied-piping options: ✓[D relative of *which* p.], ✓[of *which* p.], ✓[*which* p.]

As the intervention effects observed in (4) occur when an intervener intervenes between a *wh*-word and its associated Q (schema in 3), the only possible position of Q in (4) must be on the largest possible pied-piping constituent, illustrated in (4').

(4') * *Who*'s read [Q **no**/**few** book(s) from *which* library]? **Intervention!**

If we modify (4) so that the in-situ *wh*-word is within a PP-complement (instead of a PP-adjunct), however, the multiple question with the intervener becomes grammatical (10).

(10) ✓ *Who*'s met **no**/**few** relative(s) [Q of *which* president]?

This is because the Q can adjoin to the PP-complement [of *which* president], but not to the PP-adjunct [from *which* library] (8–9). As the intervener is entirely outside of the QP in (10), it does not trigger intervention. Thus the pattern of intervention effects in (4, 10) correlates with the options for pied-piping as determined through overt movement in (6–7).

Cable's theory predicts that Q may alternatively attach to the constituents [*which* library] or [*which* president] (8–9), as is possible in overt movement. However, if this were a possible option in covert movement, we would predict that the structure in (4'') is available, yielding no intervention effect in (4). Note that such movement of small QPs would leave a stranded preposition at LF. We argue that this effect is the emergence of the cross-linguistic constraint against preposition-stranding which is exceptionally violated in English overt movement.

(4'') * *Who*'s read **no**/**few** book(s) from [Q *which* l.]? **Impossible LF: violates P-stranding**

Applications to in-situ focus: We extend these findings to focus constructions. Overt focus-movement, in the form of it-clefts in English, also triggers pied-piping. We observe intervention effects within these cleft pivots as well (11).

(11) It's [✓a/✓the/✓some/***no**/***few** book(s) from $[\text{THAT}]_{F}$ library] that I've read ___.

Krifka (2006) argues that in-situ focus also involves covert movement with pied-piping. We thus predict intervention effects with the same sensitivity to complement/adjunct PPs observed in *wh*-in-situ. This prediction is borne out.

(12) I've only_i read [Q ✓a/✓the/✓some/***no**/***few** book(s) from $[\text{THIS}]_{F,i}$ library].
(13) ✓ I've only_i met **no** relatives [Q of $[\text{PRESIDENT OBAMA}]_{F,i}$].

This evidence thus further supports the covert movement analysis of focus interpretation, using the same syntactic mechanisms for pied-piping as in overt and covert *wh*-movement.

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Argument Structure-Driven Parsing in Tagalog

Previous literature on sentence processing has identified several structure building biases. One is a preference toward satisfying a verb's argument structure as soon as possible, the argument preference [1,2,3]. Another is a preference toward attaching an incoming phrase at the right edge of the existing structure, the local attachment bias ([4,5]). The present study provides further support for the importance of argument structure in a novel empirical domain: argument/possessor ambiguity in Tagalog.

Because Tagalog is verb-initial, argument structure information is available from the beginning of a sentence. In the Recent Perfective (RP) form, the case morphology on the arguments of some verbs is neutralized with the genitive form (glossed GEN here in all occurrences). Thus by including a genitive-marked possessor NP modifying one of the sentential arguments, it is possible to produce sentences containing a string of three identically marked NPs. In such sentences the parser must determine the grammatical function and thematic roles of the NPs without case cues. When a transitive RP verb is followed by more than two NPs, Tagalog word order is such that one NP must be a genitive on the preceding NP, but the grammar does not determine whether the constituency is [...[NP_1 NP_2] NP_3] or [...NP_1 [NP_2 NP_3]]. Here, the two parsing biases give different predictions, detailed below. In this way, how Tagalog speakers parse transitive RP verbs followed by more than two NPs can distinguish the argument and local attachment preferences.

In a word-by-word moving-window self-paced reading experiment, 38 native speakers of Tagalog in the Philippines read sentences (N=32, interspersed with over a hundred fillers) like (1), with three NPs following the verb. In (1), Case Form of NPs (Neutralized vs. Non-Neutralized), Plausibility (Possessed-Possessor sequence is plausible vs. implausible) and placement of complex NP (first vs. second argument) are manipulated as independent factors.

(1) Example Stimuli (simplified)

a. Pumili ng rantsero ang narses ng pasyente.
chose GEN cowboy NOM nurse GEN patient
The patient's nurse chose the cowboy.

b. Pumili ng narses ang pasyente ng rantsero.
chose GEN nurse NOM patient GEN cowboy
The cowboy's patient chose the nurse.

c. Pumili ng rantsero ng narses ang pasyente.
chose GEN cowboy GEN nurse NOM patient
The patient chose the nurse's cowboy.

d. Pumili ng narses ng pasyente ang rantsero.
chose GEN nurse GEN patient NOM cowboy
The cowboy chose the patient's nurse.

e. Kapipili lang ng narses ng pasyente ng rantsero.
RP.chose just GEN nurse GEN patient GEN cowboy
$\sim$ The cowboy just chose the patient's nurse.

f. Kapipili lang ng rantsero ng narses ng pasyente.
RP.chose just GEN cowboy GEN nurse GEN patient
$\sim$ The patient's nurse just chose the cowboy.

In the non-case-neutralizing normal perfective, 3-NP sequences are unambiguous provided the argument marked with "ang" is dislocated after the argument marked with "ng". So in (1a-d) only a single unambiguous parse (equivalent to the translation provided) is possible, because the arguments of the verb are distinctly case-marked. In (1a,b), the complex NP comes second, while in (1c,d), it come first. The additional factor of Plausibility (Possessed-Possessor sequence is plausible vs. implausible) was also varied in the non-case-neutralizing conditions. In (1a,d), the complex NP (possessed and possessor) is semantically plausible, while in (1b,c) it is implausible. Due to the absence of case cues, plausibility is indistinguishable from position of the complex NP for the RP conditions. In RP conditions, NP_2 can be parsed either as the possessor of NP_1 or an argument of the verb and the possessed of NP_3, with Plausibility serving to bias the parse to one constituency or the other. In (1e), the former parse is more plausible, while in (1f), the latter is.

In the absence of case-cues to distinguish arguments, the parser may behave in two ways. If the parser is driven by verbal argument structure (Hypothesis A) and by default assigns incoming NPs to theta-positions until the available theta-roles are exhausted, NP_1 and NP_2 will be initially parsed as arguments of the verb. Thus the parser will experience difficulty when this analysis turns out to be incorrect and NP_2 must be reanalyzed as a genitive on the first. This, then, predicts that when NP_3 is not a plausible possessor for NP_2, reading time slowdown will be observed at NP_3 (e.g. 1e).

In contrast, if the parser preferentially attaches incoming material as locally as possible (Hypothesis B), it should exhibit difficulty when the second NP in a sequence of two 'ng'-marked NPs is not a plausible genitive on the first. This is because a sequence of two 'ng'-marked NPs has a parse as a Possessed-Possessor sequence, and attaching an incoming NP as a genitive inside an NP just built should be preferred over attaching an argument by the principles of low attachment and minimal attachment. Reading time slowdown should therefore be observed at NP_2 when it is not a plausible possessor for NP_1 (e.g. 1f).

In the present study, it is found that reading times at NP_3 are significantly slower in the recent perfective when NP_3 is not a plausible possessor for NP_2 ($p<0.05$; linear mixed model, t=-3.1186, df=7). No significant effects are found at NP_2 in any condition. (Reading times for the critical regions do not differ significantly among the four non-neutralized conditions (a-d).) This supports the hypothesis (Hypothesis A) that argument structure information from the verb drives the parser's integration of case-ambiguous elements, overriding the local attachment preference. This finding is not consistent with the local attachment hypothesis (Hypothesis B) according to which the parse should default to building maximally locally in the absence of case cues to the contrary. Implications for the role of case-marking in language processing more generally are discussed.

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Phonology has an early influence on sound changes

The consensus view of conditioned sound changes is that they begin as low-level phonetic biases which become compounded in the production-perception feedback loop (Ohala, 1981; Pierrehumbert, 2002; Blevins, 2004; Bermúdez-Otero, 2007, *inter alia*). We argue against this consensus view that, instead, the conditioning on sound changes is phonological from the very onset of the change. To support this argument, we present a detailed analysis of a conditioned sound change, the raising of /ay/ before voiceless segments in Philadelphia.

Background on /ay/ The raising of /ay/ in Philadelphia was reported as a new and vigorous sound change in the 1970s (Labov, 2001). It occurs only before voiceless segments, including flaps which underlyingly correspond to /t/ (a classic case of opacity). It has been suggested that there is a phonetic bias for /ay/ to raise before voiceless segments, either due to pre-voiceless vowel shortening (Joos, 1942; Chambers, 1973) or pre-voiceless offglide peripheralization (Moreton and Thomas, 2004). Neither of these phonetic biases are sufficiently maintained in the pre-flap context to produce a distinction between /ay/ before flapped /t/ and /ay/ before flapped /d/, making the contemporary raising in words like *writer* and non-raising in words like *rider* phonetically unnatural (Rosenfelder, 2005, and this study). We should therefore expect that if /ay/ raising began as a natural phonetic bias, then raising before flapped /t/ would emerge as a generalization later, diachronically.

Data and Analysis Our data is drawn from the newly developed Philadelphia Neighborhood Corpus, which consists of automated vowel measurements drawn from sociolinguistic interviews conducted between 1973 and 2010 with speakers whose dates of birth range from 1888 to 1991 . This study focuses on the subset of 255 white, adult speakers, their 12,576 pre-obstruent /ay/ vowel measurements, and their 2,179 pre-/t,d/ /ay/ vowel measurements.

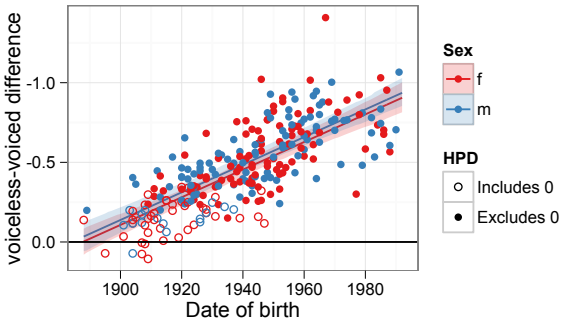

FIGURE 1. Diachronic change in pre-voiceless /ay/

First, we establish that the onset of the the sound change is included in the data. We do this by means of a Bayesian hierarchical model, estimated via Markov Chain Monte Carlo (MCMC) simulation. We model the difference in normalized F1 between pre-voiced and pre-voiceless /ay/ as a function of speakers' dates of birth, obtaining estimates for both community and individual level parameters. Figure 1 displays the predicted vector of change and 95% Highest Posterior Density (HPD) intervals for the community, as well as individual speaker estimates. Filled symbols represent speakers whose 95% HPD interval did not include 0. Most speakers don't exhibit a reliable difference between pre-voiceless and pre-voiced /ay/ until around a DOB of 1920.

Next, we fit a model using only /ay/ measurements in pre-/t, d/ contexts. We again modeled the effect of a surface /t/ relative to a surface /d/ as a function of DOB. For every speaker, we also estimated the effect of flapping on /t/, and on /d/. We would expect, if /ay/ raising was strictly phonetically conditioned in its early stages, that some speakers would raise /ay/ before surface /t/, but not before flapped /t/, since the phonetic bias of surface /t/ does not carry over to the flapping context. This would result in a reliable difference between /ay/ in the two /t/ contexts for that speaker. The results of this model are presented in Figures 3 and 4.

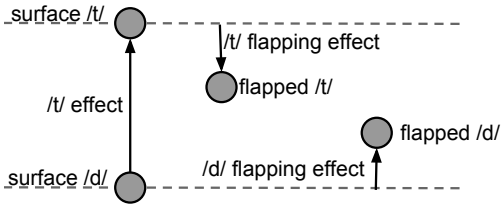

FIGURE 2. Data and speaker-level parameters

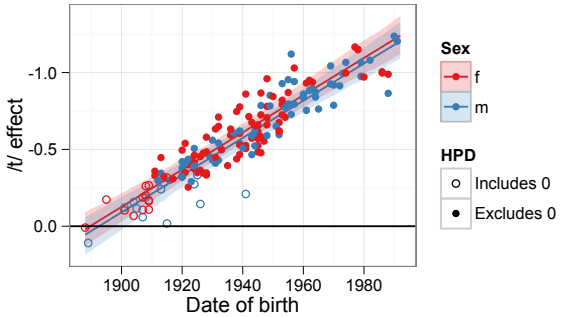

FIGURE 3. /t/ effect

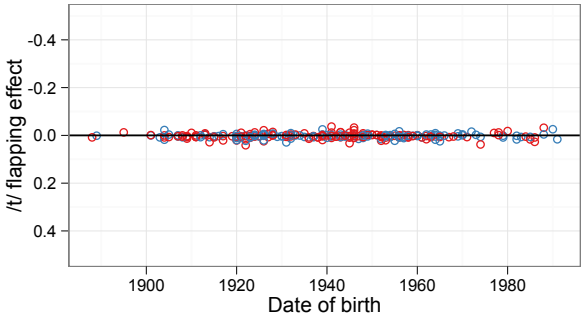

FIGURE 4. /t/ flapping effect

The fact that most speakers have no reliable difference between pre-voiced and pre-voiceless /ay/ until about 1920 is replicated for this subset of of the data. Contrary to the expectations of a purely phonetically conditioned sound change, no speakers at any time exhibit a reliable difference between /ay/ in pre-surface /t/ and pre-flapped /t/ contexts. That is, at all points in time, if a speaker raises /ay/ before a surface /t/, they also raise it before a flapped /t/.

Conclusions On the basis of the results above, we conclude that /ay/ raising has always been triggered by the underlying phonological voicing of the following segment, not by the phonetic properties of the context. Instead of a phonological process developing from an increasing phonetic bias, it appears as if the phonological process raising pre-voiceless /ay/ was in place from the very onset of the change, but it corresponded only to a small phonetic difference. The size of the phonetic difference corresponding to the phonological difference between raised and unraised /ay/ then grew steadily over the following century. We propose that sound changes are then best analyzed as changes in the language specific phonetic implementation of relatively stable phonological representations.

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Annie Gagliardi (Harvard University),
Alexis Wellwood & Jeff Lidz (University of Maryland) Saturday 3:30

With no help from syntax: Four models of meaning choice for novel adjectives.

Introduction A growing body of work highlights children's ability to use syntax to determine the meanings of novel words (see [S12] for refs). [W12] demonstrated that 4;0-5;0 year-olds leverage knowledge of syntactic category to learn that a novel superlative *gleebest* in determiner position, (1), had a quantity-based interpretation (e.g., *most*). However, in adjectival position, (2), children chose a quality-based meaning (e.g., *spottiest*), even though quantity-based meanings are in principle possible here. Using four computational models, we investigate the source of this learning bias.

(1) *Gleebest* of the cows are by the barn

(2) The *gleebest* cows are by the barn

[W12] presented cards with two groups of cows differing in spottiness and numerosity, one group by a barn and the other in a field, along with a target sentence ((1), (2) between subjects). True training cards put the group that was both most numerous and most spotty by the barn, and false put that group in the field. At test, children sorted new, unambiguous cards–a group was either most spotty, or most numerous, but not both–according to whether they thought the target sentence correctly described the card. Children chose by quantity for (1) (72%), and quality for (2) (71%).

Bayesian models of word learning The bias towards a quantity-based meaning for (1) was expected, but no bias was predicted for (2). We hypothesized that the latter result could find two sources in the learner: (a) lexical bias, based on the distribution of known gradable adjective meanings in the child's lexicon, or (b) salience, the relative difficulty of perceiving and encoding the differences in numerosity versus spottiness of groups of cows. Word learning in ambiguous contexts has been successfully modeled using Bayesian inference ([XT7], [G12]). We adapt these models to explore how (a) and (b) could interact when children generalize about novel superlatives.

A Bayesian model calculates the posterior probability of a hypothesized meaning, h, given some observed data, d. Here, the hypotheses are whether a novel word encodes a quality- or quantity-based meaning. The posterior probability, $\mathbb{P}(h|d)$, is proportional to the product of the prior probability of each hypothesis, $\mathbb{P}(h)$, and the likelihood of each hypothesis given the data, $\mathbb{P}(d|h)$ (Equation 1).

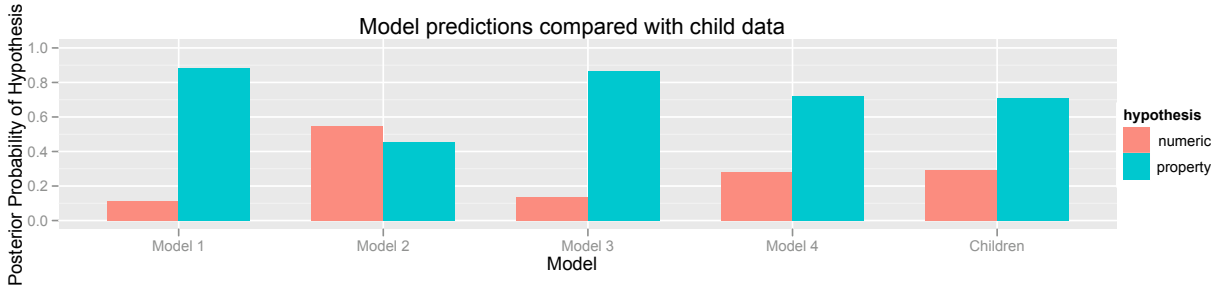
$$\mathbb{P}(h_i|d) = \frac{\mathbb{P}(d|h_i) \cdot \mathbb{P}(h_i)}{\sum_{h_j \in \{\text{all hypotheses}\}} \mathbb{P}(d|h_j) \cdot \mathbb{P}(h_j)} \tag{1}$$

A simple model encodes lexical bias (Model 1) or salience (Model 2) directly into the prior. A slightly more complex model has these factors both influence the prior (Model 3). A different, but perhaps more realistic model (Model 4), assumes that while lexical bias influences the prior, salience acts as a confusability parameter. In each model, the likelihood, $\mathbb{P}(d|h)$, is assumed to be equal for each hypothesis, as [W12]'s training stimuli were designed to make both an equally good fit.

Priors We approximated a "lexical prior", $\mathbb{P}(h_{lexicon})$, by counting gradable adjective types from parental speech in four CHILDES corpora (cf. [S7]; 45 quality- and 5 quantity-based types). We approximated a "salience prior", $\mathbb{P}(h_{salience})$, by conducting a similarity rating study on 50 adults. After presenting them with pairs of pictures differing along only one dimension (either pairs of single cows with 1-10 spots [quality], or pairs of groups numbering 1-10 [quantity]), we measured cluster distinctiveness based on hierarchical clustering of their judgments of similarity (cf. [XT7],[G12]). Next, we built a "complex prior" for each hypothesis, which is the joint probability of the lexical and salience priors.

Prior + confusability A different approach combines the lexical prior with the intuition that salience impacts how the likelihood, $\mathbb{P}(d|h)$, could be encoded with differing reliability for each

Figure 1: Simulations results and actual child data.



hypothesis (cf. [LG12]). Thus, Model 4 was the sum of four terms: A, B, C and D (each the posterior probability of the two hypotheses, given the encoding of the data), where each term was multiplied by the probability of encoding each data type (Table 1). (Note: β and γ are free parameters correlated with the relative salience of distinctions on the quality and quantity dimensions.) The models, along with the role played by the lexical bias and salience, are summarized in Table 2.

Table 1: Terms and parameters in the Differential Encoding model

Term	A	B	C	D
Correct encoding?	ql = yes, qn =yes	ql = no, qn =yes	ql = yes, qn =no	ql = no, qn =no
Parameter	$\alpha = \mathbb{P}(A)$	$\beta = \mathbb{P}(B)$	$\gamma = \mathbb{P}(C)$	$\delta = \mathbb{P}(D)$
Parameter value	$\alpha = 1 - \beta - \gamma - \delta$	$\beta =$ free	$\gamma =$ free	$\delta = \beta * \gamma$

Table 2: Role of lexical bias and salience in each model

	Model 1	Model 2	Model 3	Model 4
Lexical bias	prior	–	prior	prior
Salience	–	prior	prior	encoding

Simulations results & Conclusion. The results of the simulations are seen in Figure 1. Only the models that incorporate the biases from the lexicon reflect the general pattern exhibited by the children in [W12]'s study (i.e., Models 1, 3, and 4; fourth column). Moreover, Model 4 provides the closest fit, suggesting that children's generalizations about novel word meanings are a function **both** of the biases they bring to the word learning task and *their ability to reliably encode information* in the world. Understanding what these models represent, coupled with the experimental results reported by [W12], highlights the importance of the linguistic knowledge that children bring to the word learning task (whether syntactic or lexical), as well as the extralinguistic capacities and limitations inherent to the learner. Finally, these results emphasize the contributions that computational modeling, combined with careful empirical work, can make to our understanding of both language acquisition and linguistic representations.

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Categorical and gradient aspects of wordlikeness judgements (workshop)

Background Halle (1962) illustrates speakers' ability to distinguish between possible and impossible words in their language with the nonce words *blick* and *bnick*. While *blick* is unattested, it is phonologically well-formed and a "possible" word of English, but speakers immediately recognize *bnick* to be ill-formed and "impossible". A simple explanation for this contrast is that /bn/ is not a possible onset in English and that *bnick* is ill-formed because it cannot be syllabified (e.g., Kiparsky 1982). However, others have argued that this implies a firm boundary between the well-formed and impossible which does not match the granularity in speakers' responses in wordlikeness tasks (e.g., Albright 2009, Chomsky and Halle 1968, Hayes and Wilson 2008, Shademan 2006).

Linking hypothesis However, there is some evidence against a naïve hypothesis connecting speakers' competence to their use of intermediate ratings in wordlikeness tasks (which permit intermediate ratings). For this hypothesis to be falsifiable, it must be the case that ratings of so-called "definitional" concepts do not produce intermediate values. However, Armstrong et al. find that subjects use of a wide range of values when asked to rate the extent to which certain odd counting numbers represent the concept "odd number" on a 7-point scale, despite the fact that "no odd number seems odder than any other odd number." (Armstrong et al. 1983:274). Thus the mere use of intermediate ratings is not compelling evidence that the internal system of wordlikeness judgements produces gradient responses. This has led some (e.g., Schütze 2011) to suggest that intermediate ratings are primarily artifacts of the wordlikeness task itself. We approach this question through an evaluation of computational models of wordlikeness. This is the first study to evaluate categorical and gradient models of wordlikeness (GMWs) on an equal footing.

Data sources Data is taken from two studies which have been widely used to evaluate wordlikeness models. Scholes (1966) presents 63 monosyllabic nonce words to 33 native-speaker subjects, who give each item a "yes"/"no" rating to the question of whether the item "is likely to be usable as a word of English". The second source is a norming study by Albright and Hayes (2003, henceforth A&H) in which 87 monosyllabic nonce words are presented to 20 native speakers, who rate each item on a 7-point Likert scale according to how "natural, or English-like" they sound. Following Hayes and Wilson (2008) and Albright (2009), responses are averaged by item before analysis.

Models GMWs are represented by the MAXENT system of Hayes and Wilson (2008), a segmental BIGRAM model (Albright 2009), and a neighborhood DENSITY model (Bailey and Hahn 2001). We also consider a number of variants of these three models, and for each, we report the most performant variant. These are compared against a primitive BASELINE. This baseline decomposes nonce words into onsets and rimes—as these are known to be important domains for phonotactic patterns (e.g., Treiman 1986)—and distinguishes only between those words which consists of onsets and rimes which are both attested in a database of English monomorphs, and those which do not.

Evaluation Wordlikeness ratings and model scores are compared using non-parametric rank correlation coefficients. Unlike linear models and the familiar Pearson correlation, rank correlation statistics make only one assumption about the relationship between wordlikeness model scores and speakers' judgements, namely monotonicity. As shown in Table 1, there is no consistent advantage of GMWs over the baseline. We also compute the residual contribution of GMWs (Table 2). The results of this latter test indicates that many (and in some cases, most) of the distinctions that GMWs draw within the sets of well-formed and ill-formed clusters (as identified by the baseline) are not reflected in speaker' acceptability ratings.

Conclusions A simple categorical baseline closely models wordlikeness judgements, but beyond this, state-of-the-art GMWs fail to produce consistent improvements, suggesting that the strong performance of current GMWs derives primarily from their ability to mimic categorical distinctions (and the categorical baseline). This result provides support for recent findings that speakers asked to perform gradient syntactic judgements produce responses closely corresponding to a widely recognized categorical grammatical/ungrammatical distinction (Sprouse 2007).

	Spearman ρ				Kendall τ_b			
	BASELINE	MAXENT	BIGRAM	DENSITY	BASELINE	MAXENT	BIGRAM	DENSITY
Scholes	0.791	0.762	**0.827**	0.827	**0.664**	0.597	0.652	0.565
A&H	0.725	0.429	0.708	**0.742**	**0.599**	0.343	0.506	0.556

Table 1: Rank correlations between human wordlikeness judgements and computational model scores reveal no consistent advantage for gradient computational models, and are in some cases outperformed by a primitive binary baseline. All correlations are significant at $p = 0.05$.

	Spearman ρ			Kendall τ_b		
	Δ MAXENT	Δ BIGRAM	Δ DENSITY	Δ MAXENT	Δ BIGRAM	Δ DENSITY
Scholes	−0.029	**0.047**	−0.035	−0.067	**0.003**	−0.061
A&H	−0.008	−0.015	**0.018**	**−0.038**	−0.092	−0.049

Table 2: To estimate the residual contribution of the three GMWs beyond the baseline, stimuli are ranked first according to the baseline contrast, and then according to the GMW scores, then the baseline correlation coefficient is subtracted out to produce a difference score. The residual contribution of GMWs is large in no case, and it is negative in many cases.

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William Haddican (Queens College - CUNY)
& Daniel Ezra Johnson (Lancaster University)

Focus effects on particle placement in English and the left periphery of PP (General Conference)

This paper examines topic and focus effects on variation between particle-object ("continuous") and object-particle ("discontinuous") word orders in English particle verb constructions, as in (1). Several authors have reported that given objects in English favor the discontinuous order, while objects with new information focus favor the continuous order (Bolinger 1971, Svenonius 1996, Kayne 1998, Dehé 2000, 2002). Svenonius (1996), for instance, reports that, as an answer to the object wh-question in (2a), the continuous order is preferred and the discontinuous order dispreferred for many speakers. In contrast, as an answer to the question in (2b) where the object is given, speakers often prefer the discontinuous order.

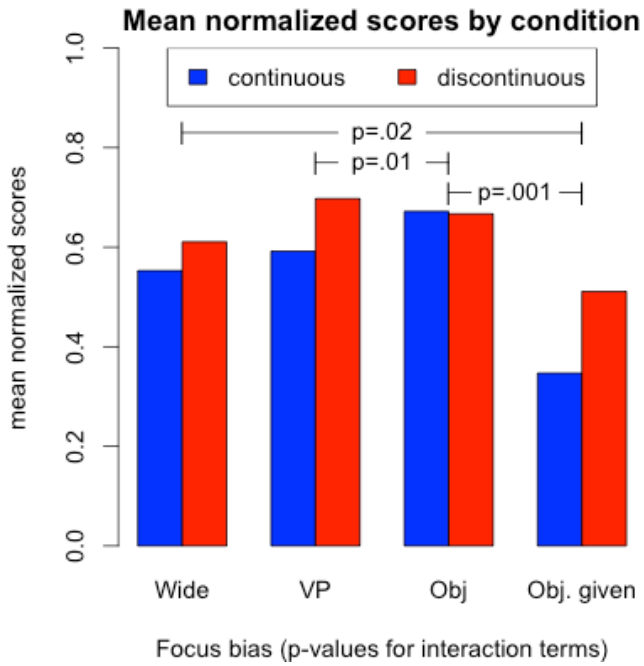
(1) a. She turned off the light. (continuous order) b. She turned the light off. (discontinuous order)
(2) a. Q: Who will you pick up? A: I'll pick (?the girls) up (the girls).
b. Q: How are Turid and Ingrid going to get here? A: I'll pick (the girls) up (?the girls).

Three main approaches to these facts have been proposed in the literature. Svenonius (1996) suggests that the effects in (2) are "stylistic and extragrammatical", an approach relatable in spirit to processing-based accounts of given vs. new-information effects on the dative alternation (Arnold et al. 2000, Bresnan and Ford 2010). Kayne (1998) proposes a Focus head above VP to which focused objects are attracted. Remnant movement of the VP containing the verb+particle produces the discontinuous order; the discontinuous order is derived by extraction of the particle to a position below Focus before VP raising. (Kayne does not spell out an account of the deviance of the latter order.) The third and most extensive treatment of the effects in (2) is by Dehé (2002) who proposes that the continuous order is the "neutral" order in that it is derivationally prior and corresponds to a sentence-wide focus interpretation. Dehé's generalization is that objects must only appear in the discontinuous order when they are defocused and within a syntactic domain bearing focus (as in (2b) where a given object is inside a focused VP); the continuous order will be preferred otherwise. (Dehé's explains this effect in terms of a focus feature "binding" constraint, details of which we omit here.) In support of the above generalization, Dehé reports on two experiments, one testing word order preferences in contexts without topic/focus interpretation biases, and another examining pitch ranges for objects in different word order conditions. As Svenonius (2005) notes, however, neither set of results illuminates the effect of focus on word order, since topic/focus interpretation is not biased directly, or is confounded with word order.

We report on a judgment experiment that tests focus effects on particle placement by biasing new vs. old information interpretations directly. Subjects were 125 undergraduates at a U.S. university, native speakers of American English. The experiment crossed two factors: word order (continuous vs. discontinuous) and focused constituent. We biased focus readings with a preceding wh-question focusing four kinds of constituents with non-idiomatic verbs, as in (3)-(6). 32 lexicalizations were created for each of these 8 conditions, blocked and assigned to lists by Latin square; subjects saw each condition 4 times. Subjects, assigned randomly to lists, judged 32 experimental sentences and 32 fillers on an 11-point scale.

(3) **Q:** What happened? **A:** Ann cut (the tree) down (the tree). (Sentence-wide focus)
(4) **Q:** What did Ann cut down? **A:** Ann cut (the tree) down (the tree). (Obj. focus)
(5) **Q:** What did Ann do? **A:** Ann cut (the tree) down (the tree). (VP focus)
(6) **Q:** What happened to the tree? **A:** Ann cut (the tree) down (the tree). (Wide focus, Obj. given)

The results revealed no support for Dehé's claim that continuous orders are preferred in "neutral" sentence-wide focus and VP-focus contexts. Subjects showed no preference in the former case ($p=.19$); for the latter, the opposite effect reached significance ($p=.002$). In addition, the results revealed significant order*focus interactions comparing VP-focus with narrow object focus sentences ($p=.01$), wide focus with given-object sentences ($p=.02$), and given-object with object focus sentences ($p=.001$, see figure, all other interaction p's>.1). The first of these interactions is unexplained by Dehé's approach, which predicts interactions only with the given-object condition. Similarly, Kayne's (1998) low Focus approach leaves unexplained the dispreference for continuous orders with given objects.



The results indeed align with "focus-last" processing approaches (Arnold et al. 2000). We propose, however, that these effects are rather grammatical in nature, relatable to topic and focus effects on word order in other syntactic domains. Specifically, we assume that gradience and cross-speaker variation in these judgements reflects competition between two different representations for particle verb structures (Kroch 1989), one (Grammar 1) where topic and focus are marked prosodically, with no effect on particle placement, and a second (Grammar 2) with Topic and Focus heads atop the extended projection of P attracting topic- and focus-marked constituents. (See Rizzi 1997, Belletti 2004 and Aboh et al. 2010 on Topic /Focus layers in CP, vP and DP respectively.)

Following Svenonius (2004, 2007), we assume that in both grammars, the object is introduced as the specifier of a case-deficient p head that takes a PP complement, and attracts P in a way parallel to V-to-v movement. The availability of both continuous and discontinuous orders in wide-focus and VP-focus contexts indicates that the object-particle word order variation is partly independent of contrasting topic/focus values on the object and particle. We propose that this variation is related to optional incorporation of P-p to a C-place head as in (7) (den Dikken 2010), a process plausibly related to the deficiency of p as a case assigner in particle verb constructions (Levinson 2011).

(7) [$_{\text{C-placeP}}$ (*down*-p-)-C [$_{\text{pP}}$ *the tree* [$_{\text{p'}}$ (*down*)-p [$_{\text{PP}}$ <*down*>]]]]]

The figure shows a slight preference for discontinuous orders in VP- and wide focus contexts where the object and particle share the same topic/focus values. In given-object and object focus sentences, this preference will be affected by competition with Grammar 2, which will differ from Grammar 1 in having Topic and Focus heads merged atop the structure in (7). In Grammar 2, in a given-object sentence like (6), the [FOC]-bearing preposition moves to FocP, and the [TOP]-bearing object raises to the higher TopP, yielding the particle-object order, as in (8). In sentences with narrow object focus, the object raises to FocP and the defocused particle raises to TopP as in (9). In sentences with VP- or sentence-wide focus, C-placeP containing the object and particle will be bear [FOC] and this constituent will raise to FocP, with its contents ordered object-particle or particle-object depending on p/P-incorporation, as in (7).

(8) *cut* [$_{\text{TopP}}$ *the tree*$_{\text{[TOP]}}$ [$_{\text{Top'}}$ Top [$_{\text{FocP}}$ *down*$_{\text{[FOC]}}$ [$_{\text{Foc'}}$ Foc [$_{\text{C-placeP}}$ <*the tree down*>]]]]] (Object given)
(9) *cut* [$_{\text{TopP}}$ *down*$_{\text{[TOP]}}$ [$_{\text{Top'}}$ Top [$_{\text{FocP}}$ *the tree*$_{\text{[FOC]}}$ [$_{\text{Foc'}}$ Foc [$_{\text{C-placeP}}$ <*the tree down*>]]]]] (Object focus)
(10) *cut* [$_{\text{FocP}}$ [$_{\text{C-placeP}}$(*down*) *the tree* (*down*)$_{\text{[FOC]}}$] [$_{\text{Foc'}}$ Foc <(*down*) *the tree* (*down*)>]] (Wide/VP focus)

The data therefore support an analysis suggesting that recently proposed structural parallelisms between the extended projection of P and those of V and N (Svenonius 2007, den Dikken 2010, Levinson 2011) may also extend to left-peripheral discourse functional projections.

Selected references: **Dehé, N.** 2002. *Particle Verbs in English: Syntax, Information Structure, and Intonation*. Amsterdam: Benjamins. **Kayne, R.S.** 1998. Overt versus Covert Movement. *Syntax* 1, 128-191. **Levinson, L.** 2011. Possessive WITH in Germanic: HAVE and the role of P. *Syntax* 14, 355-393. **Svenonius, P.** 1996. The optionality of particle shift. *Working Papers in Scandinavian Syntax* 57: 47-75.

Boris Harizanov (University of California, Santa Cruz)
& Vera Grivanova (Stanford University)

Poster Session I
Friday 2:45 - 4:45

Inward sensitive contextual allomorphy and its conditioning factors

Contextual allomorphy exhibits bidirectional sensitivity: the form of a morpheme M can be determined by another morpheme that is either closer to the root than M, or farther away from the root than M (inward vs. outward sensitivity). A major question about allomorphy is whether its direction of sensitivity correlates with the type of feature that conditions allomorphy (see Carstairs-McCarthy 2001 for discussion). Here we take up Bobaljik's (2000) claim that inward sensitive allomorphy only makes reference to non-syntactic (morphophonological) features while syntactic features are only relevant for outward sensitive allomorphy.

To account for this, Bobaljik (2000:3) assumes the following about the architecture of grammar and the nature of morphology: **[A] Separation**: morphology interprets syntax; i.e. phonological material undergoes "late", post-syntactic, insertion; **[B] Cyclicity**: the insertion of phonological material proceeds root-outwards; and **[C] Rewriting**: as morphosyntactic features are expressed by phonological material, these features are used up and no longer part of the representation. **A** and **B** are standard within the theory of Distributed Morphology (Halle & Marantz 1993, *et seq.*) and **C** is easily accommodated within such a theory (although differing perspectives exist, compare e.g. Halle 1990 and Bobaljik 2000 with Halle & Marantz 1993). Based on data from definiteness marking in Bulgarian, we argue that *both* morphosyntactic *and* phonological features are relevant for inward sensitive allomorphy (contra Bobaljik). Therefore, the three assumptions above cannot *all* be maintained. We then explore and compare two versions of lexical insertion that are consistent with the retention of **A** and **B**, but reject the strongest version of **C**.

The suffixal definiteness marker (DEF) in Bulgarian exhibits inward sensitive allomorphy as it is the most peripheral suffix to appear on a noun or nominal modifier (*e.g.* external to plural morphology). Crucially, the form of DEF depends on both morphosyntactic and phonological properties of the stem to which it attaches (Franks 2001, *i.a.*). First, allomorph selection makes reference to the gender/number features of the noun which hosts DEF: the majority of masculine singular nouns take the *-a* allomorph (1); all feminine singular nouns take the *-ta* allomorph (2); all neuter singular nouns take the *-to* allomorph (3); finally, in the plural (where gender distinctions are neutralized), DEF is *-te* (4). Homonyms which take distinct allomorphs of DEF—(1b,c) vs. (2b,c)—clearly indicate that phonological information is not a sufficient conditioning factor.

(1) *Singular masculine*
   a. dvor 'yard' — dvor**a**
   b. med 'honey' — med**a**
   c. prăst 'finger' — prăst**a**

(2) *Singular feminine*
   a. voda 'water' — voda**ta**
   b. med 'copper' — med**ta**
   c. prăst 'soil' — prăst**ta**

(3) *Singular neuter*
   a. pole 'field' — pole**to**
   b. taksi 'taxi' — taksi**to**
   c. dărvo 'tree' — dărvo**to**

(4) *Plural*
   a. maže 'men' — maže**te**
   b. kolene 'knees' — kolene**te**
   c. ramene 'shoulders' — ramene**te**

Second, the phonological shape of the host noun is another conditioning factor for allomorphy. There is a small set of vowel-final masculine singular nouns which end in *-a* or *-o* and they take the *-ta* and *-to* allomorphs of DEF, respectively (not *-a*) (5, 6). Similarly, there are a few pluralizing suffixes which end in *-a* and these are similarly followed by the *-ta* allomorph instead of *-te* (7). Thus, when DEF is attached to a stem ending in *-a* or *-o*, it is realized as *-tV* where V must match the vowel immediately preceding it (i.e. *-a* or *-o*). Furthermore, certain nouns in the language are exceptional in that they have two plural forms in free variation. Each of these appears with a

different allomorph of DEF—(4d,e) vs. (7d,e)—demonstrating that gender/number features do not uniquely determine allomorph selection either.

(5) *Singular masculine, final* -a
  a. bašta 'father' — baští**a**
  b. sădija 'judge' — sădija**ta**

(6) *Singular masculine, final* -o
  a. tatko 'dad' — tatko**to**
  b. djado 'grandfather' — djado**to**

(7) *Plural, final* -a
  a. bratja 'brothers' — bratja**ta**
  b. kraka 'legs' — krakа**ta**
  c. pătišta 'roads' — pătišta**ta**
  d. kolena ''knees — kolena**ta**
  e. ramena 'shoulders' — ramena**ta**

It is just in the case of stems ending in *-a* or *-o* that the shape of DEF will be unusual: *-ta/-to* instead of *-a* for masculine singular or *-te* for plural. For instance, the terminal node D[DEF] in the context of the singular masculine noun *bašta* 'father' is realized by the phonologically conditioned allomorph *-ta* as dictated by the final segment of the stem (5a). But why does this allomorph win the competition for insertion over the morphosyntactically conditioned allomorph *-a*, which otherwise gets inserted in the context of singular masculine nouns? Since both allomorphs match the same number of features of the terminal node (DEF), the principle governing choice between competing allomorphs in Distributed Morphology (Subset Principle, Halle & Marantz 1993) should always choose the allomorph with the most specific context of insertion. This leads to the conclusion that the phonological context must be taken to be more specific for the purposes of allomorph selection than the morphosyntactic context (see Harizanov & Gribanova 2011). This analysis requires the rejection of assumption **C** so that lexical insertion has simultaneous access to both types of context. Bye & Svenonius (to appear) develop an alternative 2-step lexical insertion procedure which first matches possible allomorphs to a morpheme M according to M's own features and its morphosyntactic context and then selects a unique allomorph on purely phonological grounds. For D[DEF] in the context of *bašta* 'father', this system chooses the set of allomorphs {*-a*, *-ta*, *-to*} as possible matches leaving the phonological component to decide the actual exponent (based on the phonological shape of the stem).

We conclude on the basis of the Bulgarian data that inward sensitive contextual allomorphy can be conditioned by both morphosyntactic and phonological features. To model such data in a late insertion theory of morphology, lexical insertion (and, thus, allomorph selection) must be able to reference both types of information. What both of the analyses presented above have in common is that they allow the form of a morpheme M to be conditioned by both the morphosyntactic and phonological properties of material that is closer to the root than M.

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Megumi Hasebe (Yokohama National University)
& Hideki Maki (Gifu University)

Poster Session I
Friday 2:45 - 4:45

The *That*-Adverb-Trace Effect in English: A Visual Analogue Scale Analysis

1. Introduction

Culicover (1993) points out that the *that*-trace effect in English is suspended by intervening adverbs, which we call the adverb effect, as shown in (1)-(2).

(1) a. Who do you think *t* left?
b. * Who do you think that *t* left?

(2) a. This is the tree that I said that *(just yesterday) *t* had resisted my shovel.
b. I asked what Leslie said that *(in her opinion) *t* had made Robin give a book to Lee.
(Culicover (1993: 558))

Ackema (2011) also provides examples with the adverb effect, such as (3).

(3) Who do you think that, according to the latest rumors, *t* is quitting politics?
(Ackema (2011: 228))

However, we have encountered some native speakers of English who show no adverb effect on the *that*-trace effect. This motivated us to examine to what degree the adverb effect is general among native speakers of English. We therefore conducted a questionnaire-based survey on it.

2. Method

In this survey, we employed the Visual Analogue Scaling (VAS) evaluation method. See Gould *et al*. (2001), among others, for the VAS. The scale used in this study is shown in Figure 1.

Figure 1. The Scale Used in This Study

How would you judge the naturalness of the sentence as English? Place a vertical mark [|] on the line below to indicate how natural you feel the sentence is.

Completely unnatural 0 |_____| 100 **Completely natural**

We first conducted a pilot study in March 2012, and then conducted this study during the period from April 27 to May 7, 2012. A total of 28 native speakers of English participated in the study (12 females and 16 males, age range 19-44, and average age 23.68). Part of the test sentences are illustrated in (5)-(12), where (5-6) are wh-interrogatives and (9)-(12) involve relative clauses. The *a*- and *b*-examples constitute minimal pairs to each other.

Wh-Interrogatives (WH)

(5) a. Who do you think *t* bought the car?
b. Who do you think that *t* bought the car?

(6) a. Who do you think just a few months ago *t* bought the car?
b. Who do you think that just a few months ago *t* bought the car?

(7) a. Who do you think in Daniel's opinion *t* bought the car?
b. Who do you think that in Daniel's opinion *t* bought the car?

(8) a. Who do you think, according to Sophia, *t* bought the car?
b. Who do you think that, according to Sophia, *t* bought the car?

Relative Clauses (REL)

(9) a. The man who I think *t* bought the car is Steven.
b. The man who I think that *t* bought the car is Steven.

(10) a. The boy who I think just a few months ago *t* bought the car is Benjamin.
b. The boy who I think that just a few months ago *t* bought the car is Benjamin.

(11) a. The girl who I think in Daniel's opinion *t* bought the car is Grace.
b. The girl who I think that in Daniel's opinion *t* bought the car is Grace.

(12) a. The person who I think, according to Sophia, *t* bought the car is Charles.
b. The person who I think that, according to Sophia, *t* bought the car is Charles.

We employed a counterbalanced design, and made 8 different questionnaires, each of which contained 80 test sentences (5 examples each from (5a, b) to (12a, b)) and 24 benchmark sentences (6 examples each from WH Good, WH Bad, REL Good, and REL Bad). There were 160 test sentences in total. We then conducted a repeated measure of 2x2x2 ANOVA (Structure Type (WH vs. REL) x COMP Type (φ vs. *that*) x Adverb Type (0 vs. ADV) on the scores measured by the VAS.

3. Results

The results of the survey are as follows. The basic statistics for the data obtained is shown in Table 1.

Table 1. Average Scores for All Conditions

		Adverb 1 (no adverb)	Adverb 2 (with an adverb)
WH	COMP 1 (no *that*)	90.61	58.14
	COMP 2 (with *that*)	**27.62**	**44.10**
REL	COMP 1 (no *that*)	79.54	50.21
	COMP 2 (with *that*)	**54.85**	**42.81**
WH+REL	COMP 1 (no *that*)	85.07	54.17
	COMP 2 (with *that*)	**41.23**	**43.46**

By ANOVA, we found a statistically significant main effect for factor COMP Type ($F(1, 27)$=151.33, p<.001) and a statistically significant main effect for factor Adverb Type ($F(1, 27)$=21.12, p<.001), but did *not* find a statistically significant main effect for factor Structure Type ($F(1, 27)$=1.73, p<.20).

By multiple comparisons (Bonferroni), we found (i) a significant difference between the cluster of Adverb 1 (no adverb) and the cluster of Adverb 2 (with an adverb) at the level of COMP 2 (with *that*) for WH (p<.001) (the adverb effect), (ii) a significant difference between the cluster of Adverb 1 (no adverb) and the cluster of Adverb 2 (with an adverb) at the level of COMP 2 (with *that*) for REL (p<.003) (**no** adverb effect), and (iii) no significant difference between the cluster of Adverb 1 (no adverb) and the cluster of Adverb 2 (with an adverb) at the level of COMP 2 (with *that*) for WH+REL (p<.51) (**no** adverb effect). These are visually represented in Figures 2-4.

Figure 2. WH

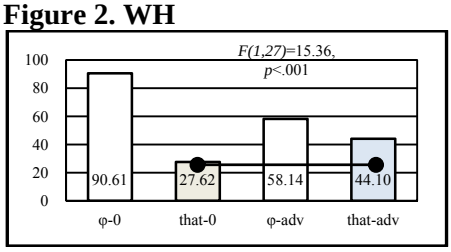


Figure 3. REL

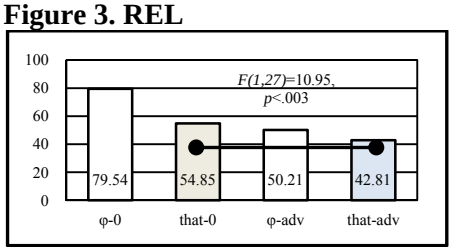
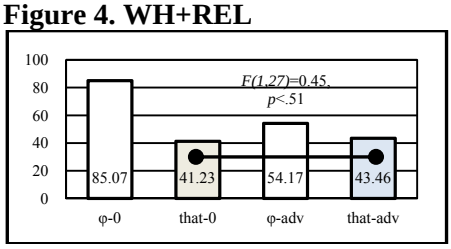


Figure 4. WH+REL



These results are consistent with those in the pilot study. In the present study, no adverb effect was observed for relative clauses and the sum of relative clauses and wh-interrogatives, while the adverb effect was seen in wh-interrogatives. Note here that in wh-interrogatives, although [*that*-adv] was better than [*that*-0], it was statistically significantly worse than [φ-adv] (F($1,27$)=30.17, p<.001). Therefore, it is safe to conclude that the *that*-trace effect is not fundamentally suspended by an additional adverb. Therefore, the results of the present study show that the adverb effect does not generally hold among native speakers of English, and is only limited to a variety of English.

4. Discussion

If the above conclusion is correct, it follows that the examples with the *that*-trace pattern and the *that*-ADV-trace pattern will receive an identical analysis. An important analysis has been proposed for the suspension of the *that*-trace effect by Ackema (2011), who, following Ackema and Neeleman's (2004) essential claim, provides an account of restrictions on subject extraction out of embedded clauses, such as the *that*-trace effect in English, in terms of a PF condition rather than a condition in syntax, such as the Empty Category Principle (ECP) (Chomsky (1981)). Ackema's (2011) analysis is attractive in the sense that it can take care of other cases such as the ban on subextraction out of a subject in Dutch and the non-existence of the *that*-trace effect for covert subject extraction, among others. However, as long as the results of the present study are concerned, his PF condition does not seem to provide an adequate account for the suspension of the *that*-trace effect in English, and it is now an open issue again whether the *that*-trace effect is syntactic or non-syntactic in nature.

Selected References

Ackema, Peter (2011) "Restrictions on Subject Extraction: A PF Interface Account," *Interfaces in Linguistics*, ed. by Raffaella Folli and Christiane Ulbrich, 225-241, Oxford University Press, Oxford.

Culicover, Peter (1993) "Evidence against ECP Accounts of the *that*-t Effect," *Linguistic Inquiry* 24, 557-561.

Gianina Iordachioaia (University of Stuttgart)

Poster Session II
Saturday 4:00 - 5:30

The interaction between nP and DP in nominalizations

1. Introduction. Chomsky (1970) and later on Picallo (1991) theoretically distinguish between lexical and syntactic nominalizations, but these approaches have little to say about the status of 'mixed forms'. Subsequent syntactic approaches to nominalization have come to the understanding that nominalizing morphemes may attach to and thus recategorize structures of varying complexity including fewer or more (extended) projections of the original category (e.g., AspP, TP, for a verb), thus accounting for the different patterns (see, e.g., van Hout and Roeper 1998, Harley & Noyer 1998, Borsley & Kornfilt 2000, Alexiadou 2001, Borer 2005, AIS 2011, among others). These approaches, however, lack a precise formulation of how much structure of the original category is compatible with how much nominal structure, and are thus theoretically more permissive than the empirical picture seems to be.

In this paper we address this shortcoming by formalizing one empirical restriction that has been observed with respect to what we call syntactic nominalizations (nominalizations that inherit complex extended projections of the original category). Namely, these nominalizations, among which the verbal gerund, seem to be restricted when combining with determiners (see data in (4)). Their incompatibility with adjectives indicates in our approach that these nominalizations also lack an nP layer, so we relate the restriction on determiners to the absence of n: Determiners carry an unvalued gender feature that is usually valued via Agree with the gender feature on n. Determiners that appear in syntactic nominalizations have a 'default' gender feature which is valued by Agree with a valued gender feature on a verbal projection, which is also responsible for the referential index in CP-anaphora.

2. Three types of nominalizations. Chomsky (1970) notices the contrast between a 'transformational'/ syntactic gerund like in (1a) and a ('lexical') derived nominal as in (1b), to the extent that only the former inherits the causative reading of the verb, which indicates that it hosts syntactic structure from the original verb/clause. The 'mixed form' in (1c), however, realizes the internal argument like the lexical nominal in (1b) and receives the causative reading of the syntactic nominalization in (1a).

(1) a. (John's) growing tomatoes *verbal gerund*
b. the growth of tomatoes *derived nominal*
c. the growing of tomatoes *nominal gerund*

In a syntactic approach, both (1b) and (1c) are derived in the syntax, but differ with respect to the amount of structure they inherit from the verb. The contrast between (1b) and (1c) lies in the fact that (1c) hosts a Voice projection, while (1b) doesn't (see, e.g., AAS 2009). This is confirmed by Kratzer's (2003) observation that nominal gerunds, like passives, exclude self-reference readings, while derived nominals allow them: e.g., 'the painfully slow registering (vs. registration) of the children'. (According to Kratzer 1996, unavailability of self-reference readings in passives indicates the presence of VoiceP.)

Syntactic approaches are flexible enough to accommodate a wide variety of mixed nominalizations between the two posited in Chomsky (1970) and Picallo (1991) (see, e.g., Borsely & Kornfilt 2000, AIS 2011). Here we propose a finer three-way distinction between lexical, morphological, and syntactic nominalizations. The first are nPs that nominalize an (uncategorized) root and are closest to what one might analyze as conversion in a lexicalist frame (2a); morphological ones nominalize a verbal/adjectival original category (orig-cat) possibly with some extended projections (ExtPs) and have nominal internal structure introduced by the nP (and attested by their morphology, including a nominalizing affix) (2b); syntactic nominalizations only have a DP-layer as their nominalizer and thus lack internal nominal structure, but inherit ExtPs from the original category (2c).

(2) a. $[_{DP}$ D $[_{nP}$ n [√]]] *lexical/root nominalization*
b. $[_{DP}$ D $[_{nP}$ n **($[_{ExtP}$ ExtP) $[_{orig\text{-}catP}$ orig-cat** [√]]]]] *morphological nominalization*
c. $[_{DP}$ D $[_{ExtP}$ **ExtP** $[_{orig\text{-}catP}$ orig-cat [√]]]] *syntactic nominalization*

For lexical nominalizations, see, e.g., non-productive 'deadjectival' nominals like *to kalo* (the good) in Greek and *răul* (bad-the) in Romanian, which exhibit no adjectival properties, so they nominalize bare roots (i.e., 'substantivization' in Giannakidou & Stavrou 1999). Here we focus on the other two types. While (1a) qualifies as a syntactic nominalization, (1b) & (1c) are both of the morphological type: (1b) has the form $[_{DP}$ *the* $[_{nP}$ *-th* $[_{vP}$ v [√*grow*], while (1c) also projects Voice (i.e. $[_{DP}$ *the*$[_{nP}$ *-ing* $[_{VoiceP}$ Voice $[_{vP}$ v[√*grow*]). The presence of the internal argument in (1b-c) is an indicator of the verbal nature of the base, so both structures include the vP/VP (Alexiadou 2001, Borer 2005; for Grimshaw 1990, they are complex event nominals, given also modification by *constant* in (3a)). Unlike morphological nominals (3a), the syntactic one in (3b) is incompatible with adjectives, which correlates with the lack of an nP in its structure $[_{DP}$*John's*$[_{TP}$ T $[_{AspP}$ *-ing* $[_{VoiceP}$ Voice $[_{vP}$ v [√*grow*] (see AIS 2011 and references therein).

(3) a. the **constant/*constantly** growth/growing of tomatoes
b. John's **constantly/*constant** growing tomatoes

Several nominalization patterns in other languages conform to this morphological vs. syntactic split also providing further contrasts (e.g., plural and gender marking only appear in morphological nominalizations). Among the former, we include Spanish nominal infinitives, Romanian infinitives and German *-ung* nominals, and among the latter, Spanish verbal infinitives, deadjectival 'lo'-nominalizations, Romanian supine nominals and Dutch/German deadjectival neuter nominals (see Miguel 1998, IS 2008, Villalba 2009, AIS 2010, AIS 2011, McNally & de Swart 2011, for examples).

3. The role of the nP between ExtP(s) and DP. Exploring Borsley & Kornfilt's (2000) intuition about the restrictions on combining mixed extended projections, we formalize the constraints on D depending on the presence of nP in nominalizations. Crosslinguistic data indicate that syntactic nominalizations are restricted with respect to determiners (4), while morphological ones are free (5).

(4) a. **John's/*the/*that/*a** performing the song
b. **El/*ese/*aquel/*un** haber él escrito esa carta *Spanish verbal infinitive*
the/this/ that/ a have.Inf he.Nom written that letter
c. **(*un/*acel)** spălat(**ul**) (al) rufelor *Romanian supine*
a/that wash.Sup(the) of laundry.Gen

(5) a. **John's/the/that/a** performing/performance of the song
b. **El/ese/aquel/un** lamentar de dos pastores *Spanish nominal infinitive*
the/this/that/a lament.Inf of two shepherds
c. **o/acea** încălcare(**a**) (a) drepturilor omului de către ministru *Ro infinitive*
a/that violate.Inf(the) of rights.Gen man.Gen by minister

We explain this restriction in syntactic nominalizations via the lack of the nP layer. Determiners usually have an unvalued gender feature that is valued by the corresponding valued feature on n, via Agree (see, e.g., Pesetsky & Torrego 2007). This happens in lexical nouns and morphological nominalizations. But languages also have a (rather grammaticalized) determiner that they use as in (2c) to adapt a non-nominal category to a nominal syntactic context. This determiner (e.g., English *'s*, Spanish *el*, Romanian *-(u)l* 'the' in (4)), we propose, has an unvalued gender feature that is valued by a 'default' gender feature on some ExtP of the original category, e.g., the verb. That verbal structures have a 'default' (usually, neuter) gender feature is proved by the possibility of CPs to be referred to anaphorically in (6a). This feature is also at play together with person and number when a CP subject agrees with the verb as in (6b). We take it to be hosted by the head that introduces existential closure on the event, i.e. Aspect. In support of this hypothesis, note that all syntactic nominalizations documented in the literature inherit at least AspectP from the verb (see AIS 2011, for an overview).

(6) a. [John lost my book]$_i$. **It$_i$** bothers me. b. [That John lost my book] **bothers** me.

As a confirmation that the gender feature on D in syntactic nominalizations is valued by the default gender feature on a verbal ExtP, the Romanian supine, a syntactic nominalization of the form [$_{DP}$ *-(u)l* [$_{AspP}$ *-t* [$_{VoiceP}$ Voice [$_{vP}$ *-a* [√*interpret*], is anaphorically referred to by the sentential anaphor *asta*, which has default gender (instead of masculine-neuter), while the infinitive, a morphological nominalization of the form [$_{DP}$ *-(u)l* [$_{nP}$ *-re* [$_{vP}$ *-a* [√*interpret*], is referred to by a feminine anaphor (see also IS 2008). In (7b), there is n which values the (non-default) feminine on D, but in (7a) gender is default like in (7c):

(7) a. Vorbeau despre **interpretatul** lui Hamlet.Se pare ca **asta/*acesta** îi atrage pe toti actorii.
They spoke about the interpretation.**Sup** of Hamlet. Apparently, **it/*this.M-N** attracts all actors.
b. Vorbeau despre **interpretarea** lui Hamlet. Se pare ca **aceasta/??asta** îi consacră pe actori.
They spoke about the interpretation.**Inf** of Hamlet. Apparently, **this.F/??it** validates the actors
c. Că Ion a venit, **asta/*aceasta/*acesta** stiu
that John has came, **it/*this.F/*this.M-N** I-know

Selected references: **AAS 2009.** (Alexiadou, Anagnostopoulou & Schäfer) PP licensing in nominalizations. *NELS* 38. **AIS 2010**. (Alexiadou, Iordachioaia & Soare). Number/aspect interactions in the syntax of nominalizations. *Journal of Linguistics* 46. **AIS 2011**. (Alexiadou, Iordachioaia & Schäfer). Scaling the variation in Romance and Germanic nominalizations. *The Noun Phrase in Romance and Germanic*. Benjamins. **IS 2008**. (Iordachioaia & Soare). Two kinds of event plurals. *EISS* 7. Paris. **Miguel 1998**. Nominal Infinitives in Spanish. *Canadian Journal of Linguistics*. 41. **Pesetsky & Torrego 2007**. The syntax of valuation and the interpretability of features. *Phrasal and Clausal Architecture*. Benjamins. **Villalba 2009**. Definite Adjective Nominalizations in Spanish. *Nereus IV.*

Peter Jurgec (Meertens Institute)

Poster Session I
Friday 2:45 - 4:45

Morphology Affects Loanword Phonology

Loanwords often exhibit non-native structures. Some of these structures are replaced by the corresponding native ones only in morphologically integrated loanwords, both diachronically and synchronically (Bloomfield 1933:447ff.; LaCharité & Paradis 2005). This paper provides empirical evidence that the foreign structures may differ in what kind of morphologically complex words they appear. Some structures are possible in suffixed, but not prefixed, words. Other structures are possible in inflected, but not derived, words. These typological distinctions are attributed to a single class of OT constraints.

Morphology can affect the distribution of foreign sounds. For example, some speakers of Dutch can pronounce bare roots from English with [ɹ], which is replaced by the native rhotic [ʀ] in suffixed words (1).

(1) Dutch: ɹ ∼ ʀ

Op[ɹ]ah	'Oprah'	Op[ʀ]ah-tje	*Op[ɹ]ah-tje	'DIM'
Ba[ɹ]ack	'Barack'	Ba[ʀ]ack-se	*Ba[ɹ]ack-se	'ADJ'
[ɹ]eading	'Reading'	[ʀ]eading-je	*[ɹ]eading-je	'DIM'
Flo[ɹ]ida	'Florida'	Flo[ʀ]ida-tje	*Flo[ɹ]ida-tje	'DIM'

One standard approach to the above pattern is to say that the speakers of Dutch employ two different cophonologies. Loanword roots take the foreign cophonology (allowing ɹ), whereas the suffixes take the native cophonology (no onset ɹ). Whenever both kinds of morphemes appear in the same word, the suffix trumps the root, and the native cophonology applies to the whole word (Inkelas & Zoll 2007).

This solution faces several challenges. First, not all affixes have the same effect. A particular foreign structure that is allowed in bare loanword roots, may be prohibited only in a subset of affixed forms. In Dutch, derivational suffixes trigger nativization (1), but not inflectional suffixes (e.g. Op[ɹ]ah'[s] '-PL') or prefixes (hoofd-op[ɹ]ah 'main O.'). Second, not all languages behave uniformly. Tables (2) and (3) give a cross-linguistic typology. For example, Tagalog replaces the foreign [f] in bare roots (fiesta 'holiday') with [p] in suffixed (pista-ng 'festivities') and prefixed words (mag-pista 'two h.'; data from Zuraw 2006). Canadian English allows the French [ʀ] in words with prefixes (ɛks-opɛʀ 'ex-au pair'), but not in words with infixes (*o-fʌkɪŋ-pɛʀ/ oʊ-fʌkɪŋ-pɛəɹ '-EXPL-') or suffixes (*opɛʀ-z/oʊpɛəɹ-z '-PL').

(2) Foreign structure allowed?

	PREFIX	SUFFIX	INFIX	LANGUAGE
I	✗	✗		Slovenian
II	✗	✗	✗	Tagalog
III	✓	✗		Dutch
IV	✓	✗	✗	English

(3) Foreign structure allowed?

	DERIVAT	INFLECT	LANGUAGES
I	✗	✗	English, Ukrainian
II	✗	✓	Dutch, Catalan

These typologies suggest that morphological restrictions on foreign phonotactics are language specific and do not seem to follow from any other properties of the languages in question. For instance, inflection in Dutch appears to be very similar to inflection in English, yet Dutch allows the relevant foreign structures with inflection, while English does not.

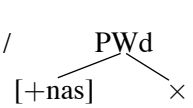
To capture these typological differences, I instead propose a single OT constraint. The idea is that the foreign structure is limited to the morpheme at the edge of a domain. For example, Dutch allows [ɹ] as long as it appears in the rightmost morpheme within the stem (as it is the case in bare root forms, prefixed and inflected forms). Derivational suffixes trigger nativization, because the root is no longer aligned with the stem edge. In OT, these effects can be achieved with alignment constraints (McCarthy & Prince 1993). Here, I use a more recent version, termed Licensed Alignment (henceforth, LA), proposed by Hyde (to appear) and Jurgec (2011). LA resembles classic alignment in many ways: both refer to domains and features.

However, LA constraints also crucially differ from classic alignment. First, LA constraints are categorical, not gradient (McCarthy 2003). Second, LA constraints may also contain more than two domains or features.

Consider the constraint that drives progressive nasal harmony: *PWd[+nasal, ×] (4). This constraint is violated by triplets ⟨PWd, [+nasal], ×⟩, when [+nasal] precedes the root node, within the Prosodic Word. Nasal harmony satisfies the constraint, because [+nasal] is associated (and is thus synchronic) with the target root node.

Even though Dutch does not involve spreading, the loanword pattern can nevertheless be attributed to the effects of LA. This is because LA can also be satisfied by changing/deleting the feature. In Dutch, some feature (or a combination of features) of the English rhotic cannot be followed by an affix, within the stem. For simplicity, the relevant features of the rhotic are henceforth replaced with "ɹ". The constraint active in Dutch is *stem[ɹ, affix] (5). This constraint is violated by triplets ⟨stem, ɹ, affix⟩, when [ɹ] precedes the affix, within the stem.

(4) *PWd[+nasal, ×]
*⟨PWd, +nas, ×⟩ /



(5) *stem[ɹ, affix]
*⟨st, ɹ, afx⟩ /

The LA constraint in (5) can be satisfied by spreading the relevant feature to a suffix segment. While there are cases of harmony that target only a single segment in the suffix (Kaplan 2008; Walker 2011), this is not what happens in Dutch, which instead prefers a feature change. This suggest that the faithfulness constraints prefer the mapping /ɹ/ → [ʀ] rather than spreading, or deletion of [ɹ]. The LA constraint is violated whenever a derivational affix follows a root containing an [ɹ], in which case [ʀ] surfaces instead (6). Crucially, bare roots, inflected and prefixed words satisfy LA, and hence the faithful candidate wins (7).

(6) ɹ not possible with derivational suffixes

/flɔɹida-tʲə$_{st}$-s/	*st[ɹ,afx]	IDENT
a. flɔɹida-tʲə$_{st}$-s	⟨st,ɹ,tʲə⟩!	
b. ☞ flɔʀida-tʲə$_{st}$-s		*

(7) ɹ possible with prefixes and inflections

/hoft-flɔɹida$_{st}$-s/	*st[ɹ,afx]	IDENT
a. ☞ hoft-flɔɹida$_{st}$-s		
b. hoft-flɔʀida$_{st}$-s		*!

The LA approach can be easily extended to capture other languages. When the precedence relations are reversed, prefixes trigger nativization. In Tagalog and Slovenian, prefixes and suffixes trigger nativization, which means that two mirror LA constraints are required. Moreover, when LA refers to words rather than stems, inflectional affixes also have an effect, as in English or Ukrainian.

LA makes further predictions about how loanword phonology can be affected by morphological domains. Since there is no domain common to roots and inflectional affixes to the exclusion of derivational affixes, there should be no language in which only inflectional, but not derivational, suffixes trigger nativization. Indeed, no such pattern has been identified, whereas the opposite pattern appears to be quite frequent (3). Furthermore, LA treats each nativization pattern as separate, because each constraint refers to a specific feature. This correctly predicts a language in which loanword patterns differ with respect to their domains. In Slovenian, some nativizations are observed with inflection (ɹɔk 'rock' ∼ ɾok-a 'GEN') and derivation (ɾok-eɾ 'rocker'). Other nativizations do not obtain with inflectional affixes (mɛsetʃusəts 'Massachusetts', mesetʃusəts-a 'GEN'), but they do obtain with derivational affixes (mesetʃusets-tʃan 'demonym').

This paper provides the first cross-linguistic study of how morphological structure affects loanword phonology. The effects are attributed to alignment constraints that refer to features and morphological domains. These constraints correctly predict that (i) derivational affixes have stronger effects than inflectional affixes, (ii) prefixes and suffixes can differ in their effects, and (iii) a single language can exhibit multiple patterns that are sensitive to different domains.

Laura Kalin (University of California, Los Angeles)

Poster Session I
Friday 2:45 - 4:45

Last Resort Structure Building: Agreement and Argument Licensing in Senaya

1. Introduction: In the Neo-Aramaic language Senaya, the auxiliary *be* (which carries a φ-probe) may be added to a derivation's structure in order to license a DP that would otherwise fail to enter into a (required) φ-agreement relation. This presents a new case of so-called 'overflow', which typically manifests in the verbal inflection domain (tense, voice, etc.). Classical overflow is amenable to treatment with last-resort auxiliary insertion to host a stranded inflectional (bound) morpheme (Bjorkman 2011). We show that Senaya's φ-overflow necessitates a more powerful last-resort mechanism whereby a dummy item can be inserted to build a new structural DP-licensing configuration.

2. Data: Both subjects and definite/pronominal objects in Senaya obligatorily trigger agreement within the verbal complex. There are three canonical aspects expressed through the verbal complex–perfective, imperfective, and progressive–and each aspect has a fixed number of agreement slots.

The aspects we are concerned with here are the imperfective and progressive, exemplified in (1)–(2) (agreement bolded) with temporal modifiers that distinguish the aspects. Note that the verbal complex in the progressive consists of the imperfective plus an enclitic auxiliary, *y/ii*.

(1) IMPERFECTIVE: 2 agreement slots

Aana (qoome / *da&aana) on talmiide molp-**an-uu**.
I tomorrow / *right.now the students teach.IMPF-**S.1FS-O.3PL**
'I (will) teach the students (tomorrow).' $\not\sim$ *'I teach the students right now.'

(2) PROGRESSIVE: 3 agreement slots

Aana (*qoome / da&aana) on talmiide molp-**an-uu**=y-**an**.
I *tomorrow / right.now the students teach.IMPF-**S.1FS-O.3PL**=be-**S.1FS**
'I am teaching the students (right now).' $\not\sim$ *'I am teaching the students tomorrow.'

There are two agreement slots in the imperfective (both on the verb base), and the progressive adds one more agreement slot, via the auxiliary, which in this instance doubles the subject agreement.

Ditransitives are surprising in several ways. First, even when the meaning of a ditransitive is imperfective, the ditransitive must be expressed using the progressive verbal complex, i.e., with an enclitic auxiliary. Second, this enclitic auxiliary agrees with the direct object. Third, ditransitives (and only ditransitives) are ambiguous between an imperfective and progressive interpretation.

(3) DITRANSITIVE: ambiguous imperfective/progressive

Aana (qoome / da&aana) oo ksuuta maxw-**an-ox**=ii-**laa**.
I tomorrow / right.now the book show.IMPF-**S.1FS-IO.2MS**=be-**DO.3FS**
'I (will) show you the book (tomorrow).' $\sim$ 'I am showing you the book (right now).'

We present an analysis of this puzzling data following a brief overview of 'overflow'.

3. Overflow in the inflectional domain: There are two basic types of auxiliary use crosslinguistically, termed by Bjorkman (2011) the 'additive pattern' and the 'overflow pattern'. Additive auxiliary use is exemplified by the English passive and progressive, both of which require the presence of *be*, e.g., *The bike was stolen* (PASSIVE), *She is stealing the bike* (PROGRESSIVE); when a passive progressive is formed, correspondingly, two *be*s are required: *The bike was being stolen*.

Overflow is exemplified by Standard Arabic past tense and imperfective aspect, which on their own do not require *be*, but together do (Bjorkman 2011:27–28, from Benmamoun 2000):

(4) a. Darasa. PAST TENSE $\nrightarrow$ *be*
study.PST.PRF.3MS
'He studied.'

b. Ya-drusu. $\boxed{\textsc{Impf. Aspect} \nrightarrow \textit{be}}$
3M-IMPF.study
'He studies.'

c. Kaana ya-drusu. $\boxed{\textsc{Past Tense} + \textsc{Impf. Aspect} \rightarrow \textit{be}}$
be.PST.3MS 3M-IMPF.study
'He was studying.' / 'He used to study.'

Bjorkman proposes that *be* is a last-resort, 'elsewhere' verb that is realized whenever a bound morpheme is stranded in a position from which it is not able to unify with the main verb; the conditions under which this arises (involving "reverse" Agree and language-specific conditions on head movement) differ per language, resulting in the different profiles of auxiliary use.

Crucially, the realization of *be* is triggered by an already-extant, semantically contentful morpheme in the syntax (e.g., tense); this is precisely where φ-overflow looks substantially different.

4. Analysis of Senaya ditransitives: We propose that ditransitives in Senaya (specifically, those interpreted as imperfectives) represent an instance of φ-overflow: as a last resort, an auxiliary is added to build new DP-licensing/φ-agreement structure.

Recall that subjects and definite/pronominal objects obligatorily trigger agreement within the verbal complex in Senaya. Kalin & van Urk (2012) argue that this obligatoriness is the reflex of a DP-licensing mechanism requiring agreement with a unique φ-probe, e.g., for Case (Chomsky 2000). They further argue that imperfective aspect in Senaya canonically involves two φ-probes, one on Asp and one on T, (5). A subject and object can thus each agree: the subject agrees with Asp and then raises to spec-TP; the object agrees with T. (We do not review their arguments for reasons of space.)

(5) $[_{\text{TP}}\ \text{DP}_{\text{Subj}}\ \text{T}_{\varphi}\ [_{\text{AspP}}\ \text{Asp}_{\varphi}\ [_{v\text{P}}\ \cancel{\text{DP}_{\text{Subj}}}\ v\ [_{\text{VP}}\ \text{V}\ \text{DP}_{\text{Obj}}\ ]]]]$

Ditransitives involve three arguments and so all three (if the objects are definite/pronominal) would not be able to agree in a canonical imperfective like (5), which only has two φ-probes. We see empirically that the auxiliary (which carries an additional agreement slot/φ-probe, (2)) may be inserted in just these cases to license the lower object, which would otherwise be unable to agree:

(6) $[\ \text{Aux}_{\varphi}\ [_{\text{TP}}\ \text{DP}_{\text{Subj}}\ \text{T}_{\varphi}\ [_{\text{AspP}}\ \text{Asp}_{\varphi}\ [_{v\text{P}}\ \cancel{\text{DP}_{\text{Subj}}}\ v\ [_{\text{ApplP}}\ \text{DP}_{\text{IndirObj}}\ \text{Appl}\ [_{\text{VP}}\ \text{V}\ \text{DP}_{\text{DirObj}}\ ]]]]]]$

We therefore propose that the auxiliary is inserted in (3)/(6) for its φ-probe, as a contentless functional element; the contentlessness of the auxiliary results in a progressive-looking verbal complex being able to be interpreted as imperfective. This verbal complex can of course also be interpreted as progressive, in which case the auxiliary was already present (i.e., not inserted for φ-agreement).

Notice that the auxiliary in Senaya ditransitives does not get inserted to support a stranded morpheme. Rather, the agreement morpheme that surfaces on Aux could not have existed until Aux was inserted, since morphological agreement is a (contentless) reflection of an Agree relation.

5. Implications: Ditransitives in Senaya reveal a case of φ-overflow, whereby an auxiliary with a φ-probe is inserted to save a DP from being unlicensed. This last-resort mechanism looks a lot like Rezac's (2011:178) $\mathfrak{R}$, motivated from crosslinguistic Person Case Constraint (PCC) repairs. Essentially, $\mathfrak{R}$ allows the insertion of an uninterpretable feature (via a lexical item already present in the language) when this is needed for the derivation to converge. The Senaya data presented here provide independent evidence for the need for a mechanism of this sort from a non-PCC domain, and further elucidates the nature of the "last-resort" mechanisms that natural language may employ.

Selected references: Bjorkman, B. 2011. *BE-ing default: The morphosyntax of auxiliaries.* Ph.D. Thesis, MIT. — Rezac, M. 2011. *Phi-features and the modular architecture of language.* Dordrecht: Springer. — Kalin, L. & C. van Urk. 2012. *A novel aspect split in Senaya.* Presented at CLS 48.

Dalina Kallulli (University of Vienna)

Poster Session I
Friday 2:45 - 4:45

Bavarian parasitic gaps revisited

1. Background: Felix (1985) draws attention to a peculiar construction in Bavarian German (henceforth: BG) illustrated in (1), which is ungrammatical in Standard German (henceforth: SG).

(1) Das ist der Kerl$_i$ den$_i$ wenn ich e_i erwisch, erschlag ich e_i (BG)
this is the guy$_i$ who$_i$ if I e_i catch beat I e_i
'This is the guy who I will beat (up) if I catch him'

The construction in (1) has three mutually dependent properties: (i) the embedded *if*-clause immediately follows the *wh*-pronoun, a property that above all marks the construction as dialectal according to Felix; (ii) the verb of the final clause precedes its subject, which as shown in (2) vs. (3) is not the regular word order in either BG or SG relative clauses; (iii) there are two empty categories in (1), both co-indexed with the relative pronoun.

(2) das ist der Kerl$_i$ den$_i$ ich e_i erschlag **vs**. (3) *das ist der Kerl$_i$ den$_i$ erschlag ich e_i
this is the guy who I e_i beat this is the guy$_i$ who$_i$ beat I e_i

Felix (1985) analyses the construction in (1) as a parasitic gap construction. Specifically, he argues that *den* in (1) is extracted from the adjunct clause, whereas the empty category in the final clause is a parasitic gap. As evidence for his view that the *wh*-phrase has been extracted from the *if*-clause rather than from the final CP, Felix brings in the following two facts: first, as shown in (4), there are sentences in which there is only one gap from which the *wh*-phrase could have been extracted and second, as shown in (5), there are sentences in which the verbs of these two clauses assign different morphological cases:

(4) Das ist der Wein$_i$ den$_i$ wenn ich e_i trink, krieg ich Kopfweh
this is the wine$_i$ which$_i$ if I e_i drink get I headache

(5) Das ist der Kerl$_i$ den$_i$ / *dem$_i$ wenn ich e_i treff, werd ich e_i helfen
this is the guy$_i$ whom$_i$ (acc) / whom$_i$ (dat) if I e_i meet will I e_i help

2. Problems with Felix (1985): In addition to theoretical problems bearing on extraction out of a strong island and others (bearing on particular ingredients of his analysis), there are also a number of empirical problems with Felix' analysis. First, extraction from strong islands is disallowed in another, similar parasitic gap construction in BG, namely the one that arguably feeds on the phenomenon of "Emphatic Topicalization" (cf. in particular Bayer 2001, Lutz 1997, 2004 *i.a.*):

(6) a. Den, wann i *e* derwisch, derschlog i *e*.
him if I *e* catch slay I *e*
'If I catch him, I slay him'
b. *Den Peter$_i$ / *Wen$_i$ ärgert sich Hans, wenn er t$_i$ sieht?
the$_{ACC}$ Peter / who annoys REFL Hans if he sees
c. *Koa Mensch, wenn t$_i$ b'suffa is, foit eam$_i$ was g'scheids ei.
no man if drunk is falls him something useful in

Under Felix' analysis, if *den* in (1) leaves the island, this means among other things that it can reach a position from where it may c-command into the host CP, thereby licensing a parasitic gap in it. In addition to theory-internal problems, Felix' analysis predicts that the relative pronoun should be able to cyclically move higher up, producing examples like (7):

(7) *Das ist der Kerl den ich erwarte (dass) wenn ich erwisch, erschlag ich.
this is the guy who I expect (that) if I catch slay I

However, the very fact that the relative pronoun in (1) must appear in the left edge of the (leftward-moved) island (see next section below) suggests that the pronoun never leaves this island. This is indeed what I propose. The crucial ingredients of my analysis are given in section 3 below.

3. Proposal: The central claims that I put forward in this paper are: (i) BG but not SG has a recursive CP, as given in (8), where the (VP-adjoined) *if*-clause has moved to the specifier position of the final CP, thereby triggering inversion (i.e. verb movement to C^0), much like in English (cf. Emonds 1969) – e.g. *Up to the parliament marched thousands of demonstrators*; (ii) the so-called 'relative pronoun'

in sentences like (1) is in fact a (PF-)merger of the complementizer *dass* 'that' and a clitic, analogous to the (dialectal) Italian *che l'* in (9) and the French *qui* in (10) – cf. Rooryck (2000), who analyzes *qui* as a complex of *que* and a clitic; (iii) the so-called 'parasitic gap' in constructions like (1) is a null resumptive pronoun, i.e. *pro* (cf. Cinque 1990), analogous to the Italian example in (11).

(8) Das ist der Kerl [$_{CP}$ den$_j$ [$_{CP}$ [$_{Spec,CP}$ wenn ich e_j erwisch]$_i$ erschlag ich t$_i$ e_j]]

(9) e una cosa ***che l'***ha detto il ministro (Fiorentino 2007)
is a thing **that it$_{CL}$**-has said the minister
(standard = **che** ha detto **0** il ministro)
that has said **0** the minister

(10) je voudrais un renseignement: c'est à propos de ma femme ***qu'elle*** a été opérée y a deux mois
I'd like to have some information: it regards my wife **that she** has been operated two months ago
(standard = ***qui*** 'who')

(11) Ecco la ragazza$_i$ [che mi domando [chi$_j$ [e_j crede [che e_i possa cantare]]]] (Taraldsen 1978)
'Here is the girl that I wonder who thinks may sing'

The fact that neither Weak (and, in particular) nor Strong Crossover effects arise in BG in the relevant construction is a strong piece of evidence for the correctness of the analysis that I have proposed here; recall that resumption systematically gives rise to WCO obviation (cf. Demirdache 1991 for Arabic and McCloskey 1990 for Irish, who assign a bi-clausal structure to constructions containing resumptive pronouns, which for all intents and purposes, has the effects of the CP-recursion structure in (8)):

(12) Wea is da Bua$_i$ den$_i$ waun sei$_i$ Muatta e_i dawascht, daschlogt-s(-n$_i$)?
who is the guy whom if his mother catches slays-she(-him) [Note: either pronoun or gap is fine] → No WCO effect

(13) [Wöches Büdl vom Hauns$_i$]$_j$, des waun a$_i$ in da Zeitung e_j siagt, wü a$_i$ e_j himochn? → No SCO
Which picture of Hans which if he$_i$ in the paper e$_j$ sees will he e$_j$ destroy

In turn, the fact that BG (but not SG) notoriously violates the Doubly Filled Complementizer Filter (Bayer 1984, 2001) directly motivates my idea that CP-recursion is possible in BG but not in SG:

(14) I woaß ned **wer daß** des doa hat.
I know not **who that** this done has

Finally, the idea that so-called relative pronouns are inflected complementizers has been independently argued for by Pesetsky & Torrego (2006:note 22) for another Germanic language (on top of English), namely Dutch: "The Dutch counterpart to English finite *who* and *which* relatives […] instead displays a form that starts with *d*-, just like demonstratives and just like the normal declarative complementizer *dat*. This form agrees with the relativized head in gender (neuter vs. non-neuter) and in number. […] We suspect that the presence of *d*- rather than *w*- is significant. The [...] elements *die* and *dat* are agreeing complementizers, not *wh*-phrases […]. Dutch finite relative clauses differ from Romance relatives (and from English infinitival relatives) in showing φ-feature agreement, but they are just like their Romance counterparts (and unlike English finite relatives) in showing C/D morphology rather than *wh*-morphology on its agreeing complementizers."

References: **Bayer, J. 1984**. COMP in Bavarian syntax. *The Linguistic Review* 3: 209-274. **Bayer, J. 2001.** Asymmetry in emphatic topicalization. In C. Féry & W. Sternefeld (eds.) *Audiatur Vox Sapientiae*. Akademie-Verlag, Berlin. 15-47. **Cinque, G. 1990**. *Types of A-bar Dependencies*. Cambridge, MA: MIT Press. **Demirdache, H. 1991**. Resumptive Chains in Restrictive Relatives, Appositives and Dislocation Structures. Ph.D. Dissertation, MIT. **Emonds, J. 1969**. Root and structure-preserving transformations. Bloomington, IN: Indiana. University Linguistics Club. **Felix, S. 1985**. Parasitic gaps in German. In W. Abraham (ed.) *Erklärende Syntax des Deutschen* 173-201. Tübingen: Narr. **Fiorentino, G. 2007**. European relative clauses and the uniqueness of the relative pronoun type. Italian Journal of Linguistics 19(2): 263-291. **Lutz, U. 1997**. Parasitic gaps und Vorfeldstruktur. In F.-J. d'Avis & U. Lutz (eds.) *Zur Satzstruktur des Deutschen*. Arbeitspapiere des Sonderforschungsbereichs 340, 90, 55-80. **Lutz, U. 2004**. ET, parasitic gaps and German clause structure. In H. Lohnstein & S. Trissler (eds) *The Syntax and Semantics of the Left Periphery 265-311*. Berlin: Mouton de Gruyter. **McCloskey, J. 1990**. Resumptive pronouns, A'-binding, and levels of representation in Irish. In R. Hendrick (ed.) *The Syntax of Modern Celtic Languages* 199–248. New York: Academic Press. **Rooryck, J. 2000**. **Configurations of Sentential Complementation**. Routledge: London. **Pesetsky, D. & E. Torrego. 2006**. Probes, goals and syntactic categories. In Y. Otsu (ed.) *Proceedings of the 7th annual Tokyo Conference on Psycholinguistics*. Tokyo: Hituzi Syobo Publishing Company. **Taraldsen, K.T. 1978.** On the NIC, vacuous application, and the *that-trace* filter. Bloomington: IULC

Esra Kesici (Cornell University)

Poster Session II
Saturday 4:00 - 5:30

EMBEDDED ROOT PHENOMENA IN TURKISH: A PARATACTIC ANALYSIS OF *ki*-CLAUSES

This paper proposes a unified treatment for Turkish embedded clauses headed by the complementizer *ki*. Such embedded *ki*-clauses are generally thought of as just another, albeit extraordinary, case of subordination. However, arguments are provided that *ki*-clauses are an instance of parataxis, and seemingly puzzling syntactic/semantic properties of such clauses are explained by virtue of this paratactic analysis. A crosslinguistic comparison is made to show that this phenomenon is not exclusive to Turkish.

I. Background: The most common embedded–clause pattern in Turkish is the "native" nominalized subordinate clause (1). Such a clause is case-marked, has a genitive subject, nominal agreement, and —in its default position— precedes the matrix verb (i.e., the matrix clause conforms to the regular Turkish SOV pattern). However, Turkish also has the embedded clause headed by *ki* (2), often referred to as an instance of a non-native (Indo-European) pattern. A *ki*-clause lacks case-marking, exhibits a nominative subject, contains a finite verbal form, and necessarily occurs to the right of the matrix verb (i.e., the matrix clause exhibits SVO order, not found elsewhere in Turkish). Essentially, the *ki*-clause resembles the Turkish matrix clause (3), and thus exhibits root properties:

(1) Hakan-Ø **[Ahmet-in okul-a git-tiğ-in]-i** san-ıyor-Ø
Hakan-NOM Ahmet-GEN school-DAT go-DIK-3POSS]-ACC believe-PROG-3SG
'Hakan believes that Ahmet went to School.' *Standard Subordinate Clause*

(2) Hakan-Ø san-ıyor-Ø **[*ki* Ahmet-Ø okul-a git-ti-Ø]**
Hakan-NOM believe-PROG-3SG *ki* Ahmet-NOM school-DAT go-PAST-3SG
'Hakan believes that Ahmet went to School.' *Ki-clause*

(3) **Ahmet-Ø okul-a git-ti-Ø**.
Ahmet-NOM school-DAT go-PAST-3SG
'Ahmet went to School.' *Matrix Clause*

The element *ki*, known to be borrowed from Persian, has predominantly been analyzed as a complementizer that heads subordinate clauses (Kornfilt 1997, 2005; Göksel and Kerslake 2005). Importantly, this subordination analysis of the *ki*-clause attributes its unusual surface properties to foreign origin (i.e., their "Indo-Europeanness"), but apart from this, treats it in essentially the same way as any other subordinate clause. However, a closer look at the syntax/semantics/pragmatics interface of *ki*-clauses reveals that many of their properties cannot be accounted for by the subordination analysis.

II. Properties of *ki*-Clauses: *Ki*-clauses exhibit features and restrictions that are not typical of standard subordination in Turkish (or elsewhere). Most importantly, the *ki*-clause must be asserted. Consequently, the main clause predicate that combines with a *ki*-clause must be *assertive*, as in (4a). Non-assertive predicates, including inherently negative verbs and negated verbs, cannot take a *ki*-clause (4b-d). Questioning a *ki*-clause or questions inside the *ki*-clause are also ruled out (4e):

(4) a. Anla-dı-m [*ki* hiçbir şey değiş-me-yecek-Ø].
realize-PST-1SG *ki* nothing change-NEG-FUT-3SG
'I realized that nothing will change.' *Assertive*

b. *(Çok) Şaşır-dı-m [*ki* Ahmet gel-di-Ø].
(very) be.surprised-PST-1SG *ki* Ahmet come-PST-3SG
Intended: 'I am/got (very) surprised that Ahmet came.' *Non-assertive (true factive)*

c. *Mümkün *ki* Ahmet gel-ecek-Ø.
possible *ki* Ahmet come-FUT-3SG.
Intended: 'It's possible that Ahmet will come.' *Non-assertive (non-presuppositional)*

d. *Başbakan inkar et-ti-Ø/ anla-ya-ma-dı-Ø *ki* kitap yasakla-n-dı-Ø.
Prime minister deny do-PST-3SG/ realize-ABIL-NEG-PST-3SG *ki* book forbid-PASS-PST-3SG
Intended: 'The prime minister denied/ didn't realize that the book was forbidden.' *Negation*

e. *San-ıyor-sun [*ki* Ahmet kim-i öp-tü-Ø]?
Hear-PST-2SG *ki* Ahmet who-ACC kiss-PST-3SG
Intended reading: 'Whom did you believe that Ahmet kissed?' *Question*

Next, *ki*-clauses cannot be topicalized (5a); they have a fixed position, unlike subordinate clauses (5b):

(5) a. *[*Ki* Ahmet Londra-ya uç-tu-Ø] ben-Ø bil-iyor-du-m.
[*Ki* Ahmet Londra-DAT fly-PST-3SG] I-NOM know-PROG-PST-1SG
Intended: 'That Ahmet flew to London I knew.' *Topicalized ki-clause*
b. [Ahmet-in Londra-ya uç-tuğ-un]-u ben-Ø bil-iyor-du-m.
[Ahmet-GEN Londra-DAT fly-DIK-3SG]-ACC I-Nom know-PROG-PST-1SG
'That Ahmet flew to London I knew.' *Topicalized Subordinate Clause*

Furthermore, a quantifier in the matrix clause cannot bind a pronoun inside the *ki*-clause:

(6) *Herkes$_i$ dedi *ki* [o/Ø$_i$ geç gel-ecek-Ø]
Everyone$_i$ said *ki* [s/he/*pro*$_i$ late come-FUT-3SG]
Intended: 'Everyone$_i$ said that he$_i$ will come late.'

In addition, Turkish *ki*-clauses are limited to one per matrix clause:

(7) *Duydum [*ki* [Ayşe Istanbul-a gitmiş]] (*ve*) [*ki* [Ahmet Izmir-e uçmuş]].
I.heard *ki* Ayşe Istanbul-DAT went and *ki* Ahmet Izmir-DAT flew
Intended: 'I heard that Ayşe went to Istanbul and that Ahmet flew to Izmir.'

In sum, these (and several other) properties of *ki*-clauses are not expected under a subordination analysis. A closer look at the properties of *ki*-clauses reveals their systemic nature, and not merely an accidental sum of peculiarities pertaining to foreign origin.

III. Analysis: The analysis presented in this paper thus departs from the subordination analysis. Moreover, a coordination analysis is ruled out as well, since it makes, among others, two incorrect predictions: first, that a *ki*-clause is iterative (a counterexample for this is 7, where at most one *ki*-clause per matrix clause is permitted); and second, that the order of conjuncts can be changed (ex. 8b is a counterexample; recall also ex. 5, where the *ki*-clause necessarily has to follow its matrix predicate):

(8) a. [$_A$ Anla-dı-m] ***ki*** [$_B$ hiçbir şey değiş-me-yecek-Ø]. *A **ki** B*
realize-PST-1SG nothing change-NEG-FUT-3SG
'I realized nothing will change.'
b. *[$_B$ Hiçbir şey değiş-me-yecek-Ø] ***ki*** [$_A$ anla-dı-m]. **B **ki** A*

Instead, it is argued that *ki*-clauses are paratactically connected to their matrix clauses. On the semantic side of the proposal, it is argued that *ki*-clauses have an independent *assertoric* illocutionary force, and as such *ki* has the function of conjoining two independent speech acts (two root CPs). It is shown that various semantic/ pragmatic restrictions regarding *ki*-clauses follow from this property. Syntactically, *ki* itself is analyzed to be a connector of category C^0 (being thus more restrictive than other coordinating conjuncts, such as *and*), and hence the clause it heads can only adjoin to another CP (and not just any other XP), thus, explaining the ungrammaticality of (7).To account for the relation that a *ki*-clause has with a position inside the matrix clause and the fact that the matrix verb that takes a *ki*-clause must have an object, Uriagereka and Torrego's (2002) derivational analysis of parataxis is adopted. It is further shown that the set of properties of Turkish *ki*-clause is not an isolated, unusual phenomenon. We see that many of the properties of *ki*-clauses are observed in languages as diverse as Frisian (embedded V2 clauses with a complementizer) and Korean (embedded root clauses). A brief comparison will also be made with Hindi *ki*.

IV. Selected References: **De Haan, G. J.** (2001). More is going on upstairs than downstairs: embedded root phenomena in West Frisian. *The Journal of Comparative Germanic Linguistics*, *4* (1), 3-38. **Diesing, M.** (1992). *Indefinites*. MIT Press. **Dwivedi, V. D.** (1994). *Syntactic dependencies and relative phrases in Hindi*. Ph.D. diss., UMass Amherst. **Göksel, A., & Kerslake, C.** (2005). *Turkish: A comprehensive grammar*. Routledge. **Hoeksema, J., & Napoli, D. N.** (1993). Paratactic and subordinative so. *Journal of Linguistics*, *29* (2), 291-314. **Hooper, J. B., & Thompson, A.** (1973).On the applicability of root transformation. *Linguistic Inquiry*, *4*(4), 465-497. **Kornfilt, J.** (1997). *Turkish*. Routledge. **Kornfilt, J.** (2005b). Asymmetries between pre-verbal and post-verbal scrambling in Turkish. In J. Sabel & M. Saito (Eds.), *The Free Word Order Phenomenon: Its Syntactic Sources and Diversity* (pp. 163-179). Mouton de Gruyter. **Uriagereka, J., & Torrego, E.** (2002). Parataxis. In J. Uriagereka (Ed.), *Derivations: Exploring the dynamics of syntax* (pp. 253-265). London: Routledge. **Yoon, S.** (2011). *'Not' in the mood: The syntax, semantics, and pragmatics of evaluative negation*. Ph.D. diss., University of Chicago.

Gregory Kierstead (Ohio State University)

Poster Session I
Friday 2:45 - 4:45

(Non-)speaker oriented conventional implicatures: A case study of Tagalog *sana*

Harris and Potts (2009) discuss two possible readings of conventional implicatures: as either *speaker oriented*, or *non-speaker oriented*. Consider the parenthetical *hopefully*: in (1a), *hopefully* refers to a hope of the speaker (Michelle Obama) and so it is speaker oriented. In contrast, in (1b) *hopefully* does not refers to a hope of the speaker (the reporter), but Michelle Obama, and so it is non-speaker oriented.

(1) a. **Context:** Said by Michelle Obama:
The poll results predict that Barack Obama, hopefully, will win the election.

b. **Context:** Said by a CNN reporter:
Michelle Obama predicts that her husband, hopefully, will win the election.

Harris and Potts (2009) show that in English, conventional implicatures allow both non-speaker and speaker oriented meanings either when embedded or unembedded; they argue that purely contextual factors determine which reading arises. I present original fieldwork data on the Tagalog particle *sana*, which refers to some agent's hopes. I show that it allows both readings, but that they are syntactically, not contextually, determined: when unembedded, *sana* must be speaker oriented, and when embedded, it must be non-speaker oriented. Thus, *sana* cannot be captured in their analysis. I give an analysis that uses insights from Schlenker's (2003) work on indexicality, but also show that the indexicality of *sana* differs from the patterns Schlenker has discussed.

Tagalog is a predicate initial language. In a root-level clause, as in (2-a), *sana* can occur after the predicate, and the utterance expresses that the utterer hopes the proposition denoted by the clause (which I will call the *prejacent*) is true. *Sana* has a limited distribution when in embedded clauses, and can be embedded under verbs of saying (*sabi* 'say', *sigaw* 'yell', *sulat* 'write') but not other propositional attitude verbs (*sa tingin* 'think', *alam* 'know'). When *sana* is embedded under *sinabi* 'say', *sana* is only acceptable if the matrix subject hopes the embedded clause is true. In (2-b), the utterer Sue is reporting that the matrix subject, John, said that he hopes he can go to a party. As John does hope he can go, *sana* is acceptable. In contrast, in (2-c), John does not hope he can go to the party, and since the prejacent that John can go to the party is not a hope of the matrix subject, John, *sana* is unacceptable. The fact that the utterer Sue does hope for the truth of the prejacent does not license *sana*.

(2) a. **Context:** John wants to go to Jill's party, but might have to work. He says:
Pwede sana ako pumunta sa party.
can SANA 1SG.DIR go.INF.AV OBL party
'I can go to the party, I hope.'

b. **Context:** John wants to go to Jill's party, but might have to work. Sue finds him really annoying, and hopes he can't come. She says:
Sinabi ni John na pwede sana ako pumunta sa party.
say IND John COMP can SANA 1SG.DIR go.INF.AV OBL party
'John said that he, he hopes, can go to the party.'

c. **Context:** John hates Sue's parties, and hopes his work schedule conflicts with them. Sue finds him interesting, so she tried to schedule a party this weekend when he is free. She says:
#Sinabi ni John na pwede sana ako pumunta sa party.
say IND John COMP can SANA 1SG.DIR go.INF.AV OBL party
Intended: 'John said that he, I hope, can go to the party.'

Harris and Potts (2009) approach would overgenerate here: it predicts that indepedent of embedding, two readings should always be possible. Instead we find that when unembedded, only a

speaker oriented reading is possible, where *sana* refers to hopes of the speaker; when embedded, we only observe a non-speaker oriented reading, where *sana* refers to hopes of the matrix subject.

Schlenker (2003) gives an analysis to capture, among other things, the fact that Amharic 'I' can refer either to the speaker, or subject of a verb of saying. He assumes verbs like 'say' introduce a new context, which includes an author. The feature author+ requires an item to refer to the author of a context (either global or introduced by a verb like 'say'), whereas author*+, requires an item to refer to the author of the global context. Amharic 'I' is lexically specified for author+, and so its referent can shift to be the subject of 'say' when embedded. In contrast, English 'I' is lexically specified for author*+, which explains why it cannot be shifted.

However, this approach is inadequate for *sana*, which does not simply specify that it refers to the hopes of an author, but that in embedded environments, it refers to the hopes of the local author (in the sense of Heim (1983)): the speaker when unembedded, the subject of *sinabi* 'say' otherwise. This problem also arises with multiple embeddings: when *sana* is embedded within nested *sinabi* 'say' clauses, as in (3) (presented to consultants with preceding contexts similar to those above), it is only acceptable when the most local author, Sally, hopes she can go. An analysis that only prohibits *sana* from referring to a hope of the author of the global context incorrectly predicts an ambiguity of whether it can refer to a hope of John or Sally, as both of them are authors of a report, and neither of them is the utterer.

(3) Sinabi ni John na sinabi ni Sally na pwede sana siya pupunta.
say IND John COMP say IND Sally COMP can SANA 3SG.DIR go.INF.AV
'John said that Sally said that she, Sally hopes (#John hopes), can go.'

I propose an analysis drawing both on the insight of Schlenker (2003) that verbs of saying introduce a new context (i.e., I adopt his operator SAY_c), and Kratzer's (1981) analysis of modals: utterances with modals are interpreted with respect to two conversational backgrounds (functions from a world to a set of propositions): a modal base and ordering source. A utterance with a necessity modal $[\![\Box\phi]\!]^{c,f,g}$ is true iff (assuming the limit hypothesis for simplicity) in all worlds where all the propositions in $f(w)$ hold, and that are most similar to w in terms of the propositions in $g(w)$ (I follow Portner (2009) and call this set $\text{BEST}(f(w), g(w)))$, ϕ is true. I augment this framework so that the modal base and ordering source are functions from *contexts* to sets of propositions, as independently motivated by Portner (2009, 40). For simplicity, a context is a world-speaker pair ($\langle x, w\rangle$) here. I define a bouletic conversational background to be a function from a world-speaker pair to the set of propositions the speaker hopes are true in that world: the hopes of x in w.

An utterance of $[\![\text{SANA } \phi]\!]$ is true in a context $\langle x, w\rangle$ iff f is a bouletic conversational background, g a stereotypical conversational background, and in all worlds in
$\text{BEST}(f(\langle x, w\rangle), g(\langle x, w\rangle) \cup \text{SAY}_{\langle x,w\rangle}\phi)$, ϕ is true:
$[\![\text{SANA } \phi]\!]^{\langle x,w\rangle,f,g} = \{w' : \text{BEST}(f(\langle x, w\rangle), g(\langle x, w\rangle) \cup \text{SAY}_{\langle x,w\rangle}\phi) \subseteq [\![\phi]\!]^{\langle x,w\rangle,f,g}\}$.
That is, given a context $\langle x, w\rangle$, ϕ holds in all worlds w' where the hopes of x are true, but that are otherwise most similar to w in the respects that x has made a report of ϕ in w, and other contextually given stereotypical expectations hold. Lexically encoding that $\text{SAY}_{\langle x,w\rangle}\phi$ must be a proposition in the ordering source is well motivated because it captures that *sana* can only embed under verbs of saying, but also predicts that the individual whose hopes *sana* refers to must be the most local speaker, who reports ϕ, and not any more global speaker: when *sana* is in a root-level utterance, it is the utterer who reports ϕ, and so *sana* refers to the utterer's hopes. When *sana* is embedded under *sinabi* 'say', it is the matrix subject who reports ϕ (the utterer reports SAY ϕ, not simply ϕ), and so *sana* refers to the matrix subject's hopes.

Selected References: Harris, J. A. & Potts, C. (2009) "Perspective-shifting with appositives and expressives," *L&P* 32. • Heim, I. (1983) "On the Projection Problem for Presuppositions," *Proceedings of WCCFL 2.* • Kratzer, A. (1981) "The notional category of modality," In Eikmeyer, H. J. & Rieser, H. (eds.) *Words, Worlds, and Contexts: New Approaches in Word Semantics.* • Portner, P. (2009) *Modality.* Oxford University Press. • Schlenker, P. (2003) "A Plea for Monsters," *L&P* 26.

An experimental investigation of on-line and off-line binding properties of Korean reflexives—evolving grammar of multiple reflexives

Korean has a rich inventory of reflexives—simple reflexives like *caki*, *casin*, as well as compound reflexives like *caki-casin*. While it is generally accepted that these reflexives are differentiated syntactically by binding distance, there are few previous studies examined all three reflexives, and the few that did based their conclusions on intuitions of researchers (e.g., Yoon 1989). Kang (1998) is a corpus study of the three reflexives, but the size of his corpus is not large enough for the results to be reliable. The consensus in the existing literature seems to be that *caki* has a strong long-distance (LD)-binding preference, while *caki-casin* has a strong local binding preference. *Casin* is judged to allow both local and LD-binding, but with a preference for local binding (Kang). However, these results are not necessarily replicated in other experimental studies (e.g., Kim and Yoon 2009, who showed *caki-casin* can be LD-bound). Given the need for a more systematic investigation, the present study employed both on-line and off-line measures to investigate the binding distance preference of the reflexives. To the best of our knowledge, our study is the first to investigate how all three of these reflexives are processed on-line (cf. Choi and Kim 2007 examined two reflexives—*caki* and *casin*).

Sixteen native speakers of Korean participated in an online eye-tracking task and an offline antecedent identification task. In the eye-tracking task, participants listened to bi-clausal sentential stimuli (appendix 1) while looking at pictures depicting the referents of several NPs that are mentioned in the sentence (appendix 2) (the design was modeled on Clackson, Felser & Clahsen, 2011). In the experimental sentences, the matrix subject and the embedded subject served as potential antecedents of the reflexives (*caki*/ *casin*/ *caki-casin*), which were always the embedded object. A norming test was conducted so that the embedded verb/VP did not introduce a bias in favor of local or long-distance interpretations. Therefore, if a preference for one of the two binding interpretations emerges, it can be attributed to the reflexives. As a way to examine whether such preferences exist, the proportions of fixations to the two subject pictures (matrix subject pictures vs. embedded subject pictures) were compared from the onset of the reflexives. For the antecedent identification task, the experimental sentences of the eye-tracking task were presented to the participants in a written format after the completion of the on-line task. Participants were asked to judge whether the reflexive in the sentence can refer to the matrix subject (e.g., for sentences in (1) - "Can *caki/casin/caki-casin* refer to Peterpan?") or to the embedded subject ("Can *caki/casin/caki-casin* refer to Shrek?"). The eye-tracking task was expected to reveal the moment-by-moment process of antecedent search, whereas the antecedent identification task investigated the possible final interpretations speakers assigned to the sentences.

The eye-tracking task results were statistically analyzed within each reflexive condition at two separate time windows − the 'reflexive+adverb' window (from reflexive onset to embedded verb onset) and the 'embedded verb' window (from embedded verb onset to matrix verb onset) (appendix 3). Paired-samples *t*-tests conducted on the fixation proportions averaged in each window revealed that for *caki* and *casin*, the proportions of fixations to the matrix subject and to the embedded subject were not significantly different at reflexive+adverb (*caki*: $t1(15)=-.574$, $p>.05$, $t2(20)=-.812$, $p>.05$; *casin*: $t1(15)=.480$, $p>.05$; $t2(20)=-.168$, $p>.05$) nor at the embedded verb (*caki*: $t1(15)=-1.477$, $p>.05$, $t2(20)=-1.469$, $p>.05$; *casin*: $t1(15)=-1.165$, $p>.05$, $t2(20)=-1.296$, $p>.05$). For *caki-casin*, however, the proportion of fixations to the embedded subject was significantly higher than the proportion of fixations to the matrix subject, at both windows (reflexive+adverb: $t1(15)=-2.999$, $p<.01$, $t2(20)=-4.012$, $p<.01$; embedded verb: $t1(15)=-2.844$, $p<.05$, $t2(20)=-3.092$, $p<.01$). For the antecedent identification task, responses that indicated that the readings were 'possible' were assigned 1 and the 'impossible' responses were assigned 0 (appendix 4). Paired-samples *t*-test comparing the average scores of matrix subject-binding interpretation and embedded subject-binding interpretation revealed that the scores for local and long-distance binding were not significantly different for *caki* ($t1(15)=.000$, $p>.05$, $t2(20)=.438$, $p>.05$). For *casin*, the embedded subject-binding interpretation received a significantly higher score than the matrix subject-binding interpretation ($t1(15)=-2.649$, $p<.05$, $t2(20)=-2.642$, $p<.05$), while for *caki-casin* the difference was even more highly significant ($t1(15)=-8.676$, $p<.001$, $t2(20)=-11.204$, $p<.001$).

What emerges in online results is a two-way contrast between *caki/casin* and *caki-casin*, while in offline results the significant contrast was between *caki* and *casin*/*caki-casin* (though *caki-casin* showed a stronger local binding bias than *casin*). These patterns are different from what has been reported thus far. It seems that in moment-by-moment online processing of the long-distance reflexives *caki* and *casin*, native Korean speakers postpone assigning a determinate interpretation (but see Choi & Kim, 2007, on embedded verb bias in differentiating *caki* and *casin*). For *caki-casin*, however, they immediately seem to assign the local-binding interpretation. What we failed to find is an early, determinate, LD-binding preference for *caki*, contrary to previous literature. In the offline results, a contrast between *caki* and the other reflexives emerged, but again *caki* did not display a marked preference for LD-binding.

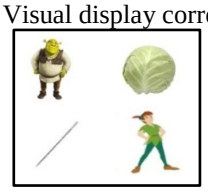
These results seem to reflect the evolving grammar of reflexives in Korean, with *casin* encroaching rapidly on the realm of *caki* (Kim and Yoon 2008). The effect of *caki* being supplanted by *casin* is seen in both online (where the two are not distinguished) and offline (where *caki* does not display a determinate LD-binding preference, contrary to expectations) results.

Appendix

(1) Example sentence (21 experimental items distributed to 3 lists + 59 fillers (Latin Square Design))

Peterpan-un [Shrek-i pyocokhan panul-lo **caki/casin/caki-casin-(l)ul** silswulo cillesstako] malhaysssupnita.
P-top S-nom sharp needle-ins self-acc by.mystake prick-comp said
'Peterpan said Shrek pricked **self** with a sharp needle by mistake.'

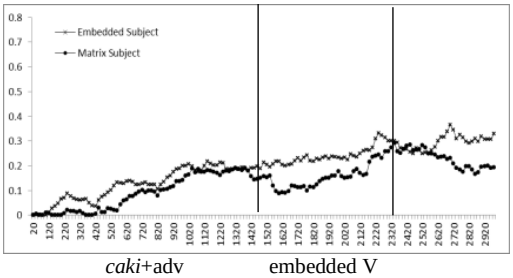
(2) Visual display corresponding to (1)



(3) Eye-tracking task results

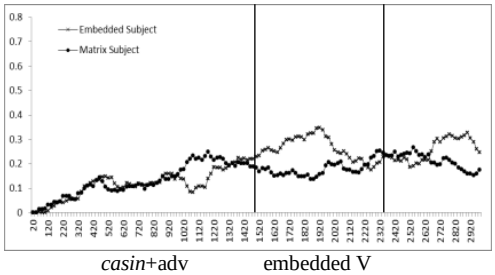
* y-axis: proportion of fixations to the two pictures corresponding to the matrix subject and the embedded subject
x-axis: time in ms from reflexive onset

< *caki* >



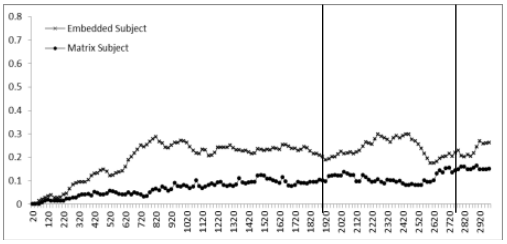
caki+adv embedded V

< *casin* >



casin+adv embedded V

< *caki-casin* >



caki-casin+adv embedded V

(4) Antecedent identification task results (average response scores; 'possible' = 1, 'impossible' = 0)

	caki	*casin*	*caki-casin*
Matrix subject-binding interpretation	0.74	0.58	0.24
Embedded subject-binding interpretation	0.74	0.82	0.96

Modal Constraints on Temporal Reference *General Session*

This paper highlights two novel phenomena which illuminate constraints on temporal reference under the scope of intensional predicates, and proposes an analysis in which modals quantify not over (whole) worlds, but over (potentially partial) histories; temporal reference embedded by the modal is then constrained to just the times contained in these partial histories.

Constraint #1: Temporal Incommensurability. Temporal comparatives like *later*, *earlier*, etc., cannot span across speech time; i.e., they cannot compare two times if one is before speech time and one is after.

(1) a. Mary got$_i$ pregnant 12 months ago. She gave$_j$ birth 9 months later$_i$. $i < j < n$
b. Mary will$_i$ get pregnant 12 months from now. She'll$_j$ give birth 9 months later$_i$. $n < i < j$
c. Mary got$_i$ pregnant 3 months ago. #She's gonna$_j$ give birth 9 months later$_i$. $\#i < n < j$

(2) a. Mary gave$_j$ birth 3 months ago. She got$_i$ pregnant 9 months earlier$_j$. $i < j < n$
b. Mary will$_j$ give birth 12 months form now. She'll$_i$ get pregnant 9 months earlier$_j$. $n < i < j$
c. Mary will$_j$ give birth 6 months from now. #She got$_i$ pregnant 9 months earlier$_j$. $\#i < n < j$

On the assumption that temporal comparatives relate reference time to an anaphoric time from a previous utterance, prior theories of tense do not account for this constraint. Tenses are predicted to constrain the temporal range of reference time itself, but not the anaphoric time introduced by these comparatives.

Constraint #2: (Non-)Ban on Forward Shifting. Abusch (1993) (see also Schlenker 2004) formulates the Upper Limit Constraint (ULC), which says the the time of the embedding predicate is the upper bound on the reference time of the lower clause, as a way to explain that in (2a), the time of pregnancy cannot be any later than the time of believing. The novel observation here, however, is that this actually depends on the embedding verb, and that a verb like *hope* is in fact compatible with forward shifting.

(3) a. Martina thought$_i$ Carissa got$_j$ pregnant. $j \not> i$
b. Martina hoped$_i$ Carissa got$_j$ pregnant. $j > i$ (or $j < i$)

Clearly here the ULC is too strong in ruling out a relative-future reading in (3b). Proposals like Kratzer (1998) and Anand & Hacquard (2008) miss as well since they derive the ULC by arguing that embedded past tenses are ambiguous between 'real' relative past (giving $j < i$) and a null tense (giving $j = i$).

This paper argues that modals and attitude verbs quantify over partial histories, thereby imposing temporal constraints on their prejacents, depending upon the modal base. Since *think* and *hope* quantify over different kinds of histories, they impose different temporal constraints.

Partial Histories. I adopt a branching times (BT) model which allows for partial worlds, or histories, which do not extend across all times. I call these partial histories. Two particular kinds of partial histories are relevant; *actual histories* are histories which (if i_0 below is evaluation time) have a present and a past but no future (they come to an end); *future histories* are the inverse, they have a lower bound but no upper bound.

Fig. 1: An actual history i_0

i_0 *Fig. 2: A future history*

This picture allows for modal bases to be sets of partial histories. The upshot of this is that modals may establish temporal constraints on their prejacents. Consider the modal verb *have to*; on its epistemic reading, it is restricted just to present or past times; on its deontic reading it cannot be associated with past times. The same goes for *must*, *got to*, etc.

(4) a. He has to fill out this form$_i$ at 3. #epistemic, ^{OK}deontic, $n < i$
b. He has to have filled out the form$_i$ at 3. ^{OK}epistemic, #deontic, $i < n$

Note that whatever temporal restrictions exist on the prejacent can't be written into the denotation of a modal like *have to* itself, since the temporal constraints depend on what contextual modal base is used. Thus they must actually fall out from the modal base choice itself. If we take the epistemic modal base to be a set of actual histories (motivated by the notion that we cannot know the future), then the ban on an epistemic

reading for (4a) is expected. Likewise, we cannot have rules (in the present) governing past behaviors, so the deontic modal base is a set of future histories, deriving the impossibility of a deontic reading in (4b).

Explaining Temporal Incommensurability. Taking *will* to be a modal (Condoravdi 2003, Kaufmann 2005, Klecha 2012), I argue that it quantifies over future histories, since it requires reference time of the prejacent to be in the future (on its predictive, not epistemic, reading). Since *will* scopes over the comparative *9 months later*, this expression is evaluated not at the actual world but in the histories that *will* quantifies over; since these histories only extend as far back as the present, times before the present are not defined.

(5) $[\![\text{she PRES}_i \text{ will}_j \text{ give birth 9 months later}_k]\!] = \lambda h \,.\, \forall h' \in \text{FUT}(h,i) \,.\, \text{birth}(h', j) \;\&\; j >^{9mos.}_{h'} k$

If (5) = (1c), the ordering $>_{h'}$ does not include k, leading to infelicity. If *will* quantified over whole worlds/histories, this would not be ruled out. Likewise, (2c) is bad because the actual world (the evaluation world for matrix contexts) is taken to be an actual history (in the BT sense); i.e., it is only defined up to evaluation time. This picture of the evaluation world aligns with theories of *will* as a modal, which argue that simple future tenses cannot exist because of the unknowability or unsettledness of the future. Modeling the evaluation world this way is a formal way to capture this idea.

Note that in the $W \times T$ framework times are totally independent from worlds, and there would be no reason to think that the ordering of two times would be dependent on a world variable. This is support for the BT model, in which the time and world (history) indices are not independent.

Explaining the ULC. The ban on forward shifting can be explained straightforwardly by appealing to this notion of partial histories as well. If *think* quantifies over actual histories (histories which extend up to event time of the attitude predicate), the embedded event time (3a) cannot be after the event time of *think*.

(6) $[\![\text{martina PAST}_i \text{ think carissa } \emptyset_j \text{ get pregnant}]\!] = \lambda h \,.\, \forall h' \in \text{DOX}_m(h,i) \,.\, \text{c-get-preg}(h', j)$

As with other theories of sequence of tense, I assume that an embedded past tense can stand for a true past or for a null tense which morphologically agrees with a higher past; however, unlike, e.g., Anand & Hacquard, I take this null tense to place *no* constraints on the temporal anaphor it introduces, rather than constraining it to be cotemporal with the matrix event time. The constraint against forward shifting in (6) is due to h' being an actual history (not extending beyond local evaluation time), rather than any constraint placed on j. This then explains why (3b) is felicitous with a forward shifting interpretation; *hope* can quantify over future histories (as well as past histories). The lower past actually does not place any constraint on the temporal interpretation of the embedded clause whatsoever. As further support, consider that when these attitude verbs are in the present, the same constraints apply.

(7) a. Martina thinks$_i$ Carissa $\{\text{got}_j, \#\text{gets}_k\}$ pregnant. $j < i, \#i < k$
b. Martina hopes$_i$ Carissa $\{\text{got}_j, \text{gets}_k\}$ pregnant. $j < i, i < k$

(A small digression on (7b): I argue that the Present is better analyzed a Non-Past, explaining the possibility for future reference in (7b). The inability of the Non-Past to have future reference in matrix contexts is due to the notion, explained above, that evaluation world is an actual history; i.e., it introduces the same temporal constraints doxastic attitude verbs and epistemic modals do.)

Summary. This paper first raises two novel phenomena, which cannot be explained by current proposals, then proposes a BT model in which modals quantify over partial histories and thereby impart temporal constraints on embedded predicates. (The matrix evaluation world can also be modeled as a partial history.) This explains why temporal comparatives cannot cross over the evaluation time of a modal (speech time for present tense modals), and why different embedding attitude verbs give rise to different temporal constraints on their predicates, in both present and past SOT contexts.

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Jeremy Kuhn (New York University)

Poster Session II
Saturday 4:00 - 5:30

Harmony via Positive Agreement: Evidence from trigger-based count effects

The Phenomenon In most patterns of harmony and assimilation, a single segment triggers harmony of a feature to the left and/or the right, until the end of the word or until some intervening blocker. In contrast, some languages demonstrate a **trigger-based count effect**, in which harmony requires *multiple* triggers (Classical Manchu and Oroqen: Walker 2001; Cantonese: Flemming 2003; Kazakh). For example, in Kazakh, the onset of a suffix assimilates to a nasal-final stem exactly when the suffix also contains a nasal coda. In (1) and (2), an underlying /d/ nasalizes to [n] when there is a nasal trigger on either side.

(1) Nasal Assimilation between two triggers (Kazakh):
  a. /adam-**d**an/ → [adam-**n**an] 'from the person'

(2) No Nasal Assimilation with only one trigger (Kazakh):
  a. /adam-**d**a/ → [adam-**d**a] 'at the person'
  b. /bala-**d**an/ → [bala-**d**an] 'from the child'

I propose an analysis of trigger-based count effects in Harmonic Grammar with Harmonic Serialism (HG: Legendre et al. 1990; HS: McCarthy 2000). I argue for a harmony constraint that demands feature agreement between adjacent and non-adjacent segments.

Harmony Constraints Theories of harmony generally employ one of two main classes of constraints: SPREAD constraints, which prefer multiply-linked feature spans (McCarthy 2011, Kimper 2011), or AGREE constraints, which prefer segments with matching feature specifications (Baković 2000, Hayes & Londe 2006). Under both constraint classes, (3a) is considered harmonic and (3c) disharmonic; however, (3b) is only considered harmonic under an AGREE constraint.

(3) a. F / \ × × b. F F | | × × c. F | × ×

SPREAD: 3a > 3b, 3c
AGREE: 3a, 3b > 3c

McCarthy (2004) and Kimper (2011) observe that a negatively defined AGREE is subject to "sour-grapes spreading": the constraint undergenerates, failing to capture patterns of partial spreading. McCarthy (2004) presents this as an argument for a SPREAD constraint. Kimper's (2011) solution is a *positively defined* SPREAD constraint: it rewards segments that share a feature instead of penalizing segments that don't. Harmonic Serialism ensures the existence of a maximally harmonic candidate. I partially follow Kimper, and show that a positively defined AGREE constraint also escapes from this pathology.

Proposal My proposal is framed within Serial Harmonic Grammar, which has the weighted constraints of HG and the serial evaluation of HS. Harmony is motivated by a positively defined constraint which rewards feature agreement. Non-local harmony is allowed, but the reward is reduced by a scaling factor based on distance.

(4) **POSAGREE(F):** Assign a reward of +1 for every pair of segments which both bear feature F.
Scaling Factor: For each locus of satisfaction, multiply the reward by a factor of 0.5 for every segment intervening between the pair of agreeing segments.

Under POSAGREE, a target is rewarded for *each* segment it agrees with; thus, unlike in a spreading analysis, a target may have *multiple triggers*. Harmonic Grammar allows the rewards from multiple triggers to accumulate to outweigh the anti-harmony constraint (canonically Faithfulness).

Arguments from Multiple Triggers Trigger-based count effects provide evidence to favor an agreement analysis over a spreading analysis: POSAGREE can capture these patterns, but SPREAD cannot. A sketch of the POSAGREE analysis is given in (5) and (6). The anti-harmony constraint prohibits nasal assimilation

when there is just one trigger, but when there are two triggers, POSAGREE wins. The additional rewards in (6) come from non-local agreement with the final [n]: a reward of +0.25 comes from agreement with [m], and, in (6b), a reward of +0.5 comes from agreement with the suffix-initial [n].

(5) No assimilation with a single trigger:

/adam+da/	5 DEP(Link)	4 POSAGREE	$\mathscr{H}$
a. ☞ + | adamda			0
b. + |\ adamna	–1	+1	–1

(6) Assimilation with two triggers:

/adam+dan/	5 DEP(Link)	4 POSAGREE	$\mathscr{H}$
a. + + | | adamdan		+.25	+1
b. ☞ + + |\ | adamnan	–1	+1 + .5 + .25	+2

Since SPREAD only rewards segments which are part of the same feature span, it does not distinguish between (5) and (6). Thus, no weighting can be given for SPREAD that will prefer (5a) over (5b) but prefer (6b) over (6a).

An analogous argument extends to trigger-based count effects where the triggers appear on the same side of the target instead of surrounding it (as in Oroqen: [ɔ̱lɔ̱-w**o**], 'fish-ACC' vs. [mɔ̱ː-w**a**], 'tree-ACC'). Here, POSAGREE receives an additional reward for non-local agreement with the first of the two syllables.

Interactions with Syllable Contact Nasal assimilation is at odds with another constraint active in Kazakh: typically, sonority must fall across a syllable boundary.

(7) Sonority fall between syllables (Kazakh): (Davis 1998, Gouskova 2004)

a. /qar+lar/ → [qar**l**ar] 'snows'
b. /qol+lar/ → [qol**d**ar] 'hands'
c. /qol+ma/ → [qol**m**a] 'Is it a hand?'
d. /adam+ma/ → [adam**b**a] 'Is it a person?'

We observe that the harmonic form [adamnan] (in (1a)) violates this constraint: [m.n] has no sonority fall. The additional complexity that this adds to the Kazakh pattern eliminates some possible alternative analyses that use negatively defined constraints, including an extension of Walker's 2001 analysis of disyllabic triggers. The argument takes the form of a ranking/weighting paradox: if the harmony constraint penalizes disagreeing segments (instead of rewarding agreeing ones), then it could be resolved by feature deletion, as Syllable Contact is resolved in (7d). The form /qol-ma/ would then be predicted to surface as [qolba] (which has no disagreeing segments), but this prediction is not borne out (see (7c)).

Extensions Under the proposed analysis, harmony can be achieved either by inserting a feature (a violation of DEP(F)) or by extending an existing feature span (a violation of DEP(Link)). I analyze local assimilation (as in Kazakh) to be a result of feature spreading, and long-distance harmony (Rose & Walker 2004) to be a result of feature insertion. The differences between the two processes may then result from differences between the faithfulness constraints. Additionally, transparency can be derived as a result of feature insertion, so does not require split feature spans (contra Kimper 2011). Blocker-based count effects (Hungarian: Hayes & Londe 2006) can still be derived as the result of competing triggers (Kimper 2011).

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Syntax-based phonological asymmetries:
the case of adjective reduplication in Mandarin Chinese

Overview. In Prosodic Morphology, reduplication frequently targets phonological constituents such as syllables, feet, and prosodic words. In Mandarin Chinese, however, adjective reduplication targets syntactic units whose size and position depend on the morphosyntactic structure of the base (Ghomeshi et al. 2004, Kirchner 2010). Specifically, attributive compounds of form AB are reduplicated as ABAB (see (1)), whereas coordinate compounds of the same form are reduplicated as AABB (see (2)). Moreover, the syntax of the base also conditions phonological patterning, calling for an elaborated theory on interface between morphosyntax and phonology. I show that the phonological asymmetry between two reduplicated forms is a consequence of the distinct morphosyntax of the base and its mapping onto the distinct prosodic structure at the interface. This proposal is thus in line with previous work where phonological patterning is argued to follow from the syntactic structures and the mapping between the two modules (Marvin 2002, Bachrach & Wagner 2007). This approach will be contrasted with an alternative which accounts for the pattern only in phonological terms (Walker & Feng 2004).

Phonological generalization. While ABAB reduplication is always faithful to the underlying representation, AABB reduplication is subject to various phonological processes which target the second syllable: the tone of the second syllable is consistently neutralized (2), it can be optionally deleted (2b), and semantically null infixes are always attracted to this position (2c). None of these processes are applicable to ABABs (1).

(1) Attributive compounds AB and their ABAB (intensified) reduplicated forms

Base	Translation	Gloss	Reduplicated form
xue^{21}-bai^{35}	snow-white	‘white’	xue^{21}**bai^{35}**xue^{21}bai^{35}
tong^{55}-hong^{35}	entirely-red	‘red’	tong^{55}**hong^{35}**tong^{55}hong^{35}
si^{21}-ying^{51}	die-hard	‘rigid’	si^{21}**ying^{51}**si^{21}ying^{51}

(2) Coordinate compounds AB and their AABB (intensified) reduplicated forms

a. Tone neutralization in the second syllable

qin^{55}-mi^{51}	close-close	‘intimate’	qin^{55}**qin^{0}**mi^{51}mi^{51}
cong^{55}-mang^{35}	hurried-busy	‘hurried’	cong^{55}**cong^{0}**mang^{35}mang^{35}

b. Deletion of the second syllable

da^{51}-fang^{55}	big-square	‘generous’	da^{51}**(da^{0})**fang^{55}fang^{55}
mang^{35}-lu^{51}	busy-busy	‘busy’	mang^{35}**(mang^{0})**lu^{51}lu^{51}

c. Infixation into the second syllable

ang^{55}-zang^{55}	dirty-dirty	‘dirty’	ang^{55}**li^{0}**ang^{55}zang^{55}
suan^{55}-liu^{55}	sour-slippery	‘sour’	suan^{55}**bu^{0}**liu^{55}liu^{55}

Syntactic structure. The evidence for distinct syntactic reduplication comes from the asymmetrical suffixation of the expressive *r*. In ABAB forms, *r* is added after each AB (AB-*r*-AB-*r*) (3a), whereas in AABB forms, *r* is only added at the end (AABB-*r*) (3b).

(3) Asymmetrical *r*-suffixation

a. *r*-suffixation to ABAB: **AB-r-AB-r**

fei.kuai	fly-fast	‘fast’	fei.kua**r**.fei.kua**r**	*fei.kuai.fei.kua**r**
gun.yuan	roll-round	‘round’	gun.yua**r**.gun.yua**r**	*gun.yuan.gun.yua**r**

b. *r*-suffixation to AABB: **AABB-r**

gao.xing	high-prosper	‘happy’	gao.gao.xing.xie**r**	*gao.ga**r**.xing.xie**r**
fei.da	fat-big	‘large’	fei.fei.da.da**r**	*fei.fe**r**.da.da**r**

Based on the fact that the suffix *r* adjoins to a phrasal node, I argue that ABAB is phrasal reduplication with an *aP* as a unit for reduplication, whereas AABB forms a single *aP* after reduplication (see (5)). To capture how morphosyntax has direct consequences on phonology, I propose that the categorial node *aP* is visible in phonology, so that phonology can make use of this information for further phonological parsing. The morphology-phonology interface is mediated by a constraint which requires alignment of the grammatical unit *aP* and the prosodic unit *PW* (4).

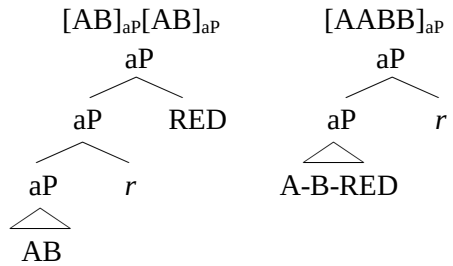
(4) Align-L(aP; PrWd): align the left edge of *aP* with the left edge of *PrWd*

$[AB]_{aP}\ [AB]_{aP}$ $\qquad$ $[AABB]_{aP}$

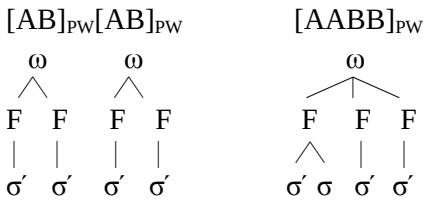
$[AB]_{PW}[AB]_{PW}$ $\qquad$ $[AABB]_{PW}$

Prosodic parsing. The phonological asymmetries follow from the length of the prosodic word: a longer prosodic word $[AABB]_{PW}$ is more likely to undergo phonological processes than a shorter one $[AB]_{PW}[AB]_{PW}$. Specifically, the interaction of final stress (Chao 1968, Xu 1980) and a strong disyllabic trochee requirement (Duanmu 1999, Sui 2012) attested outside of reduplication in Mandarin give rise to the distinct prosodic structures as in (6). Crucially, the second syllable of $[A\underline{\mathbf{B}}]_{PW}[AB]_{PW}$ at a final position of PW receives stress, whereas that of $[A\underline{\mathbf{A}}BB]_{PW}$ located in the middle of PW does not receive stress due to the trochee requirement. As a prosodically weak position, the second syllable in AABB is a locus of various phonological processes: tone neutralization (2), syllable deletion (2b), and attraction of infixes (2c). This approach is therefore particularly desirable in that the seemingly unrelated phonological processes can be unified under a single generalization.

(5) Phrasal vs. non-phrasal reduplication



(6) Prosodic parsing



Comparison with alternatives. MP correspondence theory (Walker & Feng 2004) attributes the specific morpheme order of AABB reduplication to a phonological force: a high-ranked Align [σ] constraint requires perfect alignment between morphemes and syllables, so prefers [A][A][B][B] over [A][B][AB] (where the square brackets mark morpheme boundaries). However, a purely phonological constraint cannot refer to the morphosyntax of the base, so would incorrectly predict both types of compounds to be reduplicated as AABB. Moreover, the systematic phonological differences between the two types of reduplication are puzzling when the morphosyntax is not considered. Under the current proposal, on the other hand, these differences follow from the distinct morphosyntax of the compounds and its mapping at the morphology-phonology interface. Distinct reduplication, phrasal vs. non-phrasal, correctly derives the surface phonological asymmetries, when mediated by an interface constraint by which the grammatical structure, *aP*, is interpreted in phonological terms, *PW*.

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Sunghwa Lee (University of Victoria)

Poster Session II
Saturday 4:00 - 5:30

Korean verb/adjective base vowel shortening as multiple exponence

This study explores vowel shortening occurring in verb and adjective bases in Korean, traditionally known as verb stem vowel shortening. Vowel shortening (VS) in verb/adjective bases refers to a process whereby long vowels in the base are shortened when a suffix is added. The current study suggests that VS behaves differently in two areas of morphology. In inflectional morphology, VS shows a phonologically conditioned regular pattern: Vowels are shortened only before vowel-initial suffixes. On the other hand, in derivational morphology, a base vowel is shortened when followed by a lexically specified suffix; in this case, a suffix and accompanied VS are exponents of multiple exponence. Multiple exponence (ME) or extended exponence (Caballero, 2008; Harris, 2009; Matthews, 1972, 1991; Xu, 2007, among many others) refers to a phenomenon in which two or more exponents are used to express a morphosyntactic or semantic feature value in a word.

Although it is agreed that suffixes are the process-triggering factor, there are discrepancies on what suffixes trigger VS. Some scholars describe that long vowels are shortened before a vowel initial suffix (Kim-Renaud, 1974, 1995; Kim, 1998, 2000), as in (1); others observe that VS has exceptions, when added by passive/ causative suffixes (Huh 1965; Martin, 1968, 1992; Sohn 2001), regardless of being vowel-initial (2a) or consonant-initial (2b). Others consider that VS-triggering suffixes are lexically determined (Davis and Cho, 1994; Ko, 2002, 2010, to appear). Note that segmentally identical suffixes behave differently (3): The nominalising suffix, -*i* accompanies VS, whereas the adverbial suffix, -*i* does not. Accordingly, analyses of VS in the previous literature vary, i.e., morphologically motivated phonological process (Kim-Renaud, 1973; Kang, 1991); purely phonologically conditioned process (Kim 1998, 2000); and lexically conditioned process (Davis and Cho, 1994). The comprehensive examination of VS-associated suffixes in the present study allows a better understanding on VS: phonological process in inflectional morphology and ME in derivational morphology.

Despite a large number of derivational suffixes in Korean, only a limited number of suffixes can be added to verbs or adjectives. These are verb/adjective deriving suffixes, adverb-deriving suffixes, and noun-deriving suffixes. As for verb/adjective deriving suffixes, VS-accompanied suffixes include causative/passive suffixes -*i*, -*li*, -*ki*, and -*hi* (4); the causative suffixes, -*wu*,and – *kwu* (5); and the intensifier, -*kkali* (6). Notice that the causative/passive suffixes start with either a vowel or a consonant. Among three suffixes that change verbs/adjectives into adverbs: -*i*, -*key*, and -*o/wu*, only -*o/wu* co-occurs with VS (7). This shows that VS is attributed to a property of individual suffixes, rather than a group of suffixes (e.g., adverbial suffixes or voice-deriving suffixes). With respect to noun deriving suffixes (i.e., -*i* 'act, thing, quality',- *um* 'fact, thing',- *ki* 'act, thing, quality', and -*po* 'thing, person'), only *i* and *um* accompany VS (8). Note that neither productive -*ki* nor unproductive -*po* trigger VS. In verbal and adverbial suffixes, we have seen that the initial sounds do not affect the presence/absence of VS. In addition, nominal suffixes suggest that productivity is not a factor to trigger VS. Also, it is verified that a group of suffixes belonging to the same category behaves differently. It appears conclusive that base VS occurs in accordance with individual suffixes, regardless of initial sound, productivity, or category.

A set of criteria for ME is created based on Matthews' (1972) study of Latin: ME (i) is not phonologically conditioned but rather morphologically or lexically conditioned; (ii) always occurs with a certain category regardless of the phonological manifestation; and (iii) can occur with any base form. In other words, the effect is consistent. VS in derivational morphology is not phonologically conditioned but lexically determined. This is a crucial criterion to be met as a subsidiary exponent of ME. Also, base VS in Korean shows a consistent effect when followed by a main exponent (i.e., suffix) and when occurring either in a verbal base or an adjectival base. Given that base VS meets all the criteria as a subsidiary exponent of ME, the current study proposes that VS and an accompanying-suffix in derivational morphology constitutes ME, and that VS and the suffix together signify an expression of meaning.

A formal account of the ME is provided within the framework of Word-and-Paradigm. Two derivational classes are classified in accordance with presence/absence of VS: Class 1 affixes that do not accompany VS and Class 2 suffixes that accompany VS. Word Formation Rules (WFRs) are formulated and an analysis of Class 2 is provided. This study is significant in that VS-associated suffixes are examined thoroughly in both inflectional and derivational morphology and a comprehensive but simple analysis is provided accordingly.

Data

(1)[1]	co:h	'is good'		coh-una	'is good but'	
	kwu:p	'bake'		kwuw-eto	'though one bakes'	Kim-Renaud (1974: 21)
(2)	a.	cwu:l	'to decrease'	cwul-i (CAUS)	'reduce'	
	b.	a:l	'to know'	al-li (CAUS)	'inform'	
		ka:m	'to wind'	kam-ki (CAUS)	'be wound'	(Sohn, 2001: 193)
(3)	a.	Nominalising suffix -i				
		ki:l	'long'	kil-i	'length'	
		te:p	'hot'	tew-i	'heat'	
	b.	Adverbial suffix -i				
		ko:p	'beautiful'	ko:-i	'beautifully'	
		ma:nh	'abundant'	ma:nh-i	'abundantly'	(Davis and Cho 1994: 3)
(4)		UR	Gloss	Causative/Passive		
	a.	kkwu:	'borrow'	kkwu-i	'loan'	
		nwu:p	'lie down'	nwu-i	'lay down'	
	b.	sa:l	'live'	sal-li	'save'	
		a:l	'know'	al-li	'inform'	
	c.	ta:m	'put in'	tam-ki	'be put in'	
		a:n	'hug'	an-ki	'make someone hug'	
	d.	pa:lp	'step on'	palp-hi	'be stepped on'	
		te:p	'hot'	tep-hi	'heat'	
(5)		UR	Gloss	Causative		
	a.	kkay:	'awake'	kkay-wu	'wake up'	
		pi:	'vacant'	pi-wu	'vacate'	
	b.	i:l		il-kwu	'bring under cultivation'	
(6)	-kkali 'intensifier'			noy:-kkali → noykka.li	'harp on'	
(7)	ne:m 'exceed'			nem-u	'too much, excessively, so'	
	to:l	'turns'		tol-o	'(over) again'	
(8)	a	no:l	'play'	nol-i	'playing'	
		ka:l	'till, cultivate'	kal-i	'plowing'	
	b.	no:l	'play'	nol-um	'gambling'	
		wu:l	'cry'	wul-um	'weeping, crying'	

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[1] The present study uses Yale Romanization system for data transcription. The symbol, : denotes a long vowel.

Timothy Leffel (New York University),
Radek Šimík & Marta Wierzba (University of Potsdam)

Information structure and pronominal morphology in Basaá

Goal We provide evidence from the language Basaá (SVO, Bantu, Cameroon) supporting the position that discourse and information structure (IS) concepts are not grammatical primitives, but rather can be derived from independently-needed grammatical mechanisms (with Horváth 2010, Fanselow & Lenertová 2011, contra Rizzi 1997, a.o.). Specifically, we argue that the semantic mechanism of indices and assignment functions, commonly used for the interpretation of pronouns and traces, can be extended to account for the fact that in Basaá the presence of pronouns in certain constructions correlates with the IS concepts "contrast" (reference to alternatives) and "topic" (discourse familiarity/anaphoricity). Additionally, we will show that what has been argued to be a "focus morpheme" instantiating a syntactic Focus head in Basaá (see Bassong 2010, who follows Aboh 2004), can in fact be analyzed as an operator with semantic, rather than discourse/IS, content.

Basic facts We examine four fronting constructions in Basaá: N-fronting (1a), K-fronting (1b), C(ontrastive) T(opic)-fronting (1c), and T(opic)-fronting (1d). These constructions differ along three formal factors, namely the presence/absence of (i) a resumptive pronoun (RP), (ii) a left-peripheral pronoun (LP), and (iii) a suffix on LP (*-n/-k*). Both RP and LP take the form of ordinary pronouns in Basaá (cf. *ɓá-bí-náŋâ* ***nyɛ́*** 'they invited **him**') and agree in noun class with the fronted constituent (class 1 in the ex. below). The suffixes *-n/-k* are specific to N-/K-fronting, respectively, and are not found elsewhere in Basaá grammar.

(1) a. Hiɔl **nyɛ́ -n** ɓalêt ɓá- bí- náŋâ
1.H. 1.him -N 2.teachers 2.SM- PST2- invite
'It was Hiol that the teachers invited.' (LP-*n*)

b. Hiɔl **nyɛ́ -k,** ɓalêt ɓá- bí- náŋá **nyɛ́**
1.H. 1.him -K 2.teachers 2.SM- PST2- invite 1.him
'The teachers also invited Hiol.' (LP-*k*, RP)

c. Hiɔl **nyɛ́,** ɓalêt ɓá- bí- náŋá **nyɛ́**
1.H. 1.him 2.teachers 2.SM- PST2- invite 1.him
'As for Hiol, the teachers invited him.' (LP, RP)

d. Hiɔl**,** ɓalêt ɓá- bí- náŋá **nyɛ́**
1.H. 2.teachers 2.SM- PST2- invite 1.him
'As for Hiol, the teachers invited him.' (RP)

We will show that the presence of the suffixes *-n/-k* correlates with the presence of semantic (specifically, presuppositional) effects, and that LP/RP lexicalize the abstractor-variable dependency created by fronting; LP/RP also convey contrastivity and topicality, respectively. In no case do we see any form specific to IS.

Evidence The infelicity of the continuation in (2) is explained if N-fronting imposes an exhaustive identification reading on the fronted constituent. No such interpretation is present with focus in situ, as shown by (3).

(2) *Who did the parents see?*
Kondɛ́ nyɛ́-n ɓa-n-tɛ́hɛ́
1.K. 1.him-N 2.SM-PST1-see
'It was Konde who they saw.'
#... ɓá-n-tɛ́hɛ́ yak Hiɔl
2.SM-PST1-see also 1.H.
'...They also saw Hiol.'

(3) *Who did the parents see?*
ɓa-n-tɛ́hɛ́ Kondɛ́
2.SM-PST1-see 1.K.
'They saw Konde.'
... ɓa-n-tɛ́hɛ́ yak Hiɔl
2.SM-PST1-see also 1.H.
'...They also saw Hiol.'

K-fronting is accompanied by an additive presupposition, apparent from the translation in (1b) and further supported by the contrast between (4) and (5).

(4) *The parents saw Konde.*
Hiɔl nyɛ́-k, ɓa-n-tɛ́hɛ́ nyɛ́
1.H. 1.him-K, 2.SM-PST1-see 1.him
'Hiol, they also saw him.'

(5) *The parents didn't see Konde.*
#Hiɔl nyɛ́-k, ɓa-n-tɛ́hɛ́ nyɛ́
1.H. 1.him-K, 2.SM-PST1-see 1.him
'Hiol, they also saw him.'

The presence of RP correlates with the IS property of "topicality" (in the sense of discourse familiarity). This makes all constructions in (1) topic fronting constructions, except for N-fronting (1a), which has been shown to involve exhaustive focus fronting. The topic interpretation of T-fronting is illustrated in (6).

(6) *What about Hiol?*
Hiɔl, ɓalêt ɓá- bí- náŋâ nyɛ́
1.H. 2.teachers 2.SM- PST2- invite 1.him
'As for Hiol, the teachers invited him.'

The presence of LP correlates with the IS property of contrastivity (in the sense of Rooth's 1985 "focus"). This makes the constructions in (1a) contrastive fronting constructions—contrastive focus in (1a) and contrastive topic in (1b) and (1c))—except for (1d), which involves an ordinary discourse-familiar (aboutness) topic.

Analysis The four constructions receive the structural description (LF) in (7). *-n/-k* are functional heads (roughly: C) with the semantics in (8a)/(8b). They take two arguments: the property created by fronting (P), upon which the observed maximality/additive presupposition is computed (underlined), and the fronted constituent (x).

(7) $[_{\text{CP}}$ Hiol $[_{\text{C}'}$ (*-n/-k*) $[_{\text{TP}}$ λ_7/$\text{LP}_7^{F_1}$ $[_{\text{TP}}$ Konde invited t_7/$\text{RP}_7^{T_3}]]]]$

(8) a. $[\![\text{-n}]\!] = \lambda P \lambda x : \underline{\exists y[\forall z.P(z) \rightarrow y \geq z]}.\text{MAX}(P) = x$
b. $[\![\text{-k}]\!] = \lambda P \lambda x : \underline{\exists y[P(y) \wedge x \neq y]}.P(x)$

LP and RP lexicalize doubly indexed expressions (singly indexed expressions are covert). The ordinary index 7 interprets the fronting and helps generate the ordinary semantics (9O). $F1$ is interpreted as Kratzer's (1991) designated variable (by designated variable assignments) and leads to the generation of the p-set/Rooth's (1985) focus semantic value (9F). For topics, we extrapolate Kratzer's analysis and propose that $T3$ generates a "topic semantic value" (9T). By assumption, the following relations between O and T/F hold: O $\in$ F and O = T.

(9) $[\![\text{Hiol LP}_7^{F1}\text{ Konde invited RP}_7^{T3}]\!]$ = O: Konde invited Hiol.
F: {Konde invited Hiol, Konde invited Paul, Konde invited Mary, ...}
T: Konde invited some discourse-familiar individual.

This shows that in Basaá, it is possible to derive basic IS concepts using well-established semantic mechanisms, and without resort to dedicated IS-related syntactic projections.

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RESTRICTIVENESS OF ERROR-DRIVEN RANKING ALGORITHMS

■ **EDRAs** — The target adult *phonotactics* is acquired early (Jusczyk *et. al.* 1993) and gradually (McLeod *et al.* 2001), i.e. through a sequence of intermediate, more restrictive grammars. The OT acquisition literature has endorsed *error-driven ranking algorithms* (EDRAs) as a plausible model of the child acquisition of phonotactics that offers a straightforward tool to model child acquisition paths. An EDRA maintains a current hypothesis of the target adult ranking. Following Boersma (1997, 1998, 2009), I represent this current hypothesis as a numerical *ranking vector*. Markedness constraints are initially ranked at the top and faithfulness constraints at the bottom, yielding a smallest language. Over time, the EDRA receives a stream of data from the target adult language. At each time, the EDRA checks whether its current ranking vector accounts for the current piece of data. If that is not the case, then the current ranking values of undominated loser-preferring constraints are decreased by a certain amount, say 1 for concreteness. And winner-preferring constraints are promoted by a certain *promotion amount* $p \geq 0$. The choice of this promotion amount p varies with different implementations: **(a)** Tesar and Smolensky's (1998) (gradual) EDCD sets $p = 0$, so that the algorithm performs no constraint promotion; **(b)** Boersma's (1997, 1998) GLA sets $p = 1$, so that the algorithm performs as much promotion as demotion; **(c)** Magri's (2012) *calibrated* EDRAs (CEDRAs) are in between, i.e. set $p < \frac{1}{w}$, where w is the number of winner-preferrers.

■ **Learning challenge** — Phonotactics is the knowledge of the distinction between licit and illicit forms. To learn the target adult phonotactics, an EDRA must therefore succeed on two fronts: it must learn to rule in every licit form (the *consistency* problem); and it must also learn to rule out every illicit form (the *restrictiveness* problem). A *convergent* EDRA makes only a finite number of updates before it settles on a final ranking vector consistent with the data. Convergent EDRAs, such as EDCD and CEDRAs, thus solve the first half of the problem of the acquisition of phonotactics, namely consistency. Yet, the final ranking vector could rule in too many forms (e.g., it could rule in any form, if all faithfulness constraints are ranked at the top), and thus fail at restrictiveness. Indeed, the OT computational literature has suggested that EDRAs are algorithmically too weak to guarantee restrictiveness and has thus endorsed the algorithmically stronger *batch* algorithms, that glimpse at the entire set of data at once, contrary to the cognitively more plausible EDRAs (Prince & Tesar 2004, Hayes 2004).

■ **Main result (informally)** — This talk provides the first positive result on restrictiveness of EDRAs, thus reconciling the *acquisition* perspective (that has endorsed EDRAs) and the *computational* perspective (that has doubted their computational soundness). Informally, the idea is that the relative ranking of the faithfulness constraints mainly governs the repair strategies. For the vast majority of cases, the relative ranking of the faithfulness constraints does not matter for phonotactics. In this talk, I show that EDRAs that do not promote too much (i.e., EDCD and CEDRAs, not the GLA) are always restrictive on this vast majority of languages that don't care about the relative ranking of the faithfulness constraints (called *$\mathcal{F}$-simple* languages).

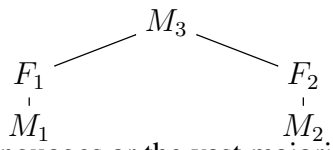
■ **$\mathcal{F}$-simple languages** — A language is *$\mathcal{F}$-simple* provided the relative ranking of the faithfulness constraints does not matter, in the sense that there exists a *partial* ranking of the constraints that does not rank any two faithfulness constraints relative to each other and furthermore *generates* the language (in the sense that each of its *total refinements* generates the language in the usual OT sense; see also Yanovich 2011). To illustrate, consider the OT typology (1), based on Lombardi (1999) via Prince and Tesar (2004). The language (2a) is $\mathcal{F}$-simple, as it is generated by the partial ranking (2b) that does not rank F_1 relative to F_2. The language (3a) is not $\mathcal{F}$-simple, as it requires F_2 to be ranked above F_1 as in (3b).

(1) forms: $\{$ pa, ba, sa, za, apsa, apza, absa, abza $\}$

constraints: $\left\{ \begin{array}{ll} F_1 = \text{IDENT[STOP-VOICING]} & M_1 = {}^*\text{[STOP-VOICING]} \\ F_2 = \text{IDENT[FRICATIVE-VOICING]} & M_2 = {}^*\text{[FRICATIVE-VOICING]} \\ & M_3 = \text{AGREE[VOICING]} \end{array} \right\}$

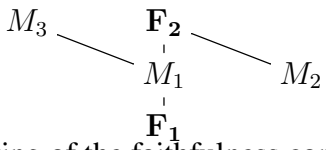
(2) a. { pa, ba, sa, za apsa, abza }

b.



(3) a. { pa, sa, za, apsa, abza }

b.



$\mathcal{F}$-simple languages ar the vast majority, as the relative ranking of the faithfulness constraints mainly governs the repair strategies, not the language. In the talk, I will substantiate this claim with various examples of OT typology taken from the literature.

■ **Main result (formally)** — It is standard practice in the OT acquisition and computational literature to assume that the child takes the adult form (correctly perceived) as the corresponding underlying form. Thus, the sets of underlying and surface forms need to coincide, so that the same form can be construed as both an underlying and a surface form. It is then natural to assume that the *generating function* that in OT pairs an underlying form with its candidate surface forms is *symmetric*. In the sense that [abza] is a candidate for the underlying form /absa/ iff vice versa [absa] is a candidate for /abza/. The main result of this talk is (5): EDRAs that don't promote too much are restrictive on the vast majority of languages ($\mathcal{F}$-simple ones).

(5) If the generating function is symmetric:
  a. EDCD (that performs no promotion) is restrictive on any $\mathcal{F}$-simple languages;
  b. this result does *not* extend to the GLA (that performs too much promotion);
  c. but it does extend to CEDRAs (that perform calibrated promotion).

■ **Remarks** — **(a)** On the one hand, EDRAs should not promote too much. In fact, the GLA (that promotes too much, i.e. demotes and promotes by the same amount) fails both at convergence (Pater 2008) and restrictiveness (5b). EDCD and CEDRAs (that promote less than they demote) are convergent (Tesar & Smolensky 1998; Magri 2012) and restrictive on $\mathcal{F}$-simple languages (5a,c). **(b)** On the other hand, EDRAs should perform some constraint promotion. In fact, although the focus of the talk is on restrictiveness on $\mathcal{F}$-simple languages, I will also discuss some cases of non $\mathcal{F}$-simple languages from the literature (such as (3a) above), showing that EDCD fails at restrictiveness while CEDRAs succeed on these test cases.

■ **Informal explanation of (5)** — A ranking that generates the target language enforces four types of ranking conditions: a faithfulness constraint needs to be ranked above another faithfulness constraint (6a); a markedness constraint needs to be ranked above a faithfulness constraint (6b); a markedness constraint needs to be ranked above another markedness constraint (6c); or a faithfulness constraint needs to be ranked above a markedness constraint (6d).

(6) a. F | F' b. M | F c. M | M' d. F | M

If the target language is $\mathcal{F}$-simple, then the relative ranking of the faithfulness constraints does not matter. Thus, ranking conditions of type (6a) are not important. Furthermore, it turns out that EDRAs that don't promote too much always gets right ranking conditions of type (6b) when trained on an $\mathcal{F}$-simple language (this property does not extend to the GLA). We are thus left with the ranking conditions of type (6c) and (6d). One of these ranking conditions could be crucial for one of two reasons. One reason is that, if the EDRA fails to learn that ranking condition, then its final ranking will fail at *consistency*, namely it will fail to rule in some licit form. Another reason is that, if the EDRA fails to learn that ranking condition, then its final ranking will fail at *restrictivity*, namely it will fail to rule out some illicit form. It turns out that, if the generating function is symmetric and the target language is $\mathcal{F}$-simple, then the ranking conditions of type (6c) and (6d) are always crucial for consistency and can never be crucial for restrictiveness only. This means in turn that a convergent EDRA will always get these ranking conditions (6c) and (6d) right, as it is guaranteed to converge to a final ranking consistent with the target language. In the talk, I will provide a more explicit proof of (5).

Child consonant harmony and phonologization of performance errors

Although many phonological patterns found in child speech have analogues in adult languages around the world, other common child processes have been found to be entirely without counterparts in adult typology. Developmental consonant harmony (CH) is one of the most frequently cited examples of this category. While adult phonologies also permit long-distance patterns of consonant agreement, the child pattern is unique in allowing assimilation with respect to major place of articulation. Examples of child CH are provided in (1). The parameters of CH, including the direction of assimilation and the participating features, are subject to considerable variation within and across children. However, Pater (2002, p. 364) proposed that several implicational generalizations can be identified regarding the preferred target, trigger, and directionality of CH in English-speaking children; these are repeated in (2).

1) Consonant harmony (Pater, 2002):
   a. Regressive assimilation: Velar or labial trigger, coronal or labial undergoer
      tickle [gɪ:gu:] bug [gʌg] top [pap]
   b. Progressive assimilation: Velar or labial trigger, coronal or labial undergoer
      coat [kok] cup [kʌk] bed [bɛ:p˺]
2) Target/Undergoer: Non-coronal implies coronal
   Trigger: Labial implies velar
   Direction: Progressive implies regressive

The existing literature provides numerous accounts of child CH (e.g. Pater, 1997, 2002; Pater & Werle, 2003, Goad, 2004; Becker & Tessier, 2011). These models succeed in capturing most or all of the properties identified in (2). However, all accounts have found it necessary to assume some qualitative difference between child and adult phonologies, typically in the form of child-specific constraints absent from the adult inventory (Pater, 1997; Becker & Tessier, 2011). We concur that some such differences will be necessary for a satisfactory model of child CH, but we contend that a complete account will also address *why* child and adult grammars differ in this way, and *how* child-specific constraints are eliminated in the course of maturation. Pater (1997) and Becker & Tessier (2011) suggest that the child-specific constraint driving CH is a reflection of articulatory or motor planning limitations specific to immature speakers. We will use a mechanism for phonologization of performance errors (McAllister Byun, Inkelas, & Rose, 2012) to expand on this insight and incorporate it into a more articulated model of child phonology.

Previous work on adult CH has made note of striking parallels between CH and patterns of assimilation in adult speech errors, e.g. *sunshine* → [ʃʌnʃaɪn] (Hansson, 2001). Hansson suggested that adult CH might be a phonologized reflex of the processing and/or motor planning pressures that give rise to speech errors. To date, models of child CH have made limited use of this possibility. However, all of the implicational relations that Pater (2002) identified in child CH also hold true in adult speech errors:

(1) <u>Preference for coronal targets</u>: Pouplier (2008) demonstrated that a large percentage of speech errors that are perceived as categorical substitutions actually involve simultaneous production of intrusive and target gestures. Further, Pouplier & Goldstein (2005) showed that intrusive errors have asymmetrical perceptual consequences, such that coronal targets with intrusive velar gestures are perceived to have velar place, while intrusive coronal gestures during a velar target typically remain undetected. A similar perceptual predominance of labial over coronal place was documented by Byrd (1992). These asymmetries could explain the tendency of coronals to assimilate to velars/labials, and not vice versa.

(2) <u>Preference for velar triggers</u>: Speech sounds that have multiple phonological properties in common are more likely to interact in speech errors (Hansson, 2001). The observation that coronal-to-velar assimilation is more persistent than coronal-to-labial or labial-to-velar assimilation in child CH can be understood as a reflection of this influence of similarity on assimilation: the pressure for assimilation is greater between two lingual consonants than between targets that do not share a major articulator.

(3) <u>Regressive bias</u>: The great majority of adult speech errors are anticipatory in nature, i.e. an earlier segment assimilates to a later one (Hansson, 2001). With their limited motor planning capacities, children may have particular difficulty activating just one gesture while inhibiting those needed later in the utter-

ance. This bias could explain the preferred regressive directionality of CH.

Speech errors have a low frequency of occurrence in adult speech, but in the context of children's more limited motor planning skill, the error rate is much higher. In this talk, we develop the hypothesis that child CH originates as a frequently recurring performance error that becomes phonologized, i.e. becomes a systematic component of the child's grammar. Focusing on positional velar fronting, McAllister Byun et al. (2012) proposed a mechanism by which children's performance errors, driven especially by their speech-motor limitations, can take on grammatical status on an intrinsically transient basis. Following Tessier (2012), Becker & Tessier (2011), and the broader literature on exemplar theory, they posited that speakers store information about their own past productions, including error forms. More specifically, they proposed that speakers unconsciously compile statistics about the frequency of occurrence of phonetic performance errors in their own attempts to produce specific sounds or sequences. This tacit knowledge forms a module termed the A(rticulatory)-map, analogous to Steriade's (2001) P(erceptual)-map. McAllister Byun et al. proposed an accompanying constraint RECYCLE: "Penalize any output whose probability of incurring a performance error is greater than that of the stored previous form," where the stored previous form is an average across the child's previous phonetic realizations of the target. If a child's attempts to match an adult target result in frequent performance errors such as harmonized forms, he/she must negotiate a balance between the pressure to match the adult target (expressed by faithfulness constraints) and the pressure to avoid performance failure (expressed by RECYCLE). The magnitude of the RECYCLE violation is proposed to be proportional to the difference in the probability of a performance error, encoded in the A-map, between a given candidate and the stored previous form. Crucially, as the child's speech-motor capacity increases, the likelihood of performance errors will decrease. As the values in the A-map are continuously updated to reflect the child's expanding articulatory skill, the pressure to recycle stored previous forms is naturally reduced. Thus, the A-map and RECYCLE offer a principled account of how child-specific patterns such as CH could arise from performance limitations, and how these patterns might naturally be eliminated in the course of physical maturation. This model preserves the continuity hypothesis in that child and adult grammars (linguistic competence) contain the same substance; the most striking differences in behavior result from the A-map, which is closely tied to performance factors.

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Elliott Moreton & Katya Pertsova
(University of North Carolina at Chapel Hill)

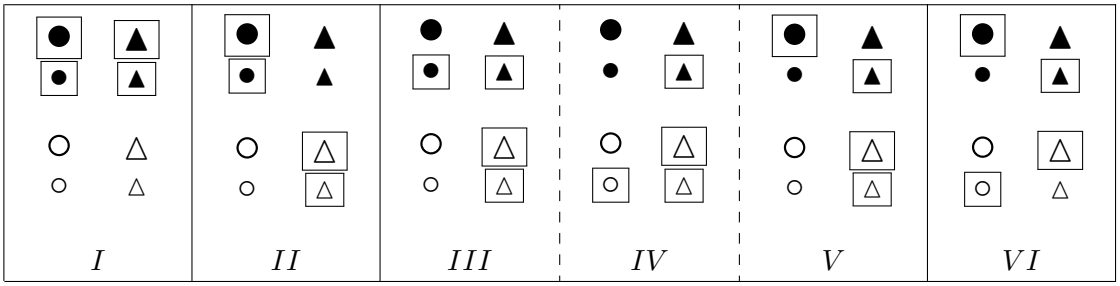
Friday 10:45

Pastry phonotactics: Is phonological learning special?

Gist: How does the formal structure of a linguistic pattern affect its learnability in the lab and its typological frequency in natural language? Does structure affect learning alike or differently for phonological and non-linguistic patterns? (1) A well-studied difficulty hierarchy for non-linguistic patterns does not predict the typological frequencies of analogous phonological patterns. (2) Pattern difficulty in a phonological learning experiment *does* match the relevant typological facts, while mismatching the non-linguistic learnability hierarchy. (3) A non-linguistic learning experiment (in progress) tests whether this difference persists when the non-linguistic stimuli are given analogues of prosodic and feature-tier structure.

Structural complexity: A hierarchy of complexity and learning difficulty has been established for *non*-linguistic patterns defined on one to three features (Figure 1, after Shepard et al. 1961): Learnability decreases in the order $I > II > \{III \approx IV \approx V\} > VI$. (E.g., the Type I pattern "black figures" is easier than the Type II pattern "black circles plus white triangles".)

Figure 1.



Typological frequency: If phonological learning is affected by complexity in the same way, the harder patterns might be less frequent in natural language. Are they? We analyzed the "phonologically active classes" in P-Base (Mielke, 2008), tabulating the patterns that could be unambiguously assigned to a Shepard type. (E.g., "front rounded vowels plus back unrounded vowels" would be Type II.) Chance expectations were established by randomly resampling P-Base to get an equal-sized database of size- and inventory-matched classes (Mielke, 2004). Frequency relative to chance was quantified as (observed/(observed+expected)).

The relative typological frequencies resulting from the analysis of Mielke's database (Figure 2b) mismatch the usual non-linguistic difficulty order (Figure 2a). Specifically, Types III, IV, and V are of similar difficulty in non-linguistic learning, but differ in relative typological frequency ($IV > III > V$). Type V is also only weakly distinguished from Type VI in typological frequency.[1]

Figure 2.

a. Non-ling. difficulty (from Fig. 1)

	II	III	IV	V	VI
I	>	>	>	>	>
II	–	>	>	>	>
III	–	–	n.s.	n.s.	>
IV	–	–	–	n.s.	>
V	–	–	–	–	>

b. Typological frequency relative to chance

	II	III	IV	V	VI
I	>***	>***	>***	>***	>***
II	–	>***	>***	>***	>***
III	–	–	<***	>***	>***
IV	–	–	–	>***	>***
V	–	–	–	–	>marg.

Experiment 1, Artificial phonological patterns: This disparity suggests that phonological learning should resemble phonological typology rather than non-linguistic learning. Does it? The hypothesis was tested using a typical "artificial-language" paradigm. Each participant ($N = 140$ to date) was assigned a type (I–VI). A phonotactic pattern of that type was chosen, with the 3 relevant features randomly selected from among the height, backness, voicing, and place (Cor vs. Dor) features of a set of 256 $CVCV$ tokens. For example: The random procedure might choose [place of C_1], [backness of V_1], and [voicing of C_2] to play the roles played by

[1] 2-sample exact binomial test, significance levels corrected for multiple simultaneous comparisons.

color, shape, and size in Figure 1, with a further random assignment dictating that [C_1 = Cor] corresponds to black, [V_1 = –back] to circular, and [C_2 = +voiced] to large. A phonological Type I pattern would then oppose stimuli like [dagu], [tiki], [dugæ], etc. to stimuli like [kudi], [kægu], [giku], etc. Phonological patterns of Types II through VI were constructed analogously. The participant practiced pronouncing 32 random pattern-conforming stimuli 4 times. They then heard 32 new conforming/nonconforming pairs and tried to pick the conforming one.

Results are shown in Figure 3a.[2] Phonological pattern learning, like phonological typology but unlike previous non-linguistic pattern-learning results, distinguishes among Types III, IV, and V. Type IV is so easy as to be indistinguishable from Type I, whereas Type V is so hard as to be indistinguishable from Type VI.

Figure 3.

a. Phonological pattern (N = 140 participants)

	II	III	IV	V	VI
I	>***	>*	n.s	>***	>***
II	–	n.s.	n.s.	n.s.	> **
III	–	–	n.s.	>marg.	>***
IV	–	–	–	>***	>***
V	–	–	–	–	n.s.

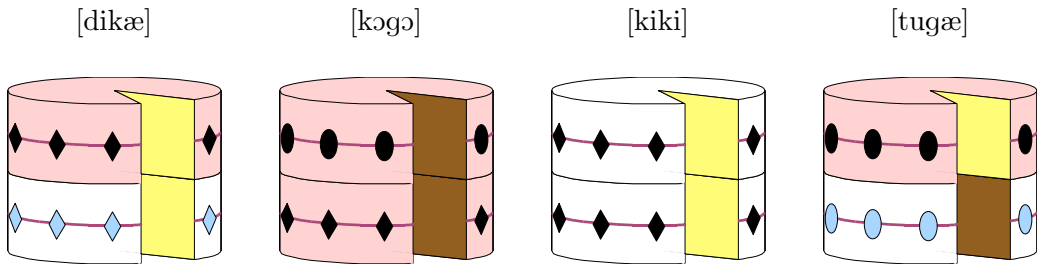
b. Cake style (N = 40 participants)

	II	III	IV	V	VI
I	>***	> *	> ***	>*	>***
II	–	n.s.	n.s.	n.s.	n.s.
III	–	–	n.s.	n.s.	>**
IV	–	–	–	n.s.	> (marg.)
V	–	–	–	–	> *

Experiment 2, Isomorphic non-linguistic pattern learning: These results seem to favor the hypothesis that phonological learning and typology show different complexity effects from non-linguistic learning. However, previous experiments on non-linguistic learning differ from Experiment 1 in major ways: (A) They use supervised learning (explicit training with right/wrong feedback) and (B) their stimuli do not have the characteristic internal structure of phonological stimuli — prosodic and feature-tier organization. Perhaps it is these factors that make the difference, rather than phonological vs. non-linguistic domain.

To control for these factors, an experiment is in progress which is (A) unsupervised, like Experiment 1, and (B) uses non-linguistic stimuli that are close analogues of the phonological stimuli of Experiment 1: fancy cakes. For each stimulus word, there is a corresponding cake. Syllables correspond to layers, and phonological features correspond to properties of the batter, icing, and decorations (Figure 4 shows corresponding words and cakes). Instead of a fictitious language, participants learn to recognize a fictitious style of cake. Each random "language" in Experiment 1 is matched by an isomorphic cake style in Experiment 2.

Figure 4.



Early results (N = 40 participants out of a planned 144) are shown in Figure 3b. So far, they resemble the classic non-linguistic results (2a), rather than the phonological results (3a), in that Type IV is significantly harder than Type I and not distinct from Types III and V, while Type V is significantly easier than Type VI. These interim findings support the hypothesis that **there are qualitative differences between pattern learning in phonology and in other domains**.

[2] Analyzed using mixed-effects logistic regression with Type as a between-participant fixed effect, and Participant as a random effect. Pairwise significant differences by Tukey's Honest Significant Difference procedure with 95% family-wise confidence level (* = $p < 0.05$, ** = $p < 0.01$, *** = $p < 0.001$)

Neil Myler (New York University)

Poster Session I
Friday 2:45 - 4:45

Cliticization Feeds Agreement: A View from Quechua

Claim: Recent years have seen a surge in work on Person Hierarchy Effects (Béjar & Rezac 2009; Nevins 2010; Walkow 2009; Lochbihler 2009; Witlschko 2008; Georgi 2011). In this talk, I make a novel argument for the superiority of (a version of) Nevins' (2010) "Multiple Agree with Clitics" (MAwC) view of such effects over the influential "Cyclic Agree" (CA) approach of Béjar & Rezac (2009). The evidence comes from a Person Hierarchy Effect which has been widely discussed in theoretical and descriptive work on the Quechua family (van de Kerke 1996; Lakämper & Wunderlich 1998; Milliken 1984; Muysken 1981; Weber 1976, 1983). I show that this effect can be readily assimilated into the typology of Person Hierarchy Effects predicted by the MAwC approach, but poses a number of problems for the CA theory. In addition, the talk will offer the first syntactic analysis of an agreement pattern that has been argued to pose fatal problems for syntactic theories of agreement morphology in general (van de Kerke 1996; Lakämper & Wunderlich 1998).

Empirical Background: The Person Hierarchy Effect in question, termed the [Addresee]-driven Subject Marking Anomaly (A-SMA), can be described as follows (the formulation and the name are both adapted from Weber 1976:16).

(1) [Addressee]-driven Subject Marking Anomaly (A-SMA)
When a verb takes a 3rd person subject and an object with the feature [Addressee], the subject agreement morpheme spells out features of the object, not the subject. When the subject is 1st person and the object has the feature [Addressee], the subject agreement morpheme spells out the features of the object OR spells out as a portmanteau marking features of both the subject and the object.

The A-SMA manifests itself in many dialects of the Quechua family, spread out amongst almost all of the known sub-branches. I illustrate from Cajamarca Quechua (Coombs-Lynch et al. 2003; Quesada 1976), for space reasons restricting myself to examples with 3rd person subjects. The combination of a 3rd person subject and a 1st person object marker yields the usual 3rd person subject agreement morpheme, as in (2) (subject agreement morphemes are in bold; the object markers are underlined). On the other hand, if a 3rd person subject is combined with a 2nd person object (3) or a 1st person inclusive plural object (4), the features realized on the subject agreement morpheme are those of the object, not the subject.

(2) Juan rika-<u>wa</u>-Ø-**n** (Cajamarca Quechua)
Juan see-1O-PRES-3S
"Juan sees me"

(3) Juan rika-<u>shu</u>-Ø-**nki**
Juan see-2O-PRES-2S
"Juan sees you"

(4) Juan rika-<u>wa</u>-Ø-**nchiq**
Juan see-1O-PRES-1INCL.S
"Juan sees us(inclusive)"

The problems that this phenomenon generates for the CA approach are as follows. First, it is unexpected that there should be no anomaly when the object is 1st person exclusive (2), since the 1st person object should be able to satisfy the φ features of v*. Hence, there should be no need or possibility for agreement with the 3rd person external argument in this example. Secondly, affix ordering facts make it impossible to maintain that the affected subject agreement marker is in fact a manifestation of a φ-bundle on v*, as required by the CA theory. As shown in the affix order schema below (vastly simplified from Muysken 1981), the relevant marker surfaces outside of tense and aspect morphology, indicating that it is located in the IP domain (the position of the object markers is omitted from this schema and will be addressed presently).

(5) Schematic representation of Quechua affix order in the verb
ROOT-ARGUMENT STRUCTURE-ASPECT-TENSE-**SUBJAGR**

Analyisis: I propose that the A-SMA emerges from two interacting properties of Quechua grammar: (i) that the object markers are clitics rather than agreement morphemes; and (ii) that [Addressee]-related clitics raise higher in the clause than 1st person clitics do. This has the consequence that [Addressee]-related clitics end the derivation in the same phase domain as the subject and are thus eligible to undergo

Agree with the subject agreement probe, but this is not the case for 1st person exclusive clitics. This, in accordance with MAwC, produces the A-SMA pattern.

Point (i) is supported by many diagnostics which have been independently argued to distinguish clitics from agreement affixes. First, the object markers are able to undergo clitic climbing in restructuring contexts.

(6) a. Maqa-**wa**-y-ta muna-Ø-n (Cuzco Quechua)
Beat-1O-INF-ACC want-PRES-3S
b. Maqa-y-ta muna-**wa**-Ø-n
Beat-INF-ACC want-1O-PRES-3S
Both: "He wants to beat me" (Adapted from Lefebvre and Muysken 1988:246; their (134))

Second, the object markers are, in many varieties, not obligatory in the presence of an overt strong pronoun, which is unexpected of agreement but compatible with a clitic analysis (see Preminger 2009). Additionally, in some dialects structures where both a full pronoun and an object marker are present have special discourse interpretations reminiscent of Romance CLLD (Arregi 2003; Rizzi 1986, 1997; Cinque 1990). Imbabura Quechua exhibits both of these properties.

(7) a. Marya-ka riku-<u>wa</u>-rka-Ø (Imbabura Quechua)
Maria-TOP see-1O-PAST-3S
b. Marya-ka ñuka-ta riku-rka-Ø
Maria-TOP I-ACC see-PAST-3S
Both: "Maria saw me."
c. Maria-ka ñuka-ta-mi riku-<u>wa</u>-rka-Ø
Maria-TOP I-ACC-EVID. see-1O-PAST-3S
"It was me that Maria saw." (Cole 1982:103-4)

Finally, despite the fact that they frequently appear adjacent to tense markers, the Quechua object markers never display allomorphy conditioned by the features of T. The subject agreement markers, on the other hand, do show such allomorphy. This is an argument for the clitichood of Quechua object markers given Nevins' (2010) observation that clitics never vary allomorphically for tense.

Point (ii) is supported by data from various dialects showing that the 2nd person clitic systematically occurs further away from the root in the verb word than 1st person clitics do. For space reasons I illustrate only from Cuzco Quechua, where the 2nd person clitic follows the tense morpheme, but the 1st person one precedes it.

(8) a. maylla-**rqa**-<u>su</u>-nki-chis (Cuzco Quechua)
wash-PAST-2O-2S-PL
"S/he washed you."
b. maylla-<u>wa</u>-**rqa**-nki-ku
wash-1O-PAST-2S-PL
"You washed us(exclusive)." (Adapted from van de Kerke 1996:126, his (13))

Adapting a methodology pioneered in the cartographic literature on Romance, in which different heights of clitic movement are diagnosed with respect to adverb placement (Tortora 2002; Ledgeway and Lombardi 2005), I argue that this indicates that 2nd person *-su* is raising to a position outside the vP phase, whereas 1st person *–wa* raises to a relatively low vP-internal position. This is schematized in (9) (AddrClP is the position to which [Addressee] clitics are assumed to raise).

(9) [AGRSP [ADDRCLP [TP pro [vP…maylla-…-(wa)] –rqa] -(su)] nki-ku/chis]
wash (1O) PAST (2O) 2S-PL

Take-home message: Because it differs from CA in deriving Person Hierarchy Effects as a case of cliticization "feeding" agreement, MAwC implicitly predicts that Person Hierarchy Effects might apply selectively if there is differentiation in how high different types of clitic raise in a language. The Quechua A-SMA confirms this prediction, and poses problems for the CA approach. Thus we have an argument for MAwC over CA. **Selected References:** Béjar, Susana and Milan Rezac (2009) *Cyclic Agree* (Linguistic Inquiry 40:35-73) / Nevins, A. (2010) *Multiple agree with clitics: Person Complementarity vs. Omnivorous Number* (LingBuzz/ 001090

An alternative account of the distribution of NPIs in interrogatives

THE PROBLEM Despite much research on the NPI front, their behavior in questions remains puzzling. Many recent theories, building on Ladusaw's original insight, have developed an alternative–based approach whereby their distribution, a requirement to be in a downward entailing (DE) context, follows from the way their alternatives are "exhaustified," without having to stipulate a licensing-by-DE condition. In fact, Guerzoni&Sharvit (2007) show that when it comes to the distribution of NPIs in questions, DE-ness cannot be a factor, and claim instead that the crucial factor is strength. While NPIs are always acceptable in direct questions (modulo some intervention facts), matters are more complicated in embedded questions: *wonder* verbs always allow NPIs, *surprise* verbs never allow NPIs, and *know* verbs have an intermediate status.

(1) a. Mary *wonders* which students brought **anything** to the party.
b. %Mary *knows* which students brought **anything** to the party.
c. *It *surprised* Mary which students brought **anything** to the party.

Noting that the NPI's acceptability correlates with whether the embedded question is interpreted as weakly (WE) or strongly (SE) exhaustive — *wonder* embeds SE questions, *surprise* embeds only WE questions, while *know* arguably admits both — G&S draw the generalizations that NPIs are only admissible in embedded questions that receive a SE interpretation. Summing up, the situation is the following. We have a promising theory of NPIs, a good generalization about their distribution in questions, and a theory of WE versus SE questions, but we don't know how these come together, and in particular how the generalization may follow given what we know about the distribution of NPIs in non–interrogative contexts. Armed with a principled theory that can compositionally derive the difference between WE and SE questions (George 2011), we are now in a good position to tackle the puzzle of NPIs in questions. The present paper addresses these questions and argues for a principled way of deriving the distribution of NPIs without relying on the notion of strength.

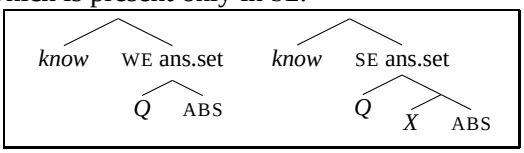
NPIS Following Krifka (1995) and Chierchia (2004), a.o., I assume that NPIs like *any* are minimally different from plain indefinites. Specifically, they are existential quantifiers, $\exists x \in D[P(x)]$, which additionally activate subdomain alternatives: $\{\exists x \in D'[P(x)] | D' \subseteq D\}$. Alternatives need to be exhaustified, that is, factored into meaning, and this is done via a covert alternative–sensitive operator **O**, akin to *only*.

(2) $\mathbf{O}(\mathscr{A}lt(p))(p)(w) = p(w) \wedge \forall q \in \mathscr{A}lt(p)\ [p \not\subseteq q \rightarrow \neg q(w)]$

The role of **O** is to negate any non–entailed alternatives. NPIs are fine in DE contexts since the alternatives are entailed by the assertion, rendering **O** vacuous. They are ruled out in non-DE because the alternatives are not entailed and negating them, as imposed by **O**, contradicts the assertion. In this system, the notion of NPI–licensing boils down to an interaction between the alternatives being activated and the method by which we "use up" these alternatives, via a mechanism of exhaustification that we have reasons to believe is independently active in grammar (e.g. when deriving scalar implicatures).

EMBEDDED QUESTIONS George (2011) takes questions to be built out of abstracts (containing the *wh* word), a question operator *Q*, and a strengthening operator *X* which is present only in SE.

(3) a. $Q = \lambda\alpha.\lambda p.\ \exists\beta\ [p = \alpha(\beta) \wedge p_{w_0}]$
b. $X = \lambda P_{\langle e,st\rangle}.\lambda\gamma_{\langle e,t\rangle}.\lambda w.\ [\gamma = \lambda x.P(x)(w)]$
c. $\text{ABS} = \lambda x.\lambda w.[x\ \text{ate}_w]$



(4) a. WE answer set $= \{p: \exists x\ [p = (\lambda w.\ [x\ \text{ate}_w]) \wedge p_{w_0}]\}$
$= \{\lambda w.\text{Mary ate}_w, \lambda w.\text{Bill ate}_w, \lambda w.\text{Mary\&Bill ate}_w\}$
b. SE answer set $= \{p: \exists X\ (p = \lambda w.\ (X = \lambda x.\ \text{ate}_w(x)) \wedge p_{w_0})\}$
$= \{\lambda w.\ [\lambda x.\ \text{ate}_{w_0}(x)] = [\lambda x.\ \text{ate}_w(x)]\ \}$

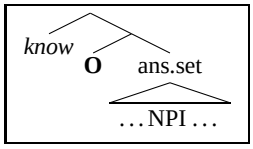
Note that the SE answer set is a singleton containing the proposition that is true in a world *w* if the set of eaters in the actual world, $\lambda x.\ \text{ate}_{w_0}(x)$ (=X), is the same as the set of eaters in *w*.

THE PROPOSAL I propose we integrate the Krifka-Chierchia idea that NPIs activate subdomain alternatives and George's account of embedded questions by claiming that whenever the abstract contains an NPI ('who ate anything'), the alternatives to the answer set in (5a) are as in (5b).

(5) a. WE.ANS $=\{\lambda w.\exists y{\in}D[M\ ate_w\ y],\ \lambda w.\exists y{\in}D[B\ ate_w\ y],\ \lambda w.\exists y{\in}D[M{+}B\ ate_w\ y]\}$

b. $\mathscr{A}lt(\text{WE.ANS}) = \left\{\begin{pmatrix}\lambda w.\exists y{\in}D'[M\ ate_w\ y]\\ \lambda w.\exists y{\in}D''[M\ ate_w\ y]\\ \ldots\end{pmatrix}, \begin{pmatrix}\lambda w.\exists y{\in}D'[B\ ate_w\ y]\\ \lambda w.\exists y{\in}D''[B\ ate_w\ y]\\ \ldots\end{pmatrix}, (\ \ldots\ldots\ )\right\}$

Alternatives require exhaustification. I take **O** to adjoin above the *Q* operator and apply point-wise to each proposition in the answer set. Thus every proposition in (5a) is exhaustified with respect to its alternatives in (5b). For each of them the NPI occurs in a non–DE context, so exhaustification will lead to a contradiction for each of the proposition in the answer set since the alternatives are not entailed and must be negated, shown in (6).



(6) $\mathbf{O}(\mathscr{A}lt(p))(p)(w) = \exists y{\in}D\ [M\ ate_w\ y] \wedge \forall D'{\subseteq}D\ (\neg\exists y{\in}D'\ [M\ ate_w\ y]) = \bot$

The unacceptability of NPIs in WE questions falls out right away thus since the exhaustified answer set is going to contain only contradictions. Turning now to SE questions that contain an NPI, given George's semantics in (7), this system predicts NPIs to be ruled out here as well. As it is, the NPI winds up in a non–monotonic context; none of its alternatives are entailed so exhaustification amounts to their negation.

(7) SE.ANS $= \{\lambda w.\ \forall x[\exists y{\in}D\ (x\ ate_{w_0}\ y) \longleftrightarrow \exists y{\in}D\ (x\ ate_w\ y)]\}$

Like before, this leads to a contradiction. Note, however, that this is contrary to the empirical data. I propose next an arguably minor amendment to George's theory which will prove to be sufficient to account for the distribution of NPIs in SE questions.

AMENDING THE SE ANSWER Intuitively, I argue that instead of an answer like (7), which says that "M&B ate something and nobody else did," we actually have the minimally different and arguably just as appropriate answer: "Only M&B ate anything." Both answers would convey the same information, that nobody other than M&B ate anything, so we don't lose anything by making this switch. Formally, the only difference lies in whether we assert or presuppose the existence part, with the new version in (8a) presupposing it (everything before the period is presupposed). This switch is encoded in the semantics of *X*, as in (8b).

(8) a. SE.ANS $= \{\lambda w{:}\ \forall x[\exists y{\in}D(x\ ate_{w_0}\ y) \rightarrow \exists y{\in}D(x\ ate_w\ y)].\ \forall x[\exists y{\in}D(x\ ate_w\ y) \rightarrow \exists y{\in}D(x\ ate_{w_0}\ y)]\}$

b. $X = \lambda P_{\langle e,st\rangle}.\lambda\gamma_{\langle e,t\rangle}.\lambda w{:}\ [\gamma \subseteq \lambda x.P(x)(w)].\ [\gamma \supseteq \lambda x.P(x)(w)]$

Presuppositional propositions are exhaustified only with respect to the alternatives of the assertive component, repeated in (9a). Every alternative in the set in (9b) can be shown to be Strawson entailed by the assertion, so exhaustification, as defined in (2), will be vacuous since $\forall q{\in}\ \mathscr{A}lt(p)\ (p \rightarrow q)$. Note that given this change, we now essentially have the same scenario as with NPI licensing in the scope of *only*.

(9) a. $p = \lambda w.\forall x[\exists y{\in}D(x\ ate_w\ y) \rightarrow \exists y{\in}D(x\ ate_{w_0}\ y)]$

b. $\mathscr{A}lt(p) = \{q{:}\ \forall D'{\subseteq}D\ q{=}\ \lambda w.\forall x[\exists y{\in}D'(x\ ate_w\ y) \rightarrow \exists y{\in}D'(x\ ate_{w_0}\ y)]\}$

NPIs can thus survive in propositions like (8) since their alternatives can be exhaustified contradition-free. In other words, exhaustifying an NPI in a SE question will simply return the answer set.

CONCLUSION What I have shown is that a simple extension of the Krifka, Chierchia, et.al. line can straightforwardly explain the generalization regarding the distribution of NPIs in interrogatives. Furthermore, a main advantage of this proposal is showing how we can derive this without having to stipulate anything about the strength of questions. The emerging picture is that not only is it the case that DE–ness is not a factor in non–interrogatives and strength not a factor in interrogatives, but that in fact all occurrences of NPIs can be accounted for in an arguably elegant way by simply looking at the interaction between their alternatives and how the grammar uses up these alternatives across different environments. This analysis can also account for the intervention facts observed with NPIs in questions.

Chierchia 2004, 'Scalar implicatures, polarity phenomena, and the s/s interface'. George 2011, 'Question embedding and the semantics of answers'. Guerzoni&Sharvit 2007, 'A question of strength: On NPIs in interrogative clauses'. Krifka 1995, 'The semantics and pragmatics of polarity items'.

Right-dislocation as deletion

The study of clausal peripheries, and in particular of the left periphery, has acquired a prominent role in syntactic theory. This talk aims to contribute to our understanding of the *right* periphery, focusing on right-dislocation (RD) constructions. In RD, a 'dislocated' XP (the *d*XP) appears at the outer right periphery of a host clause containing a correlative element. We argue that the *d*XP is the surface remnant of a separate clause, underlyingly parallel to the host clause, the rest of which is elided by a familiar type of clausal ellipsis. Our proposal has antecedents in work on Japanese/Korean (see Tanaka 2001 and Park & Kim 2009, among others), but has to our knowledge not been applied to other languages so far (but see remarks in Kayne 1994:78). Our goal is thus to extend and refine the ellipsis approach drawing on Germanic facts, and to firmly integrate RD into the typology of familiar elliptical constructions.

We address three subtypes of RD. In *backgrounding right-dislocation* (BRD), the *d*XP is deaccented and expresses discourse-old information:

(1) Ég þekki hana ekkert, *dóttur hans*. (Icelandic)
I know her:ACC nothing daughter his:ACC
'I don't know her at all, his daughter.'

In the afterthought (AT) construction, the *d*XP is a focus bearing an independent pitch accent. (2) is an example of a *specificational afterthought* (SAT), which specifies the denotation of the correlate:

(2) Ich habe heute einen Star getroffen, den John TraVOLta! (German)
I have today a:ACC star met the:ACC John Travolta
'I met a star today, John Travolta!'

A third type is the *predicative afterthought* (PAT), in which the *d*XP attributes a property to the referent of a clause-internal DP.

(3) Ich habe heute den John Travolta getroffen, ein berühmter STAR! (German)
I have today the:ACC John Travolta met a:NOM famous star
'I met John Travolta today, a famous star.'

BRD and SAT constructions display an intriguing and *prima facie* paradoxical array of properties. On the one hand, there is rather clear evidence that the *d*XP is not an integral constituent of the host clause. In terms of compositional semantics it is vacuous in BRD and 'added on' in ATs; prosodically, it does not affect the sentence accent of the host clause (unlike extraposition, which attracts the sentence accent); syntactically, it is vacuous, as evidenced by the fact that the host clause must always be syntactically complete by itself. Thus, we find a systematic contrast between RD of arguments and adjuncts, in that a clause-internal correlate is obligatory in the former but optional in the latter case (cf. Zwart 2001):

(4) a. Ik heb *('m) gezien, die man.
I have him seen that man
'I saw *(him), that man.'

b. Ik heb (toen) een man gezien, gisteren. (Dutch)
I have then a man seen yesterday
'I (then) saw a man, yesterday.'

Such facts are entirely unexpected on a rightward-movement analysis of RD; by contrast, they are expected if the *d*XP is external to the sentential domain defined by the host clause. The problem, however, is that a separate set of properties points in the opposite direction, betraying *connectivity* of the *d*XP into the clause. First, in case of argument dislocation the *d*XP bears the same θ-role as its correlate, and also covaries with it in case: see (1) and (2) above. Second, the *d*XP reconstructs for purposes of binding and scope. The following examples illustrate variable binding, satisfaction of Condition A, and violation of Condition C, respectively, in each case seemingly due to the presence of a binder in the host clause:

(5) a. Eines liebt jeder Lehrer$_i$: seine$_i$ Schüler. (German)
one thing loves every teacher his students

b. Dem kör han$_i$ ofta, sina$_i$ nya sportbilar. (Swedish)
them drives he often his.REFL new sportscars

c. *Ze$_i$ heeft hem gisteren nog gezien, Miekes$_i$ vriendje. (Dutch)
she has him yesterday still seen Mieke's boyfriend

We thus find a paradoxical constellation of properties that cannot be captured easily by either a base-generation or a movement analysis; RD squarely defies this traditional dichotomy. We therefore propose that the underlying representations are computed as biclausal structures, in which the linearly second clause is reduced by PF-deletion. That is, both BRD and SAT involve a juxtaposition of two clauses, underlyingly identical, *modulo* the difference between the *d*XP and its correlate. Semantic parallelism of the two clauses licenses ellipsis in the second, yielding the surface RD pattern:

(6) [$_{CP1}$ ich habe heute einen Star getroffen] [$_{CP2}$ den John TraVOLta [habe ich *t* getroffen]] → PF
[$_{CP1}$ ich habe heute einen Star getroffen] [$_{CP2}$ den John TraVOLta ~~[habe ich *t* getroffen]~~] (= (2))

The approach assimilates BRD/SAT to the class of constructions derived by clausal ellipsis, most notably sluicing (Merchant 2001), fragment answers (Merchant 2004), and split questions (Arregi 2010). Like the analyses just cited, ours has the advantage of deriving connectivity effects by attributing the relevant properties of the *d*XP to the grammatical relations it bears to elements (not in the host clause, but) inside the underlyingly parallel elliptical clause. Thus, matching θ-roles and case specifications of *d*XP and correlate are a straightforward consequence of both clauses containing the same case-assigning predicate (accusative *treffen* 'meet' in (6/2) above). Similarly, clausal parallelism as a precondition for ellipsis explains the observed reconstruction effects. In the examples in (5), the binder is not in fact a constituent of the host clause, but its counterpart within the parallel elliptical CP_2 c-commanding the *d*XP's trace:

(7) [$_{CP1}$ dem kör han ofta] [$_{CP2}$ sina$_i$ nya sportbilar ⟨ kör han$_i$ ofta *t* ⟩] (= (5b))

There is thus no direct reconstruction into the host clause, but rather ordinary reconstruction of the fronted XP within CP_2; this reasoning is directly analogous to Merchant's (2004) concerning connectivity in fragmentary responses (cf. *Who did John$_i$ see in the mirror? – Himself$_i$.*). In this way, the analysis allows us to have our cake and eat it, too: on the one hand, it correctly predicts connectivity effects (now understood to be a corollary of ellipsis parallelism); on the other, it explains the simultaneous signs of externality of the *d*XP, such as the syntactic independence of the host clause witnessed in (4).

We adduce further evidence for clausal structure underlying *d*XPs in BRD/SAT on the basis of right-dislocated PPs. Languages like German, which ban P-stranding under A-bar movement, require retention of a preposition in the *d*XP in such cases, whereas it is standardly omitted in P-stranding languages like Icelandic. Our analysis attributes this difference to leftward movement of the *d*XP within CP_2, analogously to Merchant's (2001, 2004) reasoning concerning parallel facts in sluicing/fragment answers.

The properties of PATs (as in (3)) suggest a slightly different analysis, however. Here we do not find case/binding connectivity into the host clause, as shown by the fact that the *d*XP in (3) bears nominative case. We propose that PATs are an instance of what Merchant (2004:725) terms *limited ellipsis*, i.e. ellipsis of the interior of a predicational copular clause, which does not require an explicit antecedent (compare *From Germany!*, which can be uttered out of the blue with a meaning like *This is from Germany!*).

(8) [$_{CP1}$ ich habe heute den John Travolta getroffen] [$_{CP2}$ ein berühmter Star [~~ist er *t*~~]] (= (3))
(cf. *Er ist ein:NOM berühmter Star.* 'He is a famous star.')

In sum, the ellipsis analysis of RD successfully derives the seemingly paradoxical constellation of properties thwarting monoclausal analyses that rely on either rightward movement or base-generation. More significantly, in doing so it relies exclusively on independently motivated grammatical computations (A-bar movement and PF-deletion), effectively eliminating RD as a construction.

References

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A Semantic Theory of Partial Control

Overview: We give an analysis of partial control (PC) that provides a principled account in terms of semantic properties of what determines whether a given control predicate permits partial control.
Background: A puzzle in the study of control concerns the participation of some control predicates in configurations where the controller is a proper subset of the plurality given by the understood subject [1]:
1a. John intended to assemble in the hall.
1b. John remembered assembling in the hall.
1c. John was glad to assemble in the hall.
A first step to understanding this phenomenon is to identify the properties distinguishing the control predicates that permit PC (the PC class) from those that only permit exhaustive control (the EC class, (2)).
2. *John tried/managed/deserved/claimed/pretended to assemble in the hall.
Proposal: Two semantic properties are jointly necessary and sufficient to diagnose membership of a given control predicate in the PC class: (I) the predicate must be a 'canonical' attitude predicate; (II) the semantics of the control predicate must involve temporal containment. After elaborating on I and II we provide a semantics that sheds light on their roles in determining the availability of partial control.
Property I: The PC predicates in (1) - and in fact all PC predicates - are attitude predicates: verbs of mental attitude or *verba dicendi*. However, not all attitude predicates are PC predicates: *try*, *manage*, *claim* and *pretend* are not (2), while in languages where *believe* is a control predicate it does not tolerate PC (3).

3.	*Gianni	crede	di	vivere	insieme
	John	believe	COMPL	live	together

Intended: 'John$_i$ believes that they$_{i+}$ live together.'
The exclusion of *try* and *manage* from the PC class is explained by assuming that they are non-canonical attitude predicates, following recent work on *try* [2, 3]. These predicates do not behave like canonical attitude predicates with respect to intensional properties:
4a. John intended/claimed/pretended to ride a unicorn to work every day.
4b. #John tried/managed to ride a unicorn to work every day.
In (4), the non-canonical attitude predicates carry existence entailments, while the canonical ones do not. These facts can be handled by extending Grano's semantics for *try* to all non-canonical attitude predicates. According to this view, what distinguishes this class from canonical attitude predicates is that the latter are quantifiers over centred worlds (world-time-individual triples), but non-canonical attitude predicates are not.
Property II: *Claim*, *pretend* and *believe* are canonical attitude predicates, but their semantics doesn't involve temporal containment. This differentiates them from PC predicates, which are either (i) future-oriented (*intend*, *want*, *expect*), (ii) past-oriented, (*remember*, *regret*) or (iii) have a progressive-like meaning (*glad*, *like*, *hate*). The future-oriented nature of *intend*, *want* and *expect* is witnessed by the availability of future temporal modifiers in their complement clause even when the matrix clause contains a present temporal modifier [1]:
5. Today John hopes/wants/expects to go to the movies tomorrow.
The analogous test with past temporal modifiers attests to the past-oriented nature of *remember* and *regret* [1]:
6. Today John remembers/regrets going to the movies yesterday.
The progressive component of the meaning of emotive factives like *glad* is revealed by their ability to take a complement clause involving an accomplishment predicate:
7. John was glad/would be glad to write a letter to Mary.
Glad differs from *believe* and *claim* in this respect:
8a. John believes Bill to write a letter to Mary *(every weekend).
8b. John claims to write a letter to Mary *(every weekend).
The degraded status of (8) is due to *believe* and *claim* being stative predicates. (We set aside *pretend*, which denotes an activity.) As such, they have the subinterval property:
9. A tenseless sentence ϕ has the subinterval property iff the truth of ϕ with regard to some interval t guarantees the truth of ϕ with regard to all the subintervals of t. [Ogihara 2007[4]: 399, ex 17]
By (9), if at t John's belief state locates him at a time at which Bill writes a letter to Mary, then any subinterval t' of t is such that at t' John's belief state locates himself at a time at which Bill writes a letter to Mary. But this attributes an incoherent mental state to John, given the definition of accomplishments:

10. ϕ is an accomplishment only if the truth of ϕ at t guarantees the falsity of ϕ at all proper subintervals of t.
[Ogihara 2007[4]: 401, ex 20]

Given (10), John cannot coherently locate himself at a time at which Bill writes a letter to Mary at t and locate himself at a time at which Bill writes a letter to Mary at all subintervals of t. But since *glad* is also stative, the acceptability of (7) calls for explanation.

Notice that the cases with *believe* and *claim* are improved by progressive marking:

11a. John believes Bill to be writing a letter to Mary.

11b. John claims to be writing a letter to Mary.

We propose that the semantics of *glad* mimics this effect by incorporating progressive meaning directly:

12. $[\![\text{glad}]\!]^{c,g} = \lambda P_{<e,<i,<s,t>>>}\lambda x_e\lambda t_i\lambda w_s$: ∀<w', t', y>: it is compatible with what x believes in w at t for x to be y in w' and t to be t' → ∃t": t' ⊆ t" & P(y)(t")(w'). ∀<w', t', y>: being in a position to identify himself as y in w' and t" as t' makes John feel glad in w at t → **∃t": t' ⊆ t"** & P(y)(t")(w')

The semantics thus makes reference to temporal containment, as does that of future- and past-oriented control predicates:

13. $[\![\text{intend}]\!]^{c,g} = \lambda P_{<e,<i,<s,t>>>}\lambda x_e\lambda t_i\lambda w_s$. ∀<w', t', y>: it is compatible with what x intends in w at t for x to be y in w' and for t to be t' → **∃t": t' ⊂ t"** & ¬∃t"': t"' ⊂ t" & t"' < t" & ∃t"': t"' ⊂ t" P(y)(t"')(w')

14. $[\![\text{remember}]\!]^{c,g} = \lambda P_{<e,<i,<s,t>>>}\lambda x_e\lambda t_i\lambda w_s$. ∀<w', t', y>: it is compatible with what x remembers in w at t for x to be y in w' and for t to be t' → **∃t": t' ⊂ t"** & ¬∃t"': t"' ⊂ t" & t" < t"' & ∃t"": t"" ⊂ t" & P(y)(t"")(w')

A simple amendment to these entries makes way for a semantics of PC: the notion of 'containment' is no longer confined to the temporal dimension, but rather applied to the world-time-individual triples that canonical attitude predicates quantify over. We define an 'extension' of such triples as follows.

15. For any pair of world-time-individual triples <w, t, x> and <w', t', y>, <w', t', y> is an *extension* of <w, t, x> iff:

(i) w ≤ w'; (ii) t ≤ t' or ∃t": t ≤ t" & t' ≤ t"; *and* (iii) x ≤ y

The semantics of attitude predicates that exhibit Property II now incorporates this notion:

16. $[\![\text{intend}]\!]^{c,g} = \lambda P_{<e,<i,<s,t>>>}\lambda x_e\lambda t_i\lambda w_s$. ∀<w', t', y>: it is compatible with what x intends in w at t for x to be y in w' and for t to be t' → **∃<w", t", z>: <w", t", z> is an extension of <w', t', y>** & P(z)(t")(w")

Analysis of partial control: This semantics renders partial control sentences straightforwardly interpretable:

17a. John intends to assemble in the hall.

17b. $[_{CP1}\ \lambda t_1\lambda w_2\ [_{IP1}$ John intends$_{t1,w2}$ $[_{CP2}\ \lambda x_3\lambda t_4\lambda w_5\ [_{IP2}$ PRO$_3$ to assemble in the hall$_{t4,w5}$]]]]

17c. $[\![17c]\!]^{c,g} = \lambda t\lambda w$. ∀<w', t', y>: it is compatible with what x intends in w at t for x to be y in w' and for t to be t' → **∃<w", t", z>: <w", t", z> is an extension of <w', t', y>** & z go to the movies together in w" at t".

Consequences: (A) We provide an account of why Properties (I) and (II) are jointly necessary and sufficient for membership in the PC class. Partial control arises as a consequence of existential quantification over extensions of centred worlds. Only canonical attitude predicates make reference to centred worlds in their semantics (Property I), and only predicates whose semantics involves temporal containment appeal to existential quantification over extensions of centred worlds (Property II).

(B) Following [5], PRO is abstracted over, yielding a property. The analysis is compatible with any mechanism whereby PRO inherits ϕ-features from the controller. The inability of PC PRO to license plural anaphors, exemplified in (18), is therefore no longer surprising.

18. *John intended to meet each other in the hall.

(C) The proposal builds on Landau's observation that PC predicates often tolerate mismatching temporal modifiers but EC predicates typically do not [1]. There are counterexamples to this generalization in both directions, however - it is flouted by the EC predicate *deserve* and the PC predicate *enjoy*:

19. Today John deserves to go the movies tomorrow.

20. *Today John enjoys going to the movies tomorrow/yesterday.

We can explain this: *deserve* is in the EC class because it is not an attitude predicate, and *enjoy* is in the PC class because the crucial temporal property is containment, not the availability of mismatching temporal modifiers.

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Diego Pescarini (University of Padua)

Double Object Constructions and the PCC: evidence from Italian

The Person Case Constraint (PCC) is an agreement restriction against combinations of weak pronouns and agreement markers when the Direct Object is 1p/2p. In English, the PCC targets Double Object Constructions, while Prepositional Constructions are unconstrained, see (1a) vs (1b). In my talk, I will argue that the same holds for Italian, *modulo* the clitic status of Italian weak pronouns.

(1) a. *? *I'll send əm you* — * DOC = Double Object Construction
b. *I'll send you to them* — PC = Prepositional Construction

First of all, I will argue that Italian is a language with dative shift (see also Giorgi & Longobardi 1991). As a consequence, a ditransitive structure like (2) corresponds to two possible structures: a PC, in which *a* is a P introducing a prepositional dative, and a DOC, in which *a* is a Case particle (K) introducing a shifted dative.

(2) *mostro il libro* [$_{PP/KP}$ *a Carlo*] — PC/DOC
show.I the book to Carlo — 'I'll show the book to C./C. the book'

I will focus on four contexts in which the PP/KP alternation is overt and show that dative KPs exhibit a series of syntactic and semantic properties: i) they must be [human/animate]; ii) they can be replaced by dative clitic/wh- pronouns; iii) they can co-occour with a floating quantifier; iv) they can bind a subject-oriented anaphor; v) they can be interpreted as possessors/recipients. The relevant alternations are illustrated under the following headings.

A. the *ci/gli* alternation. Inanimate datives are pronominalized by the clitic *ci*, while [animate/human] datives are normally replaced by a dative clitics, like *gli* ('to him'), see (3). Following Kayne 1975, I will argue that *ci* is a pro-PP, while *gli* stands for a shifted dative. Under this analysis, the alternation in (3) follows from a general principle preventing inanimate datives from occurring as shifted datives (cf. English *I sent her/*the conference my abstract*).

(3) a. ***gli*** *dedico tempo* [$_{KP}$ ~~*a Carlo*~~] — DOC
to.him dedicate.I time (to Carlo) — 'I dedicate time to him (Carlo)'
b. ****gli/ci*** *dedico tempo* [$_{PP}$ ~~*al calcio*~~] — PC
to.it dedicate.I time to.the soccer — 'I dedicate time to it (soccer)'

B. the *a/da* alternation with motion verbs. Transitive verbs like *spedire* 'to send', *portare* 'to bring' may select a [human] Indirect Object. When introduced by *a*, as in (4a), the IO is interpreted as a possessor/recipient, can be replaced by a dative pronoun, can bind a subject-oriented anaphor, etc. On the contrary, when introduced by *da*, as in (4b), the same complement counts as a goal PP.

(4) a. *Porto il libro* [$_{KP}$ ***a*** *Carlo*] — DOC
Bring.I the book to Carlo — 'I take Carlo the book'
b. *Porto il libro* [$_{PP}$ ***da*** *Carlo*] — PC
Bring.I the book to Carlo — 'I take the book to Carlo's place'

C. the *a/da* alternation with causatives. In causative constructions, the causee can be introduced by either *a* or *da*. In my opinion, the *a*-causee counts as a shifted dative as it can be replaced by a dative clitic/wh- pronoun, is a potential antecedent for a subject-oriented anaphor, can co-occur with a floating quantifier, etc.

(5) a. *Micol fa pettinare Giulia* [$_{KP}$ ***a*** *Carlo*] — DOC
Micol makes comb Giulia to Carlo — 'Micol makes Carlo comb Giulia's hair'
b. *Micol fa pettinare Giulia* [$_{PP}$ ***da*** *Carlo*] — PC
Micol makes comb Giulia by Carlo — 'Micol makes Carlo comb Giulia's hair'

D. the alternation between strong/weak *loro* ('to them'). Weak *loro* cannot be coordinated and focused, is not introduced by *a*, must precede the DO, and can bind a subject oriented anaphor. I will propose (contra Cardinaletti 1991) that the alternation between weak and strong *loro* is akin to

a dative shift alternation (it is worth noting that in Italian, as English, a pronominal shifted dative must be weak, cf. *I sent em/*THEM my abstract*).

(6) a. *Carlo mandò* [$_{KP}$ ***loro*** [*una lettera*]] DOC
Carlo sent them a letter 'Carlo sent them a letter'
b. *Carlo mandò una lettera* [$_{PP}$ ***a LORO***] PC
Carlo sent a letter to them 'Carlo sent a letter to them'

In the second part of the talk, I will use the above four alternations as a test-bed for the hypothesis that the PCC targets clitic combinations corresponding to DOCs, while clitic configurations corresponding to PCs are unconstrained (I will show that this hypothesis is a corollary of Adger & Harbour's 2007 analysis of the PCC).

This hypothesis, for instance, is consistent with the contrast in (7): in a PCC environment, the dative clitic *gli* is ungrammatical, while *ci* is fine, although the interpretation of the cluster remains unchanged. This asymmetry is consistent with the claim that *ci* stands for a dative PP (cf. A):

(7) *ti *gli/ci presenterò io, al direttore.* * DOC/PC
you to.him will.introduce I, to.the director 'I will introduce you to him (the dir.)'

Furthermore, the hypothesis above can provide a principled analysis for the so-called Fancy Constraint (Postal 1989), i.e. a constraint preventing 1p/2p clitics from occurring with an *a*-causee, as shown in (8a). It is worth recalling that, under the analysis in C, the Fancy Constraint can be analysed as a particular case of PCC as the *a*-causee counts for a particular kind of shifted dative.

(8) a. * Micol mi fa pettinare **a** Carlo * DOC
Micol me makes comb to Carlo 'Micol makes Carlo comb my hair'
b. Micol mi fa pettinare **da** Carlo PC
Micol me makes comb by Carlo 'Micol makes Carlo comb my hair'

Lastly, I will argue that the observed cross-linguistic variation regarding case-marking and dative passivization depends on the Case properties of the head licensing shifted datives. In some languages, like English, this head assigns structural Case and, as a consequence, DOCs end up being Double Accusative Constructions (DAC). Traces of DACs are attested also in Latin (where double accusatives are found with verbs meaning 'to ask', 'to teach') and in several southern Italian dialects. For instance, in Neapolitan (Ledgeway 2000), 3p [human] datives can be pronominalized by an accusative clitic like *'o* 'it/him', *'a* 'her', etc., see (9). Under the analysis above, this means that, in Neapolitan, shifted datives are assigned Accusative Case. This hypothesis is confirmed by the fact that, in the same dialect, [human/animate] datives can be passivized, cf. (10).

(9) ***'a*** *rispunneteno* ~~*a Maria /*â lettera*~~
to.her replied.they to Maria /*to.the letter 'They replied to her (Maria/*the letter)'

(10) a. ***'a*** *telefunajə a socrama*
(to).her phoned to mother.in.law=my 'he/she phoned my mother-in-law'
b. *socrama fujə telefunata*
mother.in.law=my was phoned 'my mother-in-law was phoned'

References:

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The argument structure of reflexively marked anticausatives and middles: evidence from datives

A. Many Indo-European languages have argument alternations where a transitive verb alternates with a reflexively marked version that lacks the original external argument. The most prevalent alternations of this type are *reflexively marked anticausatives*, and *reflexively marked middles*, illustrated for German in (1b) and (2b). German has a second type of middle derived from the causative/permissive verb 'lassen' (let) which follows the same pattern (3b) (cf. French *se-faire* constructions).

(1) a. *Hans öffnet die Tür.* b. *Die Tür öffnet sich.*
John opened the door the door opens REFL

(2) a. *Hans liest das Buch.* b. *Das Buch liest sich gut.*
John reads the book the book reads REFL well

(3) a. *Hans lässt das Buch lesen.* b. *Das Buch lässt sich gut lesen.*
John makes/lets the book read the book makes/lets REFL well read

These b-constructions have found three different analyses either as (i) unaccusative, (ii) unergative, or (iii) reflexivized causative structures (see **B**). We provide configurational arguments from German for the unaccusative analysis (see **C**). These arguments built on two properties of German: nominative DPs (DP_{NOM}) in passive or unaccusative structures can stay in vP-internal object position (Wurmbrand 2006), and all three constructions allow subcategorized or free datives.

B. In **unaccusative analyses**, (1b-3b) lack an external argument (though middles have it on an interpretative level) and DP_{NOM} is merged as the internal argument of the verb just as in the transitive counterpart. The reflexive pronoun is non-thematic and its presence is associated with the absence of an external argument (though theories differ in details; e.g. Reinhart 2002, Schäfer 2008, Labelle & Doron 2010). In **unergative analyses** of reflexive anticausatives and middles, DP_{NOM} in (1b-3b) is merged as an external argument which, nevertheless, gets assigned the theme role. The reflexive pronoun is analyzed as a marker of reduction (Lekakou 2008) or as a specific Voice-head passing the verb's internal θ-role up to its specifier (Labelle 2008). Under a **causative analysis of anticausatives** (Chierchia 2004, Koontz-Garboden 2009), the predicate assigns both an internal (theme) and an external (causer/effector) θ-role to DP_{NOM}. Technically, the reflexive pronoun is analyzed as a reflexivization operator which takes a relation as its argument and identifies both arguments of the relation. Though these authors do not discuss mapping to syntax, under any linking theory we are aware of, DP_{NOM} should be merged as an external argument. This is even more so if we acknowledge the arguments in Doron & Rappaport Hovav (2009) which strongly suggest that e.g. German or Romance reflexives (i.e. SE-reflexives) behave as anaphoric pronouns subject to principle A in cases of undisputed reflexive binding (*John denounced himself*). For a causative analysis of anticausatives this would mean that DP_{NOM} is the causer/effector subject and the reflexive is the anaphorically bound theme object. Such a structure carries over to **causative analyses of middles**. Zwart (1998) proposes that middles involve a little v head expressing causation/permission. German 'lassen' in (3) (and French 'faire') could be seen as overt instantiations of such a head. This head assigns a 'responsibility-role' to DP_{NOM} and the reflexive can be understood as taking up the theme role so that (2b/3b) roughly mean 'the $book_i$ is responsible that one reads it_i easily'.

C. First, reflexive middles (4b) and 'lassen'-middles (4c) can be formed with verbs assigning **lexical object case** (4a). Since German lacks quirky subjects, the fact that lexical case survives middle formation is incompatible with the idea that the referential DP is merged externally.

(4) a. *Er hilft einem Obdachlosen.* b. *Einem Obdachlosen hilft sich leicht.*
he.Nom helps a.Dat homeless-person a.Dat homeless-person helps REFL easily
c. *Einem Obdachlosen lässt sich leicht helfen.*
A.Dat homeless person lets REFL easily help

Second, across languages free **affectedness datives** are licensed only in structures involving an internal argument. In a syntactic theory of datives, these are projected in SpecApplP which is below VoiceP (if present) but above the internal argument (Pylkkänen 2002, Cuervo 2003, Schäfer 2008). All constructions in (1b-3b) allow such datives (e.g. 5a,b), which suggests that their DP_{NOM} is an internal argument. These datives are then problematic for unergative analyses and causative analyses involving a reflexivization operator (but not for ones involving an anaphor in object position).

(5) a. *Dem Mann öffnete sich die Tür.* (reflexive anticausative)
the.Dat man opened REFL the.Nom door
'The door opened and the man was (positively/negatively) affected by it.'

b. *Einem Blinden räumt sich leicht die Wohnung auf.* (reflexive middle)
a.Dat blind person cleans REFL easily the apartment up
'The apartment of a blind person cleans up easily.'

One could try to analyze affectedness datives in purely thematic terms so that the presence of a theme argument would be sufficient, irrespectively of its merge position. **Word order** facts speak against this. Lenerz (1977) established that the unmarked word order of a DP_{NOM} and a DP_{DAT} differs in active and in passive/unaccusative structures in German. While in active clauses a rhematic DP_{DAT} must follow a DP_{NOM} (cf. 6), in passives and unaccusatives both orders are possible (the order DAT<NOM is possible because a DP_{NOM} does not have to move to SpecTP). Crucially, reflexive anticausatives and both types of reflexive middles allow the order DAT<NOM. This is illustrated in (7) for middles (cf. Schachtl 1991). These facts can only be captured by the unaccusative analysis.

(6) Q.: *Wem hilft heutzutage noch der Politiker?*
whom.Dat helps nowadays yet the.Nom politician
A: *Heutzutage hilft (der Politiker) nur noch dem Reichen (*der Politiker).*
nowadays helps the.Nom politician only yet the.Dat rich the.Nom politician
'Nowadays, politicians only help rich people.'

(7) Q: *Wem räumt sich heutzutage noch die Wohnung leicht auf?*
whom.Dat cleans REFL nowadays still the.Nom apartment easily up?
A. *Heutzutage räumt sich (die Wohnung) nur noch dem Blinden (die Wohnung) leicht auf.*
nowadays cleans REFL the apartment only still the.Dat blind the apartment easily up
'Nowadays, only the apartment of a blind person can be cleaned up easily.'

Third, German ***wh*-indefinites** cannot undergo scrambling but must stay in their base position (Haider 1993, Heck & Müller 2000). If DP_{NOM} were an external argument, we would predict it to necessarily precede a dative *wh*-indefinite. Under an unaccusative analysis, on the other hand, DP_{NOM} is generated below the dative, optionally scrambling over it. This is exactly what we find (cf. 8a, b).

(8) a. *weil sich (der Gewinn) wem (der Gewinn) verdoppelt hat.*
as REFL the.Nom profit someone.Dat the.Nom profit doubled has
'because the profit of someone doubled.' (reflexive anticausative)
b. *weil sich hoffentlich (das Buch) wem (das Buch) leicht verkaufen lässt.*
as REFL hopefully the.Nom book someone.Dat the.Nom book easily sell let
'because someone can hopefully be sold the book.' ('lassen'-middle)

Finally, all constructions in (1b-3b) behave like unaccusatives and unlike transitives in the way DP_{NOM} interacts with DP_{DAT} in terms of **binding**. In a situation where a nominative quantifier is coindexed with the possessor of the dative, word order is free with transitive clauses (9a). With unaccusatives, the quantified nominative has to precede the dative (9b). All three constructions in (1b-3b) pattern with unaccusatives as exemplified with reflexive middles in (9c).

(9) a. *weil (seinem$_i$ Schüler) jeder Lehrer$_i$ (seinem$_i$ Schüler) hilft.* (transitive)
as his.Dat student every.Nom teacher his.Dat student helps
b. *weil (*seinem$_i$ Besitzer) jedes Glas$_i$ (seinem$_i$ Besitzer) zerbricht.* (unaccusative)
as his.Dat owner every.Nom glas his.Dat owner breaks
c. *weil sich (*seinem$_i$ Besitzer) jedes Auto$_i$ (seinem$_i$ Besitzer) leicht stiehlt.*(reflexive middle)
as REFL his.Dat owner every.Nom car his.Dat owner easily steals

D. The behavior of free and lexical datives in the reflexive constructions in (1b-3b) strongly suggests that their DP_{NOM} is an internal argument, and that these constructions are unaccusative. Even though our arguments depend on certain properties of German (see A above), the null-hypothesis certainly is that if the constructions in (1b-3b) can be found in other languages where they show exactly the same morphology and semantics, they should be based on the same configuration.

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Norvin Richards & Coppe van Urke
(Massachusetts Institute for Technology) Sunday 9:00

On the architecture of long-distance extraction: Evidence from Dinka

Summary: Recent work by Rackowski and Richards (2005) on Tagalog and Den Dikken (2009, 2012) on Hungarian shows that agreement between *v* and CP is necessary to establish long-distance extraction. These authors develop proposals in which this agreement allows *v* to probe into the CP phase, thereby doing away with the need to postulate intermediate movement to Spec-CP.

In this paper, we present novel data from the Nyarweng dialect of Dinka (Nilo-Saharan, South Sudan) bearing on this issue. Dinka is remarkable in being sensitive to long-distance extraction in a variety of ways. We demonstrate that Dinka provides strong support for the idea that long-distance dependencies make use of movement through intermediate Spec-CPs, contra Rackowski and Richards (2005) and Den Dikken (2009, 2012). Intriguingly, Dinka at the same time offers evidence that CPs that are extracted from must stand in an Agree relation with *v*, just as these authors propose. As such, we argue for a modification of Rackowski and Richards (2005), in which both intermediate movement to Spec-CP and Agree between *v* and the embedded CP are necessary steps in establishing a long-distance dependency.

Dinka EPP positions: Dinka has two positions that have the EPP property, in that they must be occupied (for expository convenience, these are boxed throughout). The first of these is Spec-CP, as Dinka is V2 in both main and embedded clauses:

(1) a. [Bòl] a-cí ɣɔ̀t yík Dɛ̀ŋ bâai.
Bol 3SG-PRF house build Deng village
'Bol built a house for Deng in the village'

b. [Bâai] a-cí Bôl ɣɔ̀t yík Dɛ̀ŋ.
village 3SG-PRF Bol.GEN house build Deng

The second such position is in the verbal domain, just before the main verb if an auxiliary is present, which we take to be Spec-*v*P. This position must be filled by a VP-internal DP argument, if possible:

(2) a. ɣɛ̀n cí [Ayén] yiɛ́n kitàp.
I PRF Ayen give book
'I gave Ayen a book.'

b. ɣɛ̀n cí [kitàp] yiɛ́n Ayén.
I PRF book give Ayen

c. *ɣɛ̀n cí [____] yiɛ́n Ayén kitàp.
I PRF give Ayen book

Effects of successive-cyclicity: These positions are sensitive to successive-cyclic Ā-movement in two ways:

- ***Empty edge positions:*** There is a systematic exception to the generalization that Spec-*v*P and Spec-CP must be occupied. If extraction takes place across them, both positions must instead be empty (3a–b). We take this as evidence that these are *edge positions*, which extraction uses as intermediate landing sites, behavior we attribute to the effects of phase impenetrability:

(3) a. Yàar a-cí [Dɛ̀ŋ] lɛ́k, [yè [Ból] a-cí [Ayén] tuɔɔc wút].
Yaar 3SG-PRF Deng tell C Bol 3SG-PRF Ayen send cattle.camp.LOC
'Yaar told Deng [that Bol sent Ayen to the cattle camp].'

b. Yeŋà cí Yâar [____] lɛ́k Dɛ̀ŋ, [yè [____] cí Bôl [____] tuɔɔc wút]?
who PRF Yaar.GEN tell Deng C PRF Bol.GEN send cattle.camp.LOC
'Who did Yaar tell Deng [that Bol sent to the cattle camp]?'

- ***Plural clitic stranding:*** The second way in which extraction affects these positions is by way of the plural clitic *ke*, which plural DPs leave in each Spec-*v*P along the path of movement:

(4) Yèyîŋà ye [*(ké)] tàak [[____] cîi Bôl [*(ké)] tíŋ]?
who.PL AUX.2SG PL think PRF.3SG Bol.GEN PL see
'Who all do you think Bol saw?'

Adjunct extraction: The behavior of adjunct extraction is more complicated. As (5) shows, extracted adjuncts fail to empty the Spec-*v*P along its path, but do leave a plural *ke*:

(5) Ye bɛ̀ɛi kò cí nyankái [*(ké)] [wanmáth] tuɔɔc thín?
Q villages which PRF sister PL brother send there
'Which villages did my sister send my brother to?'

As binding data shows that such adjuncts are generated in a position c-commanded by objects of the verb, we propose that adjuncts move through Spec-*v*P, leaving a plural clitic, but do not empty this position.

Rather, we invoke the condition on the *v*P EPP position described in (2) above: this position must be occupied by a DP. We posit two movement-driving features on *v*, one associated with uφ and the other with successive-cyclic movement. When a DP is *wh*-extracted, both features are satisfied by the DP, and the *v*P edge position is left empty, as in (3); when a non-DP is *wh*-extracted, the two features must be satisfied by different specifiers, and *wh*-movement fails to empty the *v*P edge position, as in (5).

A puzzle in long-distance extraction: We have seen that adjunct extraction cannot empty the Spec-*v*P of its clause (5). Long-distance extraction of adjuncts, however, does empty Spec-*v*P in higher clauses:

(6) Yétenô cí Yâar ____ lɛ̈k Dɛ̀ŋ, [yè ____ cí Bôl Ayén tuɔ̀ɔc]?
where PRF Yaar.GEN tell Deng C PRF Bol.GEN Ayen send
'Where did Yaar tell Deng [that Bol sent Ayen]?'

The role of complement clauses: We will suggest that this difference arises because of the role the embedded CP plays in long-distance extraction. We will first show that CPs in Dinka are also able to fill edge positions. The verb *lɛ̈k* 'tell' can take two objects, which are like the objects in (2); one must fill Spec-*v*P:

(7) a. Bòl a-cí Dɛ̀ŋ lɛ̈k akókôl.
Bol 3SG-PRF Deng tell story
'Bol told Deng a story.'
b. Ból a-cí akókôl lɛ̈k Dɛ̀ŋ.
Bol 3SG-PRF story tell Deng
c. *Bòl a-cí ____ lɛ̈k Dɛ̀ŋ akókôl.
Bol 3SG-PRF told Deng story

When the same verb takes a clausal complement, however, the *v*P and CP edges may be left empty:

(8) a. Bòl a-cí Dɛ̀ŋ lɛ̈k [Ayén a-cí kitàp ɣòoc].
Bol 3SG-PRF Deng tell Ayen 3SG-PRF book buy
'Bol told Deng [that Ayen bought a book].'
b. Bòl a-cí ____ lɛ̈k Dɛ̀ŋ [Ayén a-cí kitàp ɣòoc].
Bol 3SG-PRF tell Deng Ayen 3SG-PRF book buy
c. ____ a-cí Bôl ____ lɛ̈k Dɛ̀ŋ [Ayén a-cí kitàp ɣòoc].
3SG-PRF Bol.GEN tell Deng Ayen 3SG-PRF book buy
d. *____ a-cí Bôl Dɛ̀ŋ lɛ̈k [Ayén a-cí kitàp ɣòoc].
3SG-PRF Bol.GEN Deng tell Ayen 3SG-PRF book buy

We take the well-formedness of (8b–c) as evidence that the edge positions are occupied by the complement CP itself, which then extraposes to final position. The ill-formedness of (8d) demonstrates that Spec-CP is occupied via successive-cyclic movement from inside *v*P; if Spec-CP is to be emptied by the clause, the clause must extract via the edge of *v*P, emptying that position as well. These facts about clausal complementation suggest an explanation for the empty *v*P position in the matrix clause of (6); this position is occupied, not by the extracted phrase (which, as (5) shows, does not empty Spec-*v*P), but by the complement clause itself. The complement CP apparently must move to Spec-*v*P if extraction from it is to take place.

Locality and phasehood: Dinka then also exhibits the restriction that Rackowski and Richards (2005) and Den Dikken (2009, 2012) propose: extraction from CP requires *v* to Agree with CP (in Dinka, this Agree relation triggers movement of CP to Spec-*v*P). We depart from these works (which predict, incorrectly for Dinka, that extraction takes place only via Spec-*v*P, and not via Spec-CP), however, in how we derive this requirement. We propose that Agree between *v* and CPs that are extracted from is necessary because such CPs act as interveners for *wh*-probing (as these CPs themselves carry a *wh*-feature, to attract the *wh*-phrase, Preminger 2011). This proposal is to be understood together with the principle, defended in Rackowski and Richards (2005), that once a Probe has Agreed with a Goal α, it is free to ignore α in further probing. This means that Agree between *v* and CP allows *v* to ignore CP as an intervener, letting *v* target the *wh*-phrase.

In addition to this, we assume, following much work, that *wh*-extraction must take place via the edges of CP and *v*P, in order to escape phase impenetrability (e.g. Chomsky 2001). The Dinka facts provide new support for this conclusion, and also for the additional condition on extraction posited by Rackowski and Richards (2005); to escape a phase, not only must a *wh*-phrase move to the phase's edge, but the phase must itself be Agreed with by the higher Probe which is responsible for moving the *wh*-phrase.

Selected references: Dikken, Marcel den. 2012. On the strategies for forming long A′-dependencies: Evidence from Hungarian. CUNY, Ms. - Rackowski, Andrea, and Norvin Richards. 2005. Phase edge and extraction: A Tagalog case study. *Linguistic Inquiry* 36: 565–599.

Jelena Runic (University of Connecticut)

Poster Session II
Saturday 4:00 - 5:30

A NEW LOOK AT ARGUMENT ELLIPSIS: EVIDENCE FROM SLAVIC

Major Claim – The Argument Ellipsis Analysis has been quite prominent in the work on Japanese null arguments. Thus, a number of authors have argued in one way or another that null subjects and objects in Japanese are best analyzed as involving ellipsis rather than null pronouns (Saito 2007, Takahashi 2008, among many others). To illlustrate, if the null object in (1b) is preceded by (1a), then the null object in (1b) is ambiguous between strict interpretation (meaning Hanako hates his (=Taro's) mother) and sloppy interpretation (meaning Hanako hates her own mother):

(1) a. Taro-wa zibun-no hahaoya-o aisiteiru. [Şener & Takahashi 2010: 79]
Taro-NOM self-GEN mother-ACC love
'lit. Taro loves self's mother.'
b. Hanako-wa ***e*** nikundeiru.
Hanako-TOP hates.
'Hanako hates *e*.'

According to the above authors, (1b) cannot be analyzed as an empty pronoun because an overt pronoun in this position can achieve only strict interpretation. In this talk, I present data from Slavic, which challenge the argument ellipsis analysis. The major piece of evidence comes from the fact that clitics are overt, yet can obtain both strict and sloppy interpretation. I will argue that clitics are predicates of the type <e, t>, achieving semantic variability through type shifting operations. Finally, I will propose a unified analysis of Tomioka's (2003) analysis of Japanese null arguments and clitics in Slavic.

Data and Analysis – Franks (in press) notes that the sloppy reading of clitic pronouns is ocassionally allowed in Slovenian and Serbian/Croatian (SC), as illustrated by Slovenian in (2):

(2) Stane je videl **plav avto** in tudi Tone **ga** je videl. [Franks *in press*, Slovenian]
Stane AUX.3SG saw blue car and also Tone it AUX.3SG saw
'Stane saw a blue car and Tone saw **it/one** too.'

The clitic *ga* in the second conjunct can have a strict reading (in other words, Stane and Tone saw the same blue car). Nevertheless, the clitic *ga* can get a sloppy reading as well (in other words, Stane and Tone may have seen two different blue cars). All my consultants in SC (13 in total) allow sloppy reading in (3b) given an appropriate context (3a).

(3) *a.* <u>The context for sloppy indefinite reading</u>:*Nikola and Danilo are best friends. They have many interests in common except their taste for movies is completely different. Specifically, Nikola likes comedies, whereas Danilo likes horror movies. In their town, a movie festival of all film genres takes place every summer. A comedy and a horror movie played at the same time in two different buildings. Given their very different tastes, Nikola and Danilo saw two different movies.*
b. Nikola je vidio **film**, a vidio **ga** je i Danilo. [SC]
Nikola AUX.3SG saw film and saw it.CL.ACC AUX.3SG and Danilo
'Nikola saw a movie and Danilo saw **it/one** too.'
c. Nikola vide **(eden) film**, a i Danilo **go** vide. [Macedonian]
Viktor saw a film and Dimitar it.CL.ACC saw
'Nikola saw a movie and Danilo saw **it/*one** too.'

Furthermore, sloppy reading in SC is possible with both indefinite antecedent (3b) and definite/pronominal-containing antecedent (4) (the context for (4) is missing due to space limitations)

(4) Nikola je pozvao **(svoju) djevojku** na slavu, [SC]
Nikola AUX.3SG invited his girlfriend on slava
a pozvao **ju** je i Danilo.
and invited her.CL.ACC AUX.3SG and Danilo
'Nikola invited his girlfriend to the slava (family patron's day) and Danilo invited **her/his (=Danilo's) (girlfriend)** too.'

Crucially, I show that there is a principled cross-linguistic variation in this respect. Thus, the semantic freedom of clitics is banned in Macedonian (3c) even under the appropriate scenario (3a) ((4) is also disallowed in Macedonian under sloppy interpretation), as confirmed by all my consultants (six in total).

In Macedonian, the clitic can have only strict interpretation (3c), as illustrated by the English translation 'it.' Additionally, I show that the sloppy reading of clitics is not available in Bulgarian, Spanish, French, and Italian, whereas it is allowed in SC, Slovenian, Czech, and Slovak (only SC and Macedonian are used for illustration). This leads me to propose a new descriptive generalization: article-less languages allow a sloppy interpretation under the context in question, whereas article language disallow it. I then connect the semantic variability of clitics in article-less languages with the semantic freedom that full determiner-less NPs enjoy. Consider (5) in which the argument 'djevojku' in SC can obtain a variety of meanings, depending on the context:

(5) Milan je vidio **djevojku**. [SC]
Milan AUX.3SG saw girl
'Milan saw a girl/the girl/his girl(friend).'

Such semantic variability is achieved through type-shifting operations allowed only in article-less languages, as in (6):

(6) For any type shifting operation τ and any X: $*\tau$ (X) if there is a determiner D such that for any set X in its domain, D (X) = τ (X) (Blocking Principle, Type Shifting as Last Resort) (Chierchia (1998: 360))

It has been argued that full NPs in Slavic article-less languages do not project a DP layer based on a number of generalizations (Bošković 2008). In line with this, I claim that clitics are also NPs in article-less languages, not DPs. I propose that, like NPs, clitics are predicates of the type <e, t> and that they can obtain a sloppy reading via two semantic operations: Existential Closure (Heim 1982) and Type Shifting (of a predicate to an individual (cf. Partee (1987)). A somewhat similar analysis was proposed for Japanese null arguments by Tomioka (2003), who notes that, unlike English pronouns, Japanese null arguments can achieve sloppy interpretation with both definite and indefinite antecedent. Given the parallelism between clitic pronouns in article-less Slavic languages and Japanese null arguments, I propose a unified account of the two based on Tomioka's (2003) analysis of Japanese null arguments; that is, I propose a compositional analysis of clitics in article-less languages, as in (7a) for sloppy indefinite (cf. (3b)) and (7b) for sloppy definite readings (cf. (4)):

(7a) *Sloppy indefinite reading*: Via ∃-Closure	(7b) *Sloppy definite reading*: Via Iota
Input LF: $[_{IP}$ Danilo$_2$ $[ga_3]_1$ $[t_2$ saw $t_1]]]$ $\exists$ $[_{VP}$ $[ga_3]_1$ $[_{VP}$ t_2 saw $t_1]]$ $[t_2$ vidio $t_1]^g$ = saw (g(1)) (g(2)) Assume g:= [3 → λy. film (y)] $[[ga_3]]^g$ = λy. film (y) $[[$ $[ga_3]_1$ $[t_2$ vidio $t_1]]]^g$ = λx. $[[ga_3]]^g$ (x) = 1 & $[[$ 1 $[t_2$ vidio $t_1]$ $]]^g$ (x) = 1 $[[$ 1 $[t_2$ vidio $t_1]$ $]]^g$ = λz. g(2) saw (z) λx. [λy. film (y) (x) = 1 & [λz. saw (z) (g(2))](x) = 1] λx. [film (x) & saw (x) (g(2))] ∃ ([[ga_1 $[t_2$ saw $t_1]]]$g)= ∃x [film (x) & saw (x) (g(2))]	Input LF: $[_{IP}$ Danilo$_2$ $[ju_3]_1$ $[t_2$ invited $t_1]]]$ Assume g: = [3 → λy. girlfriend (y) (g(2))] $[[ju_3]]^g$ = λy. girlfriend (y) (g(2)) iota ($[[ju_3]]^g$) = ιy. [girlfriend (y) (g(2))] $[[VP]]^g$= invited (ιy. [girlfriend (y) (g(2))]) (g(2)) $[[IP]]^g$ = λx. $[VP]^{g\ x/2}$ (Danilo)= = λx.invited (ιy. [girlfriend (y) (x)]) (x) (Danilo) = invited (ιy. [girlfriend (y) (Danilo)]) (Danilo)

Conclusions – Clitics behave differently in terms of their interpretation depending on the presence/absence of articles in a language – only clitics in article-less languages have a variety of interpretations. Overall, I argue that the presence/absence of D is responsible for these differences and propose a unified account of the availability of certain readings of clitics and null arguments.

Selected references: Bošković (2008). What will you have, DP or NP? In *Proceedings of NELS* 37. **Chierchia (1998).** Reference to Kinds across Languages. *Natural Language Semantics* 6: 339-405. **Franks (in press).** The Slovenian Orphan Accusative, Empty Pronouns and Noun Phrase Structure. In Schürcks, L. et al. (eds.). **Şener & Takahashi (2010).** Ellipsis of Arguments in Japanese and Turkish. *Nanzan Linguistics 6*, 79-99. **Tomioka (2003).** The semantics of Japanese null pronouns and its cross-linguistic implications. In Schwabe,K. & S. Winkler (eds.), pp. 321-339.

Philippe Schlenker
(Institut Jean-Nicord, CNRS & New York University)
& Jonathan Lamberton

Saturday 10:45

Iconic Variables in ASL and LSF

Goals: We argue that some sign language loci (i.e. positions in signing space that realize discourse referents) are *both* formal variables and simplified representations of what they denote; in other words, they are simultaneously logical symbols and pictorial representations. We develop a 'formal semantics with iconicity' that can account for their dual life; the key idea is that some geometric properties of signs must be preserved by the interpretation function. We thus seek to reconcile insights from the 'formalist camp', which emphasizes the similarity between loci and formal indices (e.g. Lillo-Martin and Klima 1990), and insights from the 'iconic camp', which emphasizes iconicity (e.g. Liddell 2003).

Methods: Our initial data were collected from native ASL and LSF signers (Deaf children of Deaf, signing parents) using the 'playback method', whereby controlled paradigms are signed on a video and later assessed (comparatively, and iteratively) on 7-point scale by the same and/or by different signers.

[1] Structural Iconicity: The simplest instance of an iconic constraint concerns plural ASL and LSF loci, usually realized as circular areas. These can be embedded within each other, and we hypothesize that this gives rise to cases of *structural iconicity,* whereby topological inclusion in signing space is mapped into mereological inclusion of the denotations. We study 'complement set anaphora', as in (1):

(1) ?Few / #Most students came to class. They [*intended*: the students who didn't come] stayed home instead.

Complement set anaphora (whereby *they* in (1) is read as referring to the students that did *not* come) is limited (with *few*) and impossible (with *most*)*;* Nouwen 2003 argues that when it is available, complement set anaphora involves *inferred* discourse referents: no grammatical mechanism makes available a discourse referent denoting the complement set – here: the set of students who *didn't* come; by contrast, a discourse referent does denote the students that *did* come. We make two claims: ***Claim I***. When a default plural locus is used in ASL, data similar to (1) can be replicated – e.g. complement set anaphora with *most* is quite degraded [= (2)b]. ***Claim II***. When embedded loci are used, the effect is circumvented: one large locus (written as *ab*, but signed as a single circular locus) denotes the set of all students; a sub-locus (= *a*) denotes the set of students who came; and a complement locus (= *b*) thereby becomes available, denoting the set of students who didn't come (=(2)a) (averages over 5 trials and 3 informants; 1st rating: average over trials; 2nd rating: over informants; LSF data are similar).

(2) a. Obviating the deviance of compset anaphora
Context: I teach a linguistics class at NYU.
a. $\boxed{\textbf{6.7 [6.5]}}$ POSS-1 STUDENT **IX-arc-ab** FEW **IX-arc-a** a-CAME. **IX-arc-b** b-STAY HOME
b. $\boxed{\textbf{6.3 [5.8]}}$ POSS-1 STUDENT **IX-arc-ab** MOST **IX-arc-a** a-CAME. **IX-arc-b** b-STAY HOME

b. Replicating the deviance of compset anaphora
$\boxed{\textbf{3.6 [3.6]}}$ POSS-1 STUDENT FEW **a**-CAME CLASS. **IX-arc-a** a-STAY HOME
d. $\boxed{\textbf{2.8 [2.7]}}$ POSS-1 STUDENT MOST **a**-CAME CLASS. **IX-arc-a** a-STAY HOME
'Few/Most of my students came to class. They stayed home.'
(Inf 1, 8, 225; 8, 226; 8, 285; 8, 300; 8, 305; 8, 348)

We account for Claim I and Claim II by assuming that (i) Nouwen is right that in English, *as well as ASL and LSF*, the grammar *fails* to make available a discourse referent for the complement set, i.e. the set of students who didn't come; but (ii) the mapping between plural loci and mereological sums preserves relations of inclusion and complementation, which in (2)a makes available the locus *b*:

(3) Let LOC be the set of plural loci that appear in signing space, and let s an admissible assignment function that assigns values to loci. We make the assumptions in (a)-(b), where we view plural loci as sets of geometric points, and loci denotations as sets of individuals.
a. Conditions on LOC: for all a, b $\in$ LOC, (i) a $\subseteq$ b or b $\subseteq$ a or a $\cap$ b = $\emptyset$; (ii) if a $\subset$ b, (b-a) $\in$ LOC
b. Conditions on s: for all a, b $\in$ LOC, (i) a $\subset$ b iff s(a) $\subset$ s(b); (ii) if a $\subset$ b, s(b-a) = s(b)-s(a)

If *a* is a proper sublocus of a large locus *ab*, we can infer by (3)a(ii) that *(ab-a)* (i.e. *b*) is a locus as well; by (3)b(i), that s(a) $\subset$ s(ab); and by (3)b(ii), that s(b) = s(ab)-s(a). Complement set anaphora becomes available because ASL/LSF can rely on an iconic property which is inapplicable in English.

[2] Locus-external iconicity: Under restricted conditions, loci can be introduced high or low in signing space, to refer to entities that are tall/powerful/important or short. Importantly, the inferences are preserved with pronouns (*IX-a* in (4)) embedded under negation; we treat them as presuppositions.

(4) YESTERDAY IX-1 SEE R [= body-anchored proper name]. IX-1 NOT UNDERSTAND IX-a$^{\text{high / normal / low.}}$
Inferences: high locus – R is tall, or powerful/important; normal locus: nothing special; low locus: R is short

We take height specifications to have the same kind of presuppositional semantics as gender features (Cooper 1983), but with an iconic component, as seen in (5) (the crucial presupposition is in bold).

(5) Let c be a context of speech, s an assignment function and w a world (c_w = world of c). If *i* is a locus, n is a locus with neutral height, h is a measure of the heights of loci in signing space, $h_c(c_w)$ is a measure of height denotations in c_w given by the context c, and $\alpha_c > 0$ is a parameter given by the context c. Then: $[\![\text{IX-i}]\!]^{c,s,w}$ = # iff s(i) = # or $\mathbf{|i - n| \neq 0}$ **and** $\mathbf{h_c(\boxed{c_w})(s(i)) - h_c(\boxed{c_w})(s(n)) \neq \alpha_c(h(i) - h(n))}$. If $[\![\text{IX-i}]\!]^{c,s,w} \neq$ #, $[\![\text{IX-i}]\!]^{c,s,w}$ = s(i).

The part in bold requires that the height difference between the denotations in c_w of s(i) and s(n) be proportional to the height difference between the loci i and n, with a multiplicative parameter $\alpha_c > 0$. Importantly, the height of denotations is assessed relative to the world $\boxed{c_w}$ of the context: the presupposition is indexical, as is that triggered by *she* in English: in (6), *she* is can *only* be read *de re*.

(6) Bill wore a dress and make-up and John didn't realize that he was a man. He said that he/#she looked great and that he/#she was staring at him. (Sharvit 2008)

[2.1] We tested this prediction in ASL: in both (7)a-b, the height presupposition triggered by *IX-b*^{high} is satisfied with respect to my cousin's beliefs, but only in (7)b is it satisfied in c_w – and hence acceptable.

(7) POSS-1 COUSIN IX-a (a) WRONGLY THINK [scores: 3 3 3] / (b) KNOW [scores: 7 7 7]
POSS-1 YOUNG BROTHER TALL. IX-a THINK IX-b^{high} BASKETBALL PERSON.
'My cousin (a) wrongly thinks (b) knows that my younger brother is tall. He thinks he is a basketaball player.'

[2.2] We also tested the iconic component of (5) in ASL by varying the position of the denotations:

(8) *Context:* People seek self-knowledge in the weirdest of situations.
YESTERDAY VERY TALL PHILOSOPHER PERSON (a) CL-stand$_a$ (b) CL-sit$_a$ (c) CL-lie$_a$ PARK.
SUDDENLY IX-a$^{high\ /\ normal\ /\ low}$ UNDERSTAND IX-a$^{high\ /\ normal\ /\ low}$ / SELF-a$^{high\ /\ normal\ /\ low}$
'Yesterday a very tall philosopher was (a) standing (b) sitting (c) lying in the park. Suddenly he understood him / himself.'

IX-a / *SELF-a* targeted three different heights: high, normal, low. In all cases, *IX-a* was dispreferred, as this is a configuration of local binding which requires a reflexive pronoun. Within the *SELF-a* examples, high loci were possible in the 'standing' condition, less so in the 'sitting' condition, and degraded in the 'lying' condition. In other words, *SELF-a* behaves in this case as an 'iconic reflexive'.

[3] Locus-internal iconicity: Despite many disagreements, Liddell 2003 and Lillo-Martin & Meier 2011 agree that the effects of iconicity are felt with directional verbs, which *target different parts of a locus depending on their meaning* – e.g. Liddell 2003 writes that 'ASK-QUESTION$_{\sim y}$ is directed toward the chin/neck area', while 'COMMUNICATE-TELEPATHICALLY-1$^{[RECIP]}{}_{\sim y}$...is directed toward the forehead'.

[3.1] On an empirical level, we shows (a) that Liddell's claims also hold of donkey and bound pronouns, (ii) both in ASL and LSF, and (iii) that the particular part of a locus which is targeted by agreement *depends on the position (upright or hanging) of the person referred to*. Thus in (9), which involves 'donkey' anaphora, two LSF signers rated 3 possible heights for the agreement component of two verbs; as in ASL, *COMMUNICATE-BY-TELEPATHY* targeted a higher locus than *EXCHANGE-THOUGHTS*.

(9) YESTERDAY LINGUIST$_b$ PHILOSOPHER$_a$ b,a-MEET.
1. b,a-EXCHANGE-THOUGHTS 2. b,a-COMMUNICATE-BY-TELEPATHY
'Yesterday, a linguist and a philosopher met. They 1. exchanged thoughts 2. communicated by telepathy.'

[3.3] As is predicted by an iconic analysis, the preferences were reversed when the body position of the denotations was reversed, as seen for instance in the LSF example in (10):

(10) YESTERDAY TREE BRANCH.
1. LINGUIST CL-hang$_b$ PHILOSOPHER CL-hang$_a$ 2. LINGUIST CL-stand$_b$ PHILOSOPHER CL-stand$_a$
neg_____
EXCHANGE-IDEAS COMMUNICATE-BY-TELEPATHY
'Yesterday a linguist and a philosopher were 1. hanging from / 2. standing on a tree branch. They exchanged ideas but didn't communicate by telepathy.'

An LSF signer assessed three conditions for 1. and 2., with the height targeted by *COMMUNICATE-BY-TELEPATHY* (a) higher than, (b) equal to, or (c) lower than that targeted by *EXCHANGE-THOUGHTS*. In 2., the 'standing' condition, (a) was preferred to (b)-(c), as expected; but in 1., the 'hanging' condition, (c) was preferred to (a)-(b). This suggests that a geometric component must be integrated in the analysis.

[3.3] Following Schlenker 2011, we develop an iconic and presuppositional analysis of as in (11):

(11) For any objects x and y of type e, for any context c, assignment function s, and world w, h is a measure of the heights of loci in signing space, h_c is a measure of height denotations given by the context c, and α_c (> 0) is a parameter given by the context c,
$[\![\text{i-ASK-QUESTIONS-j}]\!]^{c,s,w}(y)(x) = \#$ iff $x = \#$ or $y = \#$ or $s(J) \neq y$ or $s(I) \neq x$ or **<i, I> does not stand in iconic relation R to s(I) in c_w or <j, J> does not stand in iconic relation R to s(J) in c_w.** If $[\![\text{i-ASK-QUESTIONS-j}]\!]^{c,s,w}(y)(x) \neq \#$, $[\![\text{i-ASK-QUESTIONS-j}]\!]^{c,s,w}(y)(x) = 1$ iff x ask questions to y in w.

The iconic component in bold can be specified in different ways for each verb. For *ASK-QUESTIONS*, the boxed part can be elaborated as: *the relative height of i within I is not roughly proportional to the relative height of the chin of s(I) within the body of s(I) in c_w*. For *COMMUNICATE-BY-TELEPATHY,* reference to the 'chin of s(I)' can be replaced with 'forehead of s(I)' to capture Liddell's original insight.

Allan Jay Schwade (University of California, Santa Cruz)

Poster Session II
Saturday 4:00 - 5:30

Modality Matters: What Online Adaptations Can Tell Us About Loanword Adaptation

GOAL: By providing both Russian-English bilinguals and monolingual English speakers with Russian forms containing palatalized consonants and having them spontaneously borrow said forms into English, I show that both phonological and perceptual explanations of loanword adaptation are necessary.

BACKGROUND: A number of theories have been posited in order to account for the differences between source and borrowed forms during loanword adaptation. Two of the most popular models are the PRODUCTION MODEL and the PERCEPTION MODEL. In the production model (Jacobs & Gussenhoven, 2002; Paradis & LaCharite, 2009), differences between source and borrowed forms are attributed to the phonology. More specifically, it assumes that a speaker familiar with the source language, or EXPERIENCED SPEAKER, takes the unspoken surface representation of a source word and uses it as the input to the borrowing phonology. For example, the English name 'Bob' was borrowed into Japanese as 'Bobu'. According to the production model, this occurred because a Japanese-English bilingual took the unspoken surface form [bɒb] from their English phonology and inputted it to their Japanese phonology, which yielded [bobɯ].

In the perception model (Silverman 1992; Peperkamp, Vendelin and Nakamura, 2008; Boersma and Hamann, 2009), differences between source and borrowed forms are attributed to the perceptual system. More specifically, it assumes that the phonetic decoder of a speaker unfamiliar with the source language, or NAÏVE SPEAKER, parses the acoustic form of a source word using available phonetic categories. Since some non-native words will contain spectral configurations that the listener has no experience with, the listener will map these configurations to the closest phonetic equivalent that they possess. For example, the French word for cosmetic blush is [ʁuʒ] but was borrowed into English as [ɹuʒ]. According to the perception model, the uvular fricative [ʁ] was borrowed as the alveolar approximant [ɹ] because [ʁ] is psychoacoustically more similar to [ɹ] than any other phone in English.

"CONFLICTING" PROPOSALS: The proponents of each model often seek to discredit the opposing approach using various adaptation patterns. For instance, using a corpus of English loans in Mandarin, Paradis and Trembley (2009) argue that a perception-based approach cannot explain why English unaspirated stops are adapted as aspirated by Mandarin speakers (e.g. '*hippies*': hɪ.**p**iz > si.**p^{h}**iʂ). If adaptation occurs in perception, their decoder should have faithfully parsed the unaspirated stop as unaspirated given that plain and aspirated stops are contrastive in Mandarin. Conversely, Peperkamp (2004) argues that the production account cannot predict why coda nasals in French loans in Japanese are geminated and followed by an epenthetic vowel while coda nasals in English loans are not (e.g. '*piscine (Fr.)*' pisin > pi.si**nːɯ** vs. '*screen (Eng.)*' skɹin > sɯ.kɯ.ri:**N**). The [n] in both source forms occurs in identical environments yet is adapted differently, challenging the notion of a stable synchronic phonology.

Although the major difference between both models is the locus of adaptation (i.e. the phonology vs. the decoder), another fundamental difference between the two is the assumed experience the adapter has with the source language (i.e. whether an experienced speaker or naïve speaker is doing the adapting). While it has been argued that experienced speakers are the major source of adaptations (Paradis and LaCharite, 1997), naïve speakers are certainly capable of adapting non-native forms as well. If both experienced and naïve speakers are capable of adapting words, then there exists the possibility that there are two types of loans, ones that are perception-based and ones that are production-based. The idea that two types of

loans exist has been proposed before (Rose, 1997), although such proposals are general dismissed as 'ad hoc' (Peperkamp, 2004) or 'in doubt' (Paradis and LaCharite, 2008). However, if there are in fact two types of loans, then proposals disregarding the distinction are lacking, since they would fail to capture one type of adaptation. While there is no way of knowing if an experienced or naïve speaker adapted an established loanword, we can have both groups adapt words on-the-spot. By comparing the on-the-spot adaptations of naïve and experienced speakers for the same set of words, it is possible to see if only one or both models are necessary.

ADAPTING PALATALIZED CONSONANTS: Two on-the-spot or online adaptation tasks were carried out to see how Russian-English bilinguals and monolingual English speakers adapted words containing palatalized consonants. Words with palatalized consonants were chosen because they have robust coarticulatory effects that are only expected to surface in the adaptations of those dependent on the acoustic form--- that is, the adaptations of monolingual English speakers. To elaborate, when palatalized consonants are produced, the tongue body is fronted and raised towards the hard palate (Kochetov, 2002). In velar and coronal stops, this fronting and raising creates a great degree of constriction at the hard palate which leads to affrication (Padgett, 2003). Thus, when presented with palatalized coronal or velar stops, we would expect monolingual English speakers to adapt them as affricates (e.g. t^j > tʃ). Russian-English bilinguals on the other hand would not be expected to adapt such segments as affricates since they know the segments are underlyingly a stop.

METHODOLOGY: In accordance with the perception model, the monolingual English speakers were presented with words containing palatalized stops auditorily and asked to repeat the words aloud in an American English accent or "Americanize" them. Each word contained at least one palatalized stop, which always appeared in the onset of a stressed syllable. The participants had four different opportunities to adapt the words during the experiment. The four tokens for each word came from two native speakers of Russian, who each provided two repetitions. The tokens were RMS normalized.

Eliciting adaptations proved to be more complicated for the Russian-English bilinguals since the production model claims that experienced speakers access the unspoken surface representation of a source form. In order to get them to access such a form, pictures were used. After being presented with the picture for a word, the bilinguals were asked to silently think of the word before saying it aloud in an American English accent. The images used were thoroughly vetted online using Mechanical Turk to ensure they elicited the target words.

RESULTS: Preliminary results show that although monolinguals adapt the palatalized consonants as plain a majority of the time, they also borrow them as affricates. On the other hand, bilinguals always adapt palatalized consonants as plain and never as affricates.

DISCUSSION AND CONCLUSION: Since the monolinguals were sensitive to the coarticulatory effects of palatalized stops during adaptation while the bilinguals were not, it would appear that the perception model makes the correct predictions for the adaptations of monolingual speakers and the production model for bilingual speakers. Given that monolingual English speakers and Russian-English bilinguals borrowed forms differently, a hybrid version of the perception and production models appears necessary.

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Partial Control, inflected infinitives and defective intervention

Partial Control (PC), of the kind seen in (1), presents a non-trivial problem for the Movement Theory of Control (MTC):

(1) John$_i$ would prefer PRO$_{i+}$ to separate

As Landau (1999, 2000, 2003, 2004) has argued at length, PC patterns with Exhaustive Control (EC) in being sensitive to locality/island conditions, in yielding only a sloppy reading under ellipsis and functioning as a bound variable - the diagnostics used by Hornstein (1999) et seq. to argue that EC involves movement. Unlike EC, however, PC cannot easily be analysed as movement as the connection between controller and controllee is a non-exhaustive subset-superset relation wholly untypical of A-chains. There is no partial raising/passivisation, notably. In this paper I discuss apparent examples of PC in European Portuguese (EP) with both inflected and uninflected infinitives and argue that they shed important light on the PC problem. While Boeckx, Hornstein and Nunes' (2010) (BHN) covert commitative approach provides a plausible account of PC with uninflected infinitives in EP, this analysis does not extend to PC with inflected infinitives. These data, moreover, are also problematic for Landau's (2000, 2004) Agree-based approach, and Rodrigues' (2007) subextraction account. A new analysis is put forth whereby PC arises where a thematic head establishes an Agree relation with a DP in its c-command domain but that DP cannot move to raise to receive a theta-role as it already bears Case. As such, PC can be viewed as a kind of defective thematic intervention, in the sense of Chomsky (2000).

Virtually all EP speakers tested permit PC with uninflected infinitives in tensed non-finite complements, as per Landau's (2000) PC-generalisation. Thus desiderative verbs like *preferir* 'prefer' permit PC whereas implicative verbs like *conseguir* 'manage' disallow it:

(2) The PC-generalization

In tensed complements, PRO inherits all phi-features from the controller, including semantic plurality, but not necessarily semantic singularity.

(3) a. *O Pedro	conseguiu	reunir=se	hoje	de	manhã
the Pedro	managed.3S	meet.INF=self.3	today	of	morning
b. O João	preferia	reunir=se	às	6.	
the João	preferred	meet.INF=self.3	at.the	6	

Examples like (3b) have the properties of OC (being subject to locality (4) and yielding a sloppy reading under ellipsis for example, hence the condition B violation in (5)):

(4) *O Pedro	acha	que	eu	preferia	reunir=se	mais cedo
the Pedro	believes that		I	preferred	meet.INF=self.3	more early

'Pedro$_i$ believes that I would prefer PROi+ to meet earlier on.'

(5) *O João preferia reunir=se de manhã, e a Maria$_i$ também preferia (mas sem ela$_i$).
the João preferred meet.INF=self.3 of morning, and the Maria also preferred (but without her)
'João$_i$ would prefer PRO$_{i+}$ to meet in the morning and so would Maria (but without her).'

There are, nonetheless, several reasons to believe that such examples are not true instances of PC but rather involve a covert commitative of the kind discussed by BHN.

(6) The chair$_i$ hoped [PRO$_i$/t$_i$ to meet *pro*$_{commitative}$ at 6]

While (6) is actually problematic for English, for various reasons, examples like (3b) in EP are plausibly instances of EC, derived via movement, with a covert commitative creating the mirage of PC. Firstly, unlike 'true PC', 'fake PC' examples such as (3b) are universally accepted. Secondly, they are compatible with restructuring for many speakers, unlike true PC (cf. Landau 2000: 80). Thirdly, a covert commitative analysis is the only way to reconcile the syntactic and semantic properties of PRO in such cases. The reflexive clitic always agrees for person and number with its antecedent, in line with Landau's PC-generalisation:

(7) a. Eu	preferia	reunir=me	mais tarde.	
I	preferred.1SG	meet.INF=self.1SG	more late	

'I preferred/would prefer to meet later on.'

b. *Eu	preferia	reunir=nos	às	3
I	preferred.1SG	meet.INF=self.1PL	at.the	3
c. *Eu	preferia	reunir=se	mais tarde	
I	preferred.1SG	meet.INF=self.3	more late	

Crucial to Landau's (2000, 2004) Agree-based analysis is the idea that PC results from a mismatch between the syntactic *singularity* and semantic *plurality* of PRO. Further EP data show, however, that there is more to PC than this mismatch in semantic plurality. In fact, in instances of fake PC in EP, PRO can receive a reading wholly distinct from its syntactic phi-specification, both in terms of number *and* person:

(8) Preferias reunir=te mais tarde?
prefer.2SG meet.INF=self.2SG more late
i. 'Would you prefer PRO_{2PL} to meet later on?'
ii. 'Would you prefer PRO_{1PL} to meet later on?'

(9) O João preferia reunir=se às 6.
the João preferred.3SG meet.INF=self.3 at.the 6
i. 'João would prefer PRO_{3PL} to meet at 6.'
ii. 'João would prefer PRO_{1PL} to meet at 6.'

In both cases, the reading under (ii), whereby the speaker is included in the referent of PRO, cannot be derived from a mismatch in semantic/syntactic plurality alone. It can be derived, however, from the presence of a null first person commitative. Finally, there is a very close match in EP between those verbs which can surface with a *com*P complement and those permitting PC (unlike in English).

Interestingly, many EP speakers (around half those surveyed) also permit what looks like PC with inflected infinitive complements (cf. also Modesto 2010 on Brazilian Portuguese and Rodrigues and Hornstein 2011 for a critique):

(10) %Eu preferia reunirmo=nos mais tarde.
I preferred.1SG meet.INF.1PL=self.1PL more late
'I would prefer to meet later on.'

This second phenomenon appears to be a true instance of PC, hence its more variable status and the fact that it is incompatible with restructuring predicates. Here, there is clearly no requirement for the syntactic number *or* person features of the controlled subject to match those of the controller, contrary to Landau's PC-generalisation. All that is required is for the controlled subject to semantically contain the controller:

(11) %O João preferia reunirmo=nos mais tarde.
the João preferred.3SG meet.INF.1PL=self.1PL more late
'$João_i$ would prefer for $us_{i+speaker(+)}$ to meet later on.'

Although there is evidence that the subject of inflected infinitivals is *pro* not PRO (following Raposo 1989: 297, Quicoli 1996: 59), there is nonetheless evidence that such examples involve OC. Crucially, desiderative Control predicates do *not* permit inflected infinitival complements with referential subjects, as Raposo (1987) shows, and so (11) cannot be an instance of accidental co-reference. This is further confirmed by (12), where a condition B violation indicates that *pro* must be partially controlled:

(12) *O $João_i$ preferia reunirem=se sem ele_i
the João preferred.3S meet.INF.3PL=self.3 without him

Examples like (11) also display the properties of OC (e.g. sensitivity to locality, sloppy reading under ellipsis). In such cases, however it is clear that the phi-features of the embedded subject are fully syntactically specified and distinct from those of the controller. In such cases, I argue that the PC relation arises because the thematic head *v* establishes an Agree relation with *pro*, formally valuing its [D:] feature with *pro*'s referential index. However, as *pro* has a valued Case feature, it is defective and cannot raise to merge with *v*. As theta-roles are configurationally determined at LF (essentially theta-roles can be 'assigned' via either external or internal merge), it follows that *pro* cannot receive an additional theta-role from *v*. As such a distinct DP_j must be merged in *v*'s specifier to avoid a thematic crash at LF. This means that at LF the referential index of DP_j must be non-distinct from the referential index of *pro*, yielding PC:

(13) $[_{vP}\ DP_j\ v_{[D:\ i]}\ V\ [pro_i\ T\ldots]\ ]$ where j is non-distinct from i

The case of identity (EC) is ruled out by economy as movement provides a more parsimonious derivation. As such, this defective thematic intervention leads to PC. I provide a tentative extension of this analysis to other languages which either lack PC (Greek, Romanian) or have PC but lack inflected infinitives (English), based on the availability of Case in non-finite clauses.

Microvariation in head-exponent alignment: Finno-Ugric possessive markers

Introduction.This work explores microvariation in the syntactic and semantic status of the possessive suffix in the Finno-Ugric languages of Meadow Mari and Komi Zyryan within a larger enterprise that assumes that what looks like semantically similar exponents might correspond to different functional heads in different languages once distribution patterns are carefully examined (Borer 2005, Wiltschko 2008, Butler to appear a.o.). I address the problem of the so called "definite" uses of possessive suffixes, attested cross-linguistically (Fraurud 2001 for an overview), arguing that these suffixes realize different functional heads in Mari and Komi.

Systematically, the 3rd person singular possessive suffix, 3SG, that on its "proper possessive" use head-marks ϕ-features of the possessor, (1), attaches to nouns in the absence of either an expressed or implicit possessor, (2).

(1) üdər-ən ača-**že**
girl-GEN father-3SG
'(the/a) girl's father' [Mari: proper possessive use]

(2) Pərəs den pij-əm uža-m. Pij-**(že)** optalt-əš.
cat and dog-ACC see-PRS.1SG dog-(3SG) bark-NARR
'I see a dog and a cat. The dog starts barking.' [Mari: definite use]

I show that "definite" uses of 3SG are licensed under different conditions in Komi and Mari, in contrast to the discussions in the literature which consider Finno-Ugric languages that feature "polyfunctionality" of 3SG a homogeneous group in this respect (Fraurud 2001, Kuznetsova 2003, Gerland 2011). I argue that 3SG realizes a single head Poss in Komi, whereas in Mari it realizes a discourse-linked head in the left-periphery of the extended nominal projection *and* a Poss head. I thus propose a solution to a long-standing debate about whether 3SG is a developing definite article (Garland 2011 for discussion) or whether "definite" uses are in some way semantic extensions of possessive use proper (Fraurud 2001, Kuznetsova 2003). I argue that, methodologically, we have to look at distributional patterns in each Finno-Ugric language *separately*, and, theoretically, allow for a marker to be an exponent of different functional heads in different languages.

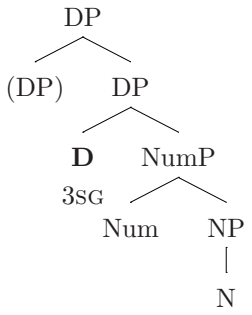
Komi pattern. Fraurud (2001), Kuznetsova (2003) argued that Finno-Ugric 3SG should not be considered a grammatical marker of definiteness because of its apparent non-obligatoriness. For instance, Germanic definite articles are obligatory in case the conditions on their use are fulfilled (Heim 1991). However, in (3)–(4) from Komi the omission of 3SG leads to ungrammaticality.

(3) Me ... ad'd'-il-i pon. Ponm-***(ys)** kuč'-i-s uut-ny.
I ... see-ITER-PRT dog dog.obl-*(3SG) start-PRT-3 bark-INF
'I saw a dog. The dog started barking.' (Kashkin 2008)

(4) əbes-***(se)** s'ipt-i!
door-3SG.ACC close-IMP
'Close the door!' (Kashkin 2008)

The contexts in (3)–(4) correspond to anaphoric and immediate situation uses respectively in the pre-theoretical classification of Hawkins (1978) which in Germanic are contexts of the obligatory use of the definite article. Interestingly, D in English is commonly considered to be realized as either the definite article or the possessive marker *'s*, depending on whether or not SpecDP is occupied by a possessor DP. This elegantly accounts for the complementarity of *the* and *'s*: **the John's hat* (de Villiers and Roeper 1995, Sobin 2002).

I argue that **in Komi 3SG is an exponent of D**, whether its Spec is occupied by a possessor DP or not. (I make a standard assumption that the surface morpheme order is derived via successive-cyclic head-movement). This is comparable to English-prime where *the* and *'s* are homophonous. It is then *predicted* (*correctly*) that Komi does not allow for the co-occurrence of 3SG with any other possessive suffix.



Komi: exponent of D

Mari pattern. In stark contrast to Komi, in (5)–(6) from Mari the use of 3SG leads to ungrammaticality. Compare this with (3)–(4).

(5) Məj ... pij-əm už-əm. Pij-**(*že)** opt-aš tüŋal-e.
I ... dog-ACC see-NARR.1SG dog-(*3SG) bark-INF begin-NARR.3SG
'I saw a dog. The dog started barking.'

(6) Petərəza omsa-**(*ž)**-əm!
close-IMP door-(*3SG)-ACC

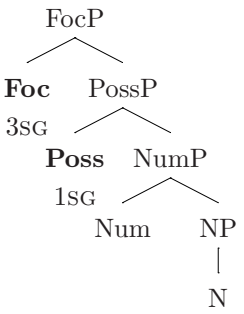
'Close the door!'

Instead, the licensing condition on the non-possessive use of 3SG in Mari is the availability of a set of alternatives. Compare (5) with (2) above, where a dog is contrasted with a cat. (7) and (8) constitute a minimal pair further illustrating the crucial role of an alternative set:

(7) Vasja kniga-m nal-əm. Tač'e tudo (tide) kniga-**(*ž)**-əm lud-eš.
Vasja book-ACC buy-NARR.1SG today he (that) book-3SG-ACC read-PRS.3SG
'Vasja bought a book. Today he is reading that book.'

(8) Vasja kum kniga-m nal-əm. Tač'e ik kniga-**ž**-əm tude lud-eš.
Vasja three book-ACC buy-NARR.1SG today one book-3SG-ACC he read-PRS.3SG
'Vasja bought three books. Today he is reading a particular book among those.'

I argue that **in Mari 3SG can be an exponent of either a Poss head or a Focus head**. These heads have different licensing conditions. The former is licensed by the presence of a possessor. The licensing mechanism in this case amounts to a variable over individuals, which I take to be part of the semantics of Poss, getting co-indexed with a possessor. The latter is licensed by the presence of a set of alternatives: a variable over individuals associated with the Focus head ranges over individuals from a contextually salient set, similarly to how a set of alternatives licenses the relative reading of superlatives (e.g. *John climbed the highest mountain among a set of mountain-climbers*) according to Farkas and Kiss (2000).



Mari: exponent of Poss and of Focus

This treatment makes a straightforward *prediction* that in Mari 3SG must be able to co-occur with another possessive suffix. This is strikingly confirmed. In the form *uškal-**em-že*** in (9) the possessive suffix proper **-em** is licensed by the 1st person possessor, whereas 3SG is licensed by a previously mentioned set of alternatives.

(9) Məj-ən nəl uškal-em ulo. Məj ikt-əž-əm užal-ən-em. Uškal-**em-že** šiž-eš
I-GEN four cow-1SG is. I one-3SG-ACC sell-DESID-PRS.1SG cow-1SG-3SG feel-PRS.3SG
što məj tud-əm užal-em
that I he-ACC sell-PRS.1SG
'I have four cows. I want to sell one of them. That cow of mine feels that I'm going to sell it.'

Interestingly, if there a salient set of alternatives that consists of potential possessors, the possessive suffix proper cannot co-occur with 3SG. This is expected on the current account since a variable over individuals associated with each head would be assigned the same value, namely what would correspond to the actual 2nd person possessor.

(10) Məj **təj-ən** uškal-**et-(*š)**-əm už-ən-am a **Vasja-n** ogəl
I you-GEN cow-2SG-(*3SG)-ACC see-PRS-1SG but Vasja-GEN neg
'I saw your cow, not Vasja's.'

Conclusions. I have proposed that in Mari 3SG can be an exponent of two distinct heads, Poss and Focus, whereas in Komi it is an exponent of D, which was confirmed by the pattern of possessive suffix doubling in the former language and the absence thereof in the latter. This makes it unnecessary to talk about semantic "monsters" (e.g. "a possessive morpheme on its way to become a definite article"): we don't have to recur to diachrony to explain synchronic facts. This study contributes to a general research paradigm which assumes that a) nominal expressions in different languages consist of specific selections from a set of available functional heads (e.g. Despić (2011) presented distributional differences between nominal expressions in Serbo-Croatian and English that point to the NP status of the former and DP status of the latter), and that b) alignment of these functional heads with exponents has to be based on careful distributional analysis in each language (e.g. Wiltschko (2008) argued that what looks like a class of definite articles is associated with D in German, but with Class in Halkomelem Salish).

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A Regular Rule of Palatalisation for Italian Verbs

& how base-derivative faithfulness creates a lexical gap

1. Introduction. Italian has a palatalisation rule transforming velar stops /k,g/ to affricates [tʃ,dʒ] if followed by a front vowel /i,e,ɛ/. When stem-final /k,g/ is followed by a suffix-initial /i,e/, the observed palatalisation is not uniform for either nouns (Giavazzi 2012) or verbs. (1a) shows normal palatalisation, (1b) shows underpalatalisation, where the rule fails to apply before a trigger vowel, and (1c) shows overpalatalisation, where the rule applies before a non-trigger vowel. Suffixes *-o* & *-i* are 1 & 2P.SG.:

(1) a. viŋ**ko** 'I win' b. pa**go** 'I pay' c. pja**tʃo** 'I please' (cf. pjakwi - 'I pleased')
vin**tʃi** 'you_{SG} win' pa**gi** 'you_{SG} pay' pja**tʃi** 'you_{SG} please'

Variance in the application of the rule at the stem-suffix boundary is the result of a base-to-derivative relationship (Benua 1998) that holds between an inflected verb form and its infinitive.

2. Overpalatalisation & -ere verbs. In a development to Steriade's (2001) P-Map hypothesis, I propose that the prominence of stressed segments in a base may cause their features to be carried over into derivatives. Thus, in Italian, segments in inflected verbs are faithful for stridency *when that same segment is stressed in the infinitive*. A new, specific faithfulness constraint models this, along with two others:

(2) ID(STRID) / ́ (BD) : Stressed segments in the *Base* (infinitive) retain stridency in the *Derived* form
*KI : Penalise velar stop - front vowel sequences
ID(STRID) (IO) : Segments in the *Input* must match for stridency with *Output* correspondents

Consider first *-ere* verbs, the only Italian verb family with alternating infinitive stress (Davis et al. 1997). In 'víntʃere', stress does not fall on the relevant segment, so base-derivative faithfulness is not invoked, and the verb's derivatives palatalise normally (3). For 'pia**tʃé**re' though, the strident is stressed and so must be retained in derivatives, even when suffixed by a non triggering vowel (4):

(3)

/viŋk+o/	ID(STRI) / ́ (BD)	*KI	ID(STRI) (IO)
☞ víŋ.ko			
vín.tʃo			*!
Base = Inf: vín.tʃɛ.re			

/viŋk+i/	ID(STRI) / ́ (BD)	*KI	ID(STRI) (IO)
víŋ.ki		*!	
☞ vín.tʃi			*
Base = Inf: vín.tʃɛ.re			

(4)

/pjak+o/	ID(STRI) / ́ (BD)	*KI	ID(STRI) (IO)
pjá.ko	*!		
☞ pjá.tʃo			*
Base = Inf: pja.**tʃɛ́**.re			

/pjak+i/	ID(STRI) / ́ (BD)	*KI	ID(STRI) (IO)
pjá.ki	*!	*	
☞ pjá.tʃi			*
Base = Inf: pja.**tʃɛ́**.re			

As verbs ending [-tʃ/dʒɛre] are rare, I present results of wug-verb experiments on stress assignment and conjugation of verbs with these endings. Results show that, as above, speakers assign stress to the initial syllable when heavy, then palatalise normally ('fól.tʃɛ.re' → fól.ko, fól.tʃi), or otherwise assign penult stress and overpalatalise ('po.**tʃɛ́**.re' → pó.tʃo, pó.tʃi). Thus, palatalisation as derived above is productive.

3. Faithfulness to ± stridency. The analysis extends to all regular verbs ending *-are* & *-ire*. These verbs always have penultimate stress. For *-are* verbs, eg. 'pa**gá**re', a stressed stem-final [-strid] segment blocks palatalisation (5a). However, if the relevant segment is [+strid], it is retained in derivatives: 'lan**tʃá**re' (to throw) → 'lan**tʃo**, lan**tʃi**. Most *-ire* verbs use an infix -isk- which may cause palatalisation (though see §5), but those that do not, eg. 'cu**tʃí**re' (to sew), show overapplication due to a stressed [+strid] segment (5b):

(5) (a)

/pag+i/	ID(STRI) / ́ (BD)	*KI	ID(STRI) (IO)
☞ pá.gi		*	
pá.dʒi	*!		*
Base = Inf: pa.**gá**.re			

(b)

/cuk+o/	ID(STRI) / ́ (BD)	*KI	ID(STRI) (IO)
cú.ko	*!		
☞ cú.tʃo			*
Base = Inf: cu.**tʃí**.re			

4. Irregular verbs. I consider too inflected verbs with a stem-final /k,tʃ/ not present in the infinitive, eg. 'díre' (to say). With no base correspondent palatalisation depends on the lower ranked constraints:

(6)

/dik+o/	ID(STRI) / ǵ (BD)	*KI	ID(STRI) (IO)
☞ dí.ko			
dí.tʃo			*!
Base = Inf: dí.re			

/dik+i/	ID(STRI) / ǵ (BD)	*KI	ID(STRI) (IO)
dí.ki		*!	
☞ dí.tʃi			*
Base = Inf: dí.re			

5. A lexical gap. The cyclic nature of BD-faithfulness creates a lexical gap in Italian. Palatalisation in inflected verbs depends on the phonology first deriving palatalisation in the infinitive, but at this earlier stage palatalisation can only be regular. As bases, infinitives have no base of their own - palatalisation simply follows from the infinitive suffix: *-are*, *ere*, or *-ire*. As such, there are no morphologically simplex Italian infinitives ending [-k/gɛre] or [-k/gire]. This logical possibility is unexplainable under a phonology-blind stem-listing analysis (Pirelli & Battista 2000). Note, however, that *-ire* can be used as a suffix to create verbs from adjectives or nouns, eg. 'bjaŋkire' (to whiten) from 'bjaŋko' (white). In this case however, palatalisation is blocked because these infinitives remain faithful to a nominal or adjectival base. Note that once these verbs are inflected, they now show underpalatalisation before the infix -isk-.

(7)

/bjaŋk+ire/	ID(STRI) (BD)	*KI	ID(STRI) (IO)
☞ bjaŋ.kí.re		*	
bjan.tʃí.re	*!		*
Base = Adj: bjáŋ.**ko**			

/bjaŋk+isk+o/	ID(STRI) ǵ (BD)	*KI	ID(STRI) (IO)
☞ bjaŋ.kís.ko		*	
bjan.tʃís.ko	*!		*
Base = Inf: bjaŋ.**kí**.re			

6. The question of bases. Following Albright (2002), I assume that the infinitive acts as base because it is a morpho-phonologically informative member of the verbal paradigm. Specifically, it aids in selection of agreement suffixes. Infinitives are the only form to maintain contrast across Italian's four conjugations:

(7)

Infinitive suffix	Conjugation pattern	Infinitive suffix	Conjugation pattern
Stressed *-áre*	Regular *-are* conjugation	Stressed *-ére*	Regular *-ere* conjugation
Stressless *-ere*	Irregular *-ere* conjugation	Stressed *-íre*	Regular *-ire* conjugation

An inflected verb looks to its infinitive when deciding which form of an agreement suffix to apply. Consider 3p.pl pres., which has two spellouts. An *-áre* infinitive indicates spellout as *-ano*, while all other suffixes cause spellout as *-ono*. Regarding *-ere* verbs specifically, variance in infinitive stress predicts whether the past participle form is regular or irregular, eg. 'tatʃ**ére**' → 'tatʃ**uto**', but 'víntʃ**ere**' → 'vinto'.

The base of derived verbs seems to be selected according to the verbalising suffix. The *-ire* suffix above never causes palatalisation, but another relevant suffix *-izzare* (corresponding to English -ise/-ize) may. The base form for 'bjaŋkire' must be a non palatalising form, eg. M.SG., but palatalisation before *-izzare* alternates according to the M.PL form: 'lírit**ʃi**$_{\text{M.PL}}$' (lyrical) → 'lirit**ʃi**zzare', but 'antí**ki**$_{\text{M.PL}}$' (antique) → 'anti**ki**zzare'. Giavazzi (2012) shows palatalisation in the plural is blocked in an immediately post-stress syllable. Further work will attempt to explain why base selection differs by suffix, and consider how this analysis of verbal morphology may be linked with Giavazzi's analysis of nominal morphology.

7. Conclusion. Italian verbal morphology is derived in cycles. Infinitives are derived early and obey markedness constraints, but they invoke correspondence that later creates exceptionality and a lexical gap.

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Person and Number Features on Bound Pronouns and the Structure of Indices

The Phenomena: Rullmann (2003, 2004) discusses two interesting phenomena regarding the semantics of bound plural pronouns: (i) semantically singular plural pronouns and (ii) partial binding. (i) is exemplified by (1).

(1) Most of the boys think that they are the smartest student.

The predicate *be the smartest student* here is only compatible with a singular individual, as shown by the contrast in (2).

(2) That boy is/#These boys are the smartest student.

Therefore the bound pronoun *they* in (1) is interpreted as a singular individual, despite its plural morphology. An example of (ii) is given in (3), where the plural pronoun *their* is simultaneously bound by the two universal quantifiers.

(3) Each of the students told each of the professors that *their* meeting was fun.

Furthermore, these two phenomena can happen at the same time. For example, the following example allows a reading where *they* is bound by two plural quantifiers but denotes a pair of individuals at a time. Thus, the students and professors distribute into atomic individuals as in (1) above, and summed up as a pair as in (3).

(4) Most of the students told most of the professors that *their* meeting was fun.

Lastly, all of the above interact with person features. That is, all of them are possible with first and second person pronouns as well.

(5) a. We all think that *we* are the smartest student.
b. Each of the students told me that *our* meeting was fun.
c. Most of the students told me that *our* meeting was fun.

Previous Analyses: There is disagreement in the literature about whether the above data should be accounted for in the semantics or in the morphology. Rullmann pursues a semantic account, claiming that plural pronouns always denote plural individuals. Semantically singular plural pronouns like (1) pose a challenge for such a view, while partial binding is more or less straightforward, as the referent is plural. While Rullmann gives an account of (1) adopting Winter's (2001) semantics of plurality, it faces several empirical problems, as Rullmann himself points out (Rullmann 2003, 2004). The morphological account, or the *minimal pronoun* account (Heim 2008, Kratzer 1998, 2009, von Stechow 2003), on the other hand, claims that the phi-features of a bound pronoun are semantically inert and are just copied from the binder(s) by a PF rule called *Feature Transmission*. For this account, semantically singular plural pronouns are straightforwardly captured, as the plural feature on suchm a pronoun is not semantically interpreted and compatible with a singular denotation. However, partial binding needs an explanation. For instance, both of the antecedents in (3) are morphologically singular, and hence the plural feature cannot be coming from them. Heim (2008) offers a solution under the minimal pronoun account, but in order to subsume the interaction with person features, it suffers from conceptually unwelcome redundancies between LF and PF, as Heim herself admits. That is, her account makes heavy use of spell-out rules that seemingly duplicate the role of semantics in the morphology.

To sum up, Rullmann's account tries to maintain a straightforward morphology-semantics mapping, where all morphologically plural pronouns are semantically plural, but is empirically problematic. Heim's minimal pronoun account involves opaque relation between semantics and morphology mediated by complex spell-out rules that separately impose similar conditions on the two components. In what follows, I propose a novel account that dispenses with ad hoc morphological rules, by shifting all the necessary complexity to syntax, whereby reconciling the straightforward semantics-morphology mapping and empirical adequacy.

(i) Semantically Singular Plural Pronouns: Semantically singular plural pronouns are only found in the scope of a distributivity operator, which can optionally be realized as *all, each, both*, etc., as in (6).

(6) These boys all think that they are the smartest student.

I propose that *they* in (3) and (6) simply denotes the plurality consisting of the relevant boys, but the distributivity operator remotely operates on it and returns a singular individual. More specifically, I propose that the distributivity operator universally quantifies over choice functions that pick out an atomic

member of the subject. In order to prevent overgeneration, I assume that the domain of the relevant choice functions is restricted to the plurality in question.

(7) a. $[\![\mathcal{D}/\text{all}_i \text{ VP}]\!]^g = \lambda X.\, \forall f \in \textbf{RelCF}(X)[[\![\text{VP}]\!]^{g[i \mapsto f]}]$
b. $\textbf{RelCF}(X) = \{f \mid f(X) \sqsubseteq_a f \wedge \forall Y \neq X[Y \notin \text{dom}(f)]\}$

For a simple sentence like *These boys*$_x$ *all*$_i$ $i(t_x)$ *drank*, the choice function f denoted by i applies to the trace of the subject within VP and the distributive meaning is derived For (1), I claim that f is used twice, once for the VP internal subject trace in the matrix clause, and once for *they* in the embedded clause. As a consequence they co-vary, as desired.

(ii) Partial Binding: An analysis of partial binding requires a pronoun to be able to bear multiple indices (cf. Higginbotham 1986). Both Rullmann and Heim make use of this mechanism.

(8) $[\![\text{they}_{\{x,y,\ldots\}}]\!]^g = g(x) \oplus g(y) \oplus \ldots$

With this, the intended reading of (3) follows more or less straightforwardly.

(9) [Each of the students]$_x$ told [each of the professors]$_y$ that their$_{\{x,y\}}$ meeting was fun.

The reason why the bound pronoun is plural is because its denotation is plural.

(i)+(ii): As pointed out above, the above two phenomena can co-occur as in (4). In order to analyze this example, we need two occurrences of the $\mathcal{D}$, and also allow a choice function to apply to one of the indices of the plural pronoun in the following manner (the object is QRed).

(10) [Most of the students]$_x$ $\mathcal{D}_i$ [most of the professors]$_y$ $\mathcal{D}_j$ $t_{i(x)}$ told $t_{j(y)}$ that their$_{\{i(x),j(y)\}}$ meeting was fun.

The crucial assumption here is that the choice functions can target the denotation of one of the indices of the plural pronoun, e.g. $[\![t_{i(x)}]\!] = g(i)(g(x))$. In other words, my proposal is to complicate the syntax of indices so that they carry information regarding the choice function. An attractive feature of the present account is that all morphologically plural pronouns are semantically plural and vice versa, and there is no need for ad hoc spell out rules.

Interaction with Person Features: The above phenomena interact with person features. Roughly put, if any part of the plural pronoun denotes the speaker, it must be a plural first person pronoun, if any part of it denotes the hearer but no part denotes the speaker, it must be a plural second person pronoun, and otherwise it must be a plural third person pronoun. Under the present account, this pattern is explained by assuming that indices carry person information as well, e.g. $x[1]$, where the numbers in [ ] denote the person feature. The person features are interpreted through the admissibility condition on g:

(11) An assignment g is admissible in a given context c only if for all x, $g(x[1])$ includes the speaker of c; $g(x[2])$ includes the hearer of c but not the speaker of c; and $g(x[3])$ includes neither the speaker nor the hearer.

We furthermore impose the syntactic condition on binding that only first person pronouns can bind $x[1]$ and second person pronoun can bind $x[2]$, which mimics in syntax the effect of Feature Transmission postulated in the minimal pronoun account. Crucially, our morphological rule is very simple: if any of the indices of a pronoun has [1], the pronoun is first person, if any of them has [2] and none has [1], it is second person, and otherwise it is third person, and these same features are used to interpreted them, unlike under Heim's minimal pronoun approach. (12) illustrates this where a first person plural pronoun is distributively bound by *we* and *each of the professors*

(12) We$_{x[1]}$ all$_i$ told [each of the professors]$_{y[3]}$ that our$_{\{i(x[1]),y[3]\}}$ meeting was fun.

The semantics and morphology are captured under the representation indicated here. Moreover, the present analysis can easily be extended to gendered plural pronouns in languages like Hebrew and French, although the details are omitted here for reasons of space.

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Poster Session II
Saturday 4:00 - 5:30

Speakers and hearers use prosody to disambiguate scopally-ambiguous sentences

Introduction: Sentences such as (1) give rise to multiple interpretations (cf. (2)), based on the scopal relation between the quantifier *all* and negation. An open question in the theoretical literature, dating back to Jackendoff (1972), concerns the role of prosody in disambiguation.

(1) *All the men didn't go*

(2) a. ∀ > ¬: none went (claim: falling contour; negation in presupposition: *some men didn't go*)

b. ¬ > ∀: not all went (claim: fall-rise; negation focused, not in presupposition: *some men went*)

We present findings from a production study indicating that speakers can manipulate auditory cues to disambiguate these sentences, but that these cues are often not realized as sentence-final contour. We then demonstrate in two complementary perception studies that hearers successfully recruit prosodic information to access the interpretation intended by a speaker and supported by a discourse context. Arguing in support of a pragmatic account, we conclude that speakers and hearers employ the link between prosody and information structure in a discourse context to disambiguate these sentences.

Background: Jackendoff (1972) proposed that each of the interpretations in (2) is paired with a particular prosodic contour, which disambiguates the sentence. Specifically, when negation takes narrow scope, as in (2a), negation is encoded in the presupposition, and the sentence has a falling contour. However, when negation takes wide scope, as in (2b), negation is sentential and part of the focus, not the presupposition, and the sentence has a fall-rise contour (cf. Bolinger, 1965). Jackendoff encoded the distinction directly into the logical representation, consequently predicting that the contour provided by the speaker should invariably disambiguate the sentence. Subsequent researchers (Ladd 1980; Liberman & Sag, 1974; Kadmon & Roberts 1986; Ward & Hirschberg 1985; Koizumi, 2009) questioned the nature of the link between prosody and interpretation, arguing for a central role of pragmatics (e.g., a negative or positive Question Under Discussion, the presence of scalar alternatives). Consequently, while a prosodic correlate to sentence interpretation would still be predicted, prosodic cues – as a consequence of being linked to the context – should be variable.

Thus, it is possible that speakers signal their intended interpretation with prosody, and that hearers can recognize prosody as signaling a particular interpretation. However, while there is some evidence to this effect with similar sentences in Greek (Baltazani, 2002), and for a host of other items in English (e.g., Hirschberg & Avesani, 2000, Price *et al*., 1991; Speer *et al*., 1993; a.o.), to date, experimental support for these specific cases in English has remained elusive (cf. Jackson, 2006; McMahon *et al*., 2003). We argue that because these studies were small scale, focused on the universal quantifier in subject position, and did not systematically manipulate aspects of the discourse context that could give rise to prosodic contrasts, they were therefore not in a position to uncover these trends.

Production Study: 19 undergraduates were recorded reading discourse contexts in which a target sentence such as (1) was embedded and information structure was manipulated, as in (3).

(3) a. Context 1: *most* > negation, negation associated with presupposition
Neil is an avid fan of the theater. I bought tickets to the musical "Chicago" for him as a gift. My friend Adam was concerned about the choice. I realized he was right.
Neil doesn't enjoy most musicals. He thinks they are very cheesy.

b. Context 2: negation > *most*, negation associated with focus/assertion
Neil is an avid fan of the theater. I bought tickets to the musical "Chicago" for him as a gift. My friend Adam was concerned about the choice. I had to assure him that it was ok.
Neil doesn't enjoy most musicals. But I know for a fact that he adores "Chicago."

Target sentences included negation interacting with *all*, *many*, *most*, or *because*; controls involved focus-sensitive operators (*only*, *even*) and pronominal reference. (Total items per speaker: 56) We performed two main analyses on the excised sentences: (1) coding of the sentence-final contour as falling v. non-falling, (2) an acoustic analysis of the lexical item interacting with negation and the sentence-final word. Results indicate that speakers were highly likely to assign a falling contour to the *all* sentences (71-96%), but were more likely to assign a falling contour to *many* > negation sentence than to negation > *many* sentences (91% v. 64%), as predicted. Despite the lack of robust suprasegmental cues, and a range of

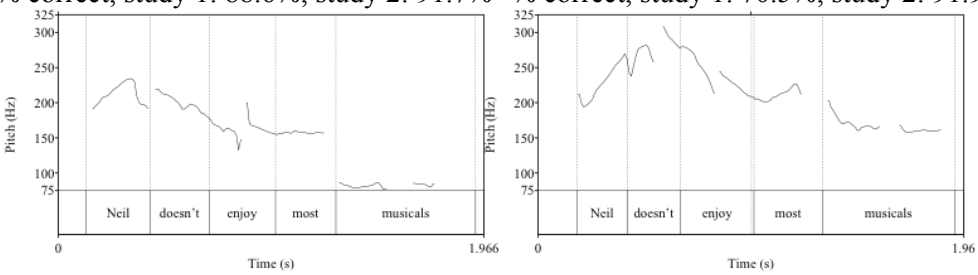
variable productions within and across speakers, we did find a significant difference in word duration: the sentence-final word was longest (and the quantifier shortest in *many/most* sentences) when the quantifier took wide scope over negation. Thus, speakers did provide auditory cues to sentence disambiguation.

A subset of the production items were targeted for two perception studies. Items were contributed by an experimenter and three naïve participants who responded to post-context comprehension questions well above chance and produced clear minimal pairs in a manner largely consistent with claims in the theoretical literature. See Figure 1.

Figure 1: A minimal pair for the target sentence *Neil doesn't enjoy most musicals* produced by a naïve production study participant with % correct from each of the perception studies

Context 1: *most* > negation
% correct, study 1: 88.6%, study 2: 91.7%

Context 2: negation > *most*
% correct, study 1: 70.5%, study 2: 91.9%



Perception Study 1: 44 undergraduates were presented with 48 experimental trials each, blocked by speaker, and pseudorandomized within blocks to separate minimal pair members and similar lexical items. Each trial had the same structure: participants saw the target sentence in the middle of the screen, and heard a version of it spoken aloud three times. They were then asked to choose the sentence most likely to follow it, as in (3), thereby placing it in a mini discourse context. Correct responses were those that corresponded to the interpretation intended by the speaker and the discourse context from which the sentence had been taken. Results (see Table 1) indicated that hearers were successful in this task.

Perception Study 2: 37 undergraduates were presented with 36 trials each, in the manner described above. Each trial had the same structure: participants read through a discourse context (self-paced, line by line, cumulative). They then heard two versions of the same target sentence, and were asked to choose the version that best matched the preceding context. Once again, hearers were successful at pairing prosody with interpretation, with the surprising exception of *all* > negation sentences. See Table 1.

Table 1: Average % correct for test item types in two perception studies

	all, negation		*many/most*, negation		*because*, negation	
	all > neg	neg > *all*	*m* > neg	neg > *m*	*bec* > neg	neg > *bec*
Perception 1	69.3**	66.4*	62.5**	76.1**	62.4*	76.0**
Perception 2	76.9**	53.1	88.8**	84.3**	79.3**	85.4**

All perception results have been analyzed three ways: binomial probability to determine difference from chance level (**: $p<.01$, *: $p<.05$), χ^2 analysis of the distribution of individual responses scores, and ANOVAs comparing the factors *speaker*, *scope of negation*, and *lexical item*.

Conclusions: The results show that prosody does disambiguate these classic quantificational sentences. Further, the variability we observed in the production study, as well as the contribution of contextual factors interacting with prosody and highlighting scopal relations, underscores the central role of information structure. We argue along with Fodor (2002) that psycholinguistic research investigating participants' interpretation of scopally-ambiguous sentences should incorporate prosody into their design.

Selected References: **Baltazani** (2002). The prosodic structure of quantificational sentences in Greek; **Hirschberg** & **Avesani** (2000). Prosodic disambiguation in English and Italian; **Jackson** (2006). Prosody and logical scope in English; **Jackendoff** (1972) Semantic interpretation in generative grammar; **Koizumi** (2009). Processing the *not-because* ambiguity in English: The role of pragmatics and prosody; **Ladd** (1980). The structure of intonational meaning; **Kadmon** & **Roberts** (1986). Prosody and scope: The role of discourse structure; **Ward**. & **Hirschberg** (1985). Implicating uncertainty: The pragmatics of fall-rise intonation.

NATURALISTIC SPEECH MISPERCEPTION – A COMPUTATIONAL CORPUS-BASED STUDY

Introduction: Laboratory studies, historical linguistics and theoretical modelling have elucidated a number of phonetic trends of misperception. However, little work to date has investigated misperception in its most naturalistic form, namely slips of the ear (Bond, 1999), e.g. "End Rule Left" → "Andrew left", "Geez, really?" → "Disraeli". Our goal in this research is to develop a computational analysis followed by quantitative statistics based on a 3500+ pair corpus of slips of the ear. Investigation the targets and directionality of misperception in the "messy" realm of real conversation can provide a testbed for numerous theoretical and experimental constructs, as applied to speech perception (Miller and Nicely, 1955), word segmentation from phrases (Mattys et al., 2005) and cross-dialectal comprehension (Labov, 2010).

Methods: As the old adage goes, "Data is not the plural of anecdote", and thus to draw reasonable and reliable conclusions about whether naturalistic occurrences of this sort end up mirroring, paralleling, or diverging from independent evidence collected with laboratory methods, we have collected and compiled a corpus of 3,638 naturalistically occurring instances (the largest existing corpus to our knowledge), consisting of slips from English spontaneous conversation, mostly North American varieties phonetically transcribed using collectors' transcriptions and interlocutors' demographics.

Analysis of the errors in terms of consonant substitutions, deletions, or insertions was computationally extracted using alignment algorithms from computational biology (Kondrak, 2003), with subsequent application of parameter optimization techniques, the ultimate outcome of which was a two-dimensional confusion matrix of all substitutions (treating insertion or deletion as alignment with zero).

Results: A frequency analysis of deletions and substitutions of consonants yield the following trends (normalised rate using corpus token frequencies), in terms of a scale of confusability.

["≻" indicates "is confused with a higher rate than"]

(1)	Adjacent environments (Deletions)	C_C ≻ C_V ≻ V_C ≻ V_# ≻ #_V ≻ V_V (see Figure 1)
(2)	Adjacent environments (Substitutions)	V_V ≻ #_V ≻ V_# ≻ C_V ≻ V_C ≻ C_C (see Figure 1)
(3)	Place (Deletions)	Coronal ≻ Dorsal ≻ Labial
(4)	Place (Substitutions)	Labial/Dorsal ≻ Coronal

The normalised trends in adjacent environments for deletions (1) and substitutions (2) came out to be significant against a hypothetical trend based on increasing phonetic cues and inspecting the role of adjacency alone, C_C ≻ C_V ≻ V_C ≻ V_# ≻ #_V ≻ V_V, in a logistic regression - using *lmer()* in R with helmert coding in either directions, which compares each level to the mean of the subsequent levels (forward) or previous levels (reversed), at $.001 < p < .05$ for most of the levels of contrasts.

Substitution/deletion complementarity of environments: For deletions, the environment trend (1) provides a negative correlation between the amount of confusion with the amount of phonetic cues, such that phonetically less robust environments would have more confusions, where C_C has the highest confusion rate. However this correlation is reversed for substitutions (2), where V_V has the highest confusion rate. Together, (1) and (2) indicate a substitution/deletion complementarity (see Figure 1), which could be explained by considering that in more robust environment (e.g. V_V), the fact that a segment was there must be retained, and so errors, when they occur, are more likely ones of substitution.

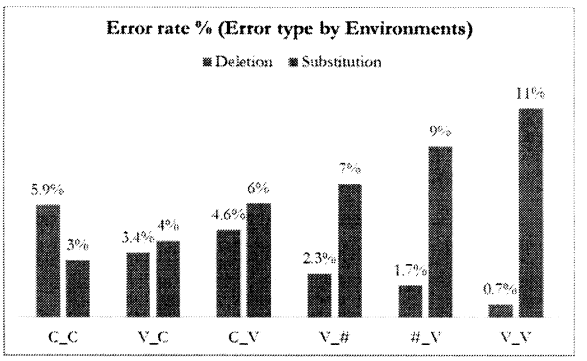


Figure 1

Scale of least perceptibility of Place: The place trend for deletions (3) matches largely with Jun's (2004) scale of least perceptibility, Coronal ≻ Labial ≻ Velar. In a context-sensitive analysis, the divergence of Dorsal being more confusable than Labial turned out to be caused mainly by /k/ deletions in V_C[sibilant], e.g. "section" → "session".

Underspecification of Coronal: The place trend for substitutions (4) shows that coronal confusion is significantly lower than Labial ($p < .001$) and Dorsal ($p < .01$). In fact, a more specific comparison, by excluding confusions between Labial and Dorsal, shows that the probability of (Dorsal/Labial → Coronal) is significantly higher than the probability of (Coronal → Dorsal/Labial), at $p < .01$. These analyses can be captured with a featurally underspecified lexicon (FUL) (Eulitz & Lahiri, 2004) such that Coronal is underspecified or with an acoustic/perceptual account by asymmetric distances between coronal and non-coronal (Tsuji, Cristia, & Fikkert, 2012).

Stressed syllables - "islands" of reliability: Stressed syllables are considered as "islands" of reliability (Pisoni's term) with greater prominence, duration and intensity, thus a plausible hypothesis would be unstressed syllables being more confusable than stressed. However, as opposed to our hypothesis, an initial analysis of the effect of stress with pre/post-vocalic environments, #_V and V_#, shows that stressed syllables are more confusable, but only in monosyllables and not in polysyllables. (Browman, 1980)

Phonological/phonetic processes: Finally, certain substitution-pairs showed asymmetric confusions which suggest that phonotactic processes specific to the phonology of English phonological/phonetic processes play a role, namely, θ-fronting, ŋ-alveolarization and t-d-neutralisation due to tapping ([d] ↔ [ɾ]). Surprisingly, most of these asymmetric confusions are also found in laboratory studies with nonsense stimuli for example in Miller and Nicely (1955), Wang and Bilger (1973) and Cutler et al. (2004).

Conclusions: We reported new findings using the largest naturalistic speech misperception corpus and alignment algorithms. We explored the effects of positional environments, stress information, and phonological features and how perceptual errors might drive diachronic changes. We showed that naturalistic data are consistent and complementary with laboratory results, although much richer because they include many more phonological contexts than laboratory studies (usually limited to VCV or CV). We demonstrated that phonological and perceptual considerations exert a major role in real-life messy, everyday erroneous performance even when we might expect top-down contextual effects to otherwise dominate. Given the divergences from our hypotheses and the different patterns observed for deletions and substitutions, we outline how context-sensitive confusion matrices could refine these conclusions.

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When Worst Is Best: Grammar Construction in Phonological Learning

A commonly used technique in language learning theories is error-driven learning (the term originates with (Wexler and Culicover 1980), the technique goes back further). In traditional error-driven learning, the learner only changes in response to an 'error': an inconsistency between an observed form and the learner's current "best guess" grammar. The learner normally responds to an error by attempting to change its "best guess" grammar. If no error occurs, no change is made by the learner. Examples of this approach in phonological learning include Error-Driven Constraint Demotion with Optimality Theory (Tesar and Smolensky 2000), the Gradual Learning Algorithm with Stochastic Optimality Theory (Boersma 1998), and the HG-GLA with Harmonic Grammar (Pater 2008). This kind of learner fails to capitalize on observed forms which happen to be consistent with the learner's current "best guess" grammar, but nevertheless contain information useful for learning.

An alternative approach views the learner as engaged in the accumulation of information about the target grammar. At any given time, the learner's information partitions the set of possible grammars into two groups: the grammars that are consistent with the information and are therefore (at that time) viable, and the grammars that are inconsistent with the information and therefore non-viable. Learning proceeds by accumulating information that reduces the number of viable grammars. The key difference between this and error-driven learning lies in the use of observed forms: an error-driven learner's goal is to test its current "best guess" grammar, while an information accumulating learner's goal is to obtain new information about the target grammar (and thereby reduce the number of viable grammars). An error-driven learner will fail to capitalize on observed forms that are consistent with the "best guess" grammar, but inconsistent with other viable grammars.

In general, it is computationally intractable to separately test each viable grammar with respect to an observed form. Error-driven learning avoids this problem by only testing the "best guess" grammar, the one most likely to be correct. This talk argues, with support from computer simulations, that an information accumulating learner can instead test the viable grammar that is most likely to be inconsistent with the observed form. With respect to the interpretation of that form, this could be considered the "worst guess". When evaluating observed forms in learning, the "worst guess" grammar is the best one to test.

This idea is here put to use in phonological learning, in the context of the Output-Driven Learner (Tesar 2012, Tesar to appear), an algorithm that simultaneously learns ranking information and lexical (underlying form) information. The Output-Driven Learner stores ranking information in the form of a support of winner-loser pairs. It stores lexical information in the form of a lexicon of underlying forms where all features of all segments may be set individually. The "worst guess" approach is successfully applied in the learning of both ranking and lexical information.

Due to restrictiveness concerns, the "best guess" ranking is normally presumed to be the one with faithfulness constraints ranked as low as possible (Hayes 2004, Prince and Tesar 2004). During phonotactic learning, when the learner uses inputs that are identical to the surface forms, the faithfulness low bias also produces the ranking most likely to produce an error. During non-phonotactic learning, however, when the learner considers inputs that are not identical to the surface, a ranking produced with a markedness low bias is more likely to produce an error. The ability to rapidly produce constraint rankings with different biases, relative to a single store of information, is here provided by a version of Biased Constraint Demotion (Prince and Tesar 2004).

To illustrate, consider the learning of grammars that determine stress and vowel length for words. During phonotactic learning, the learner has determined that stress is sensitive to lexical specification (Ident[stress]≫{MainLeft, MainRight}), and that long vowels can appear on the surface (Ident[length]≫NoLong). Consistent with that information, the faithfulness low ranking is shown in (1), while the markedness low ranking is shown in (2).

(1) {WSP} ≫ {Ident[stress]} ≫ { MainLeft, MainRight} ≫ {Ident[length]} ≫ {NoLong}

(2) {Ident[stress], Ident[length]} ≫ {WSP, MainLeft, MainRight, NoLong}

Once the learner has determined that a certain suffix has the underlying feature value +long, because it surfaces as long in stressed position, the learner can observed that in some other words (where the suffix is unstressed), the same suffix surfaces as –long. The learner can then construct a grammatical candidate that is non-faithful, because the suffix is underlyingly +long but surfaces –long: /páka:/→[páka]. With the faithfulness low ranking in (1), this candidate is already optimal, as the top-ranked markedness constraint WSP prevents unstressed surface vowels from being long, and the second-ranked faithfulness constraint Ident[stress] preserves initial stress. WSP is ranked at the top by default, not by explicit knowledge. In the markedness low ranking in (2), WSP is ranked at the bottom with the other markedness constraints. The learner's candidate is **not** optimal under this ranking: the high ranking of Ident[length] will preserve the length of the suffix vowel, yielding optimal /páka:/→[páka:]. This "error" allows the learner to obtain additional ranking information: WSP **must** dominate Ident[long]. The "worst guess" bias has transformed this ranking information from default guess to empirically supported knowledge. Such knowledge can be reliably used to learn other parts of the grammar, while default guesses cannot.

To gain the benefits of this approach, the learner must be engaged in the accumulation of grammatical information, instead of storing a single complete grammar at a time and altering it in response to an error. Further, the learner must be able to construct different grammars (rankings and lexica) for different purposes, with respect to a single store of information. The learner will construct the "best guess" grammar when engaged in ordinary language use. But when evaluating a word for learning purposes, the "worst guess" is sometimes best.

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Overview This talk investigates the embedding of imperatives under the reportative evidential *je* and the verb of saying *he'i* in Mbyá (Tupí-Guaraní), a rare phenomenon cross-linguistically (see Aikhenvald 2005). Such constructions are interpreted as commands on behalf of another person (neither speaker nor addressee), yet they are not quotations, as evidenced by the lack of indexical shifting. It is argued that *je* and *he'i* are speech act modifiers conveying that the person that is responsible for the embedded speech act is not the speaker.

Imperatives in Mbyá are expressed with a special paradigm of person agreement on verbs. Characteristic features of imperatives (see Kaufman 2012) are (i) a presupposition that the speaker has the authority required to carry out the command, see (1), (ii) a presupposition that the speaker does not know in advance that the command will not be followed, see (2) and (iii) a presupposition that the speaker approves of the command, see (3):

(1) A: T-ere-o che-ro gui. B:# Añete-'ỹ. Nd-a-a-i va'erã.
Imp-A2-go my-house from. true-neg A3-neg-A1-go-neg have-to
'Go away from my house!' '# That's not true. I don't have to go away.'

(2) A-ikuaa nd-ere-o mo'ã-i-a. # T-ere-o!
A1-know neg-A2-go fut-neg-nlz imp-A2-go
'I know you won't go (away). # Go (away)!'

(3) A-ipota re-pyta. # Tereo!
A1-wish A2-stay imp-A2-go
'I wish you would stay. # Go (away)!'

Reportative evidentiality and verb of saying The particle *je* is used to express reportative evidentiality. A proposition *p* modified by *je* (henceforth '*p je*') conveys that the speaker heard from someone else that the proposition is true. *Je* is an illocutionary operator rather than a modal operator (see Matthewson et al. 2007), as shown by the fact that a speaker can assert *p je* even though she believes that *p* is false, as in (5). This is a hallmark of illocutionary evidentials, (see Faller 2002). Moreover, *je* scopes over negation and cannot be semantically (or syntactically) embedded in complements of verbs of attitude report (*-ovia*, 'believe') and antecedents of conditionals, which are necessary (though not sufficient) properties of illocutionary evidentials.

(4) A: Aureliano o-ĩ je Aristobulo py.
Aureliano A3-be JE Aristobulo in
'Aureliano is in Aristobulo [I heard].'

(5) Maria omenda je, va'eri a-ikuaa n-o-menda-i-a.
Maria A3-marry JE but A1-known neg-A3-marry-neg-comp
'Maria is married [I heard], but I know she isn't married.'

The verb of saying *he'i* can be used to make direct or indirect reports. When making indirect reports, *he'i* can be used sentence initially, the complementizer *-a* must be suffixed to the main verb of its complement, and indexicals are not shifted, see (6). When making direct reports, *he'i* must be used sentence finally, the complementizer *-a* is not used and indexicals are interpreted with respect to the context in which the reported sentence was asserted, see (7):

(6) A: He'i a-ipota-a cho'o.
A3.say A1-like-comp meat
'He said that I like meat.'

(7) A: "A-ipota cho'o" he'i.
A1-like meat A3.say
' "I like meat", he said'

Embedding Imperatives Imperatives can be embedded under *je*. In that case, the speaker reports that another person (neither speaker nor addressee) commanded the addressee to perform the action described by the sentence. Contrary to unreported imperatives, the speaker can express his desire that the addressee do not carry out the order, see (8). Note that indexicals (including 1st and 2nd person pronouns and locative adverbs) are not shifted in these constructions. Imperatives can also be embedded under *he'i*, in which case the authority underlying command is shifted to the subject of the matrix verb. *He'i* is used sentence initially, and indexicals are not shifted, which indicates that this is not a quotation. The speaker can express his desire that the

addressee do not carry it the order, see (9). Note that the complementizer *-a* cannot be used on the embedded verb.

(8) E-me'ẽ je chevy pe ka'ygua, va'eri nd-a-i-pota-i.
imp-give JE me.obl to mate, but neg-A1-want-neg
'[She/he said] that you must give me the mate, but I don't want it.'

(9) He'i e-me'ẽ chevy pe ka'ygua, va'eri nd-a-i-pota-i.
A3.say imp-give JE me.obl to mate, but neg-A1-want-neg
'She/he said that you must give me the mate, but I but I don't want it.'

Analysis Linguistic expressions are evaluated with respect to a context of utterance c (which determines at least a speaker c_s and an addressee c_a) and a world-time index i. Propositions are properties of world-time indices. Following Krifka ('Embedding Speech Acts', t.a.), LFs are headed by a ForceP, which determines the type of speech act that the LF can be used to perform. A ForceP is headed by a speech act operator, such as ASSERT and DIRECT (for imperatives). I simplify the analysis here for ease of presentation:

(10) $[\![\text{ASSERT}]\!]^c = \lambda p.\lambda x.\lambda y.\lambda i.$x has assertive commitments with respect to p towards y in i

(11) $[\![\text{DIRECT}]\!]^c = \lambda p.\lambda x.\lambda y.\lambda i.$x has directive commitments with respect to p towards y in i

The second argument of a ForceP head must be a rigid designator of the speaker c_s, and the third argument must be a rigid designator of the addressee c_a. This is a syntactic stipulation. The complete ForceP determines what kind of speech act the sentence can be used to perform. I argue that *je* is a speech act modifier. Given a speech act operator P as input, it outputs a speech act operator Q such that $Q(p)(x)(y)(i)$ is true iff there is a z different from x such that $P(p)(z)(y)(i)$ is true. In other words, *je* shifts the person that is responsible for the speech act to some individual other than the speaker. This explains why the speaker is not responsible for imperatives embedded under *je*. Note however that any indexical that occurs inside the IP, e.g. first person pronouns, is not shifted and has its normal reference. *Je* also encodes the source of evidence of the resulting speech act (hearsay). This is not represented in (12) for reasons of space, but see Faller (2002). The verb of saying *he'i* is ambiguous between a proposition embedding *he'i*$_1$ and a speech act embedding *he'i*$_2$. *He'i*$_2$ selects a speech act operator P, a proposition p and a subject x, and outputs a proposition true at an index i iff x has P-commitments with respect to p towards the addressee c_a in i. This predicts that the first person form *ha'e*$_2$ of the verb *he'i*$_2$ can be used to report orders that the speaker herself produced (*Ha'e eme'ẽ ka'ygua*, 'I said give the mate'), contrary to *je*. This prediction is borne out.

(12) $[\![\text{je}]\!]^c = \lambda P.\lambda p.\lambda x.\lambda y.\lambda i.\exists z[z \neq x \wedge P(p)(z)(y)(i)]$

(13) $[\![\text{he'i}_2]\!]^c = \lambda P.\lambda p.\lambda x.\lambda i.P(p)(x)(c_a)(i)$

As noted, the complementizer *-a* cannot be used with *he'i*$_2$. Similar facts have been observed in English with embedded imperatives (*Mary said call John*), see Crnic and Trinh (2009), and in German, see Krifka (t.a.). Krifka argues that this is because the complement of verbs of saying that embed speech act is not a CP but a root clause, i.e a ForceP. In the present analysis, *he'i*$_2$ does not select a ForceP but rather a ForceP head and an IP. Insofar as *-a* is a complementizer, its absence is predicted nonetheless.

Other theories of imperatives I will argue that these facts are problematic for Portner's (2007, 2011) theory of imperatives, according to which imperatives denote properties that are added to the To-Do-List of the addressee by a rule of discourse update, predicting no embedded imperatives. This raises the question whether the benefits of Portner's theory can be integrated to a theory using speech acts operators. I will also argue that while Crnic and Trinh's (2009) analysis of embedded imperatives in Kaufmann's framework can account for embedding under *he'i* in Mbyá, it is less clear that it can deal with embedding under the evidential *je*.

Constraints on exceptional ellipsis are only parallelism effects

In this paper we examine three English ellipsis constructions - multiple sluicing (1, MS), multiple fragments (2, MFr) and pseudogapping (3, PsG) - which seem to involve movements that are impossible in the absence of ellipsis; we call these `exceptional ellipsis' constructions. We demonstrate that there are a number of unexpected asymmetries between the exceptional ellipsis constructions which are not accounted for in existing accounts. We propose an account of these restrictions in terms of parallelism; this account strongly implicates covert movement in the antecedent to ellipsis as a determining factor in whether or not a given ‘exceptional' movement is possible, in line with proposals in Griffiths and Liptak (2011).

Constraints on exceptional movements: we show that PsG is best analysed as involving A'-movement to a clause-internal FocP projection followed by ellipsis (Jayaseelan 2001, Gengel 2007). Arguments against the rightward A'-movement analysis (i.e. HNPS, Jayaseelan 1990) include the possibility of indirect object remnants (4, cf. 4b) and the possibility of p-stranding (5, cf. 5b). Arguments against the A-movement analysis include the possibility of direct object remnants with double objects (6) and movement across controlled subjects of infinitives (7; both involve locality violations in this analysis). We show that the leftward A'-movement analysis can handle all this data, although it leads to two immediate problems: (i) such movement is not possible in the absence of ellipsis, (3b); (ii) the movement is finite clause-bound (8).

Problem (i) is what makes PsG a form of exceptional ellipsis, so we propose that this is part of a general problem and not one for this analysis. Problem (ii) is more serious and thus taken to be instructive. It is especially interesting considering the comparison with fragment answers. Fragments are taken, following Merchant (2004), to involve focus movement to the left periphery followed by clausal ellipsis; (9) shows that this focus movement is not clause-bounded. One account may be to say that foc-movement targeting the left periphery is unbounded while movement targeting a clause-internal position is bounded. Besides its ad hoc nature, such an account is empirically problematic, since we can see that the second remnant of MFs is also typically clause-bounded (10). Relevant in this context is a similar constraint on MS (11), where the second remnant cannot originate in an embedded clause. Adapting Lasnik (2005), we might be tempted analyse all structures as involving rightward movement of the `exceptional' remnants (the second remnant in MS and MFr, the focus remnant in PsG). This doesn't work for PsG (cf. 4,5) and it also suffers from similar problems with MFrs (12,13), but Lasnik shows it works very well for MS, which is more restricted (14,15). We might say, then, that MFrs and PsG involve illicit leftward movement of the ellipsis remnants, whereas PsG involves rightward extraposition of the second whP. However, it remains mysterious that the second remnant of MFrs cannot cross a clause boundary whereas the sole one in a single fragment can.

The role of Parallelism: we argue that all of the mysterious properties of exceptional ellipsis follow from Parallelism, a constraint which ensures that an ellipsis site E and its antecedent A must contain parallel binders for any contained variables, if we assume the following: (i) wh-in-situ typically undergo covert movement to Spec,CP (Huang 1982); (ii) covert (wh-)movement is finite clause-bound (May 1985, Dayal 2002); (iii) focused XPs undergo covert focus movement (Krifka 2006); (iv) exceptional movements in the context of clausal ellipsis are in principle unbounded. **With PsG**, clause-boundedness follows straightforwardly: by assumption (iii), the contrastively focused correlate (wine in 3) undergoes covert focus movement to the clause-internal FocP projection in A; by assumption (ii), a parallel antecedent cannot be derived for long pseudogapping (8) because covert movement of the antecedent is clause-bound (cf. the LFs in 16). **With simple fragments**, the antecedent is typically a wh-question, in which the whP is in Spec,CP, and so focus movement of the fragment to Spec,CP trivially satisfies Parallelism; the focus movement in the fragment is unbounded by assumption (iv), so it is able to track the unbounded overt wh-movement in the antecedent. **With MFr**, however, the correlate of the second fragment is wh-in-situ, and this only takes scope in the matrix Spec,CP when locality permits; this means that the second remnant is typically finite clause-bound. Support for this analysis comes from apparent exceptions: QR may escape finite clauses and ECM complements when the embedded subject is bound by the matrix subject (17, Lasnik 2006); multiple wh-questions in such configurations allow for MFrs (18). We note that MFrs only work in response to pair-list questions (19); this follows since P-L questions involve both whPs taking scope in Spec,CP whereas Single-Pair questions involve interpretation of wh-in-situ (Dayal 2002), deriving antecedents that won't be parallel to the MFr with both remnants in Spec,CP (20).

With MS, we propose that Lasnik (2005) is correct in assuming that it involves regular sluicing (with the first whP in Spec,CP) plus rightward extraposition of the second whP to a TP-adjoined position, rather than multiple wh-movement to Spec,CP. We propose that this is because the indefinite correlate of the second whP cannot take scope in the CP-domain, as it takes scope at the TP-level after QR. The indefinite correlate of the higher whP (and the sole whP of a single sluice) takes full clausal scope by being interpreted by existential closure at the clausal (CP) level (Heim 1982, Chung et al 1995), but this is not possible for both indefinite correlates since it would not differentiate the two whPs for scope. Given this, the second whP can only escape clausal ellipsis and satisfy parallelism by undergoing rightward extraposition. In this approach, the restrictions on the movement of the second whP aren't restrictions on the movement operation that affects the second whP, but rather general restrictions that follow from parallelism. We conclude by considering the distribution of true MS across languages and how this may follow from certain assumptions about how focus fronting operates (Horvath 2008).

(1) Someone spoke about something, but I don't know who about what (*spoke).
(2) A: Who bought what? B: John a bike, and Mary a bicycle. || *John a bike brought.
(3) a. Rab will bring wine, and Morag will beer. b. *Morag will beer bring.
(4) a. ?John gave Bill a lot of money, and Mary will Susan. (Lasnik 1999: 143)
b. *John gave a lot of money the organization that he supported.
(5) a. John spoke to Bill and Mary should Susan. (Levin 1993)
b. *John spoke to for advice the wisest woman in the village.
(6) John didn't speak to Mary but he did to Susan.
(7) Rab wants to fire John, but he doesn't Bill.
(8) *Kathy thinks Henry should study astronomy but she doesn't meteorology. (Lasnik 2006)
(9) A: What did you say John likes? B: Salad.
(10) A: Who said you bought what? || Who did you say bought what?
B: *John a book, (and Mary a pencil).
(11) *One of the students said that Mary spoke to one of the professors, but I don't know which student to which professor (Lasnik 2005)
(12) A: Who did you give what? B: Mary a bottle of wine, and Rab a beer.
(13) A: Who did you speak to about what? B: Mary the weather, and Rab the government.
(14) ??Each manager gave one of the new players advice, but I don't know which manager which of new the players.
(15) Some linguist spoke about some paper on sluicing, but I don't know which linguist ?*(about) which paper on sluicing. (Lasnik 2005)
(16) A:[TP subj T [FocP ..... [CP ||**NO QR past here**|| [TP… $XP_{correlate}$]]]]
XX----------|
E: [TP subj T [FocP XPi ... [CP [TP ... ti ....]]]]
(17) At least one man thinks he's in love with each of these women [*each>some* with bound *he*]
(18) A: Which lawyer said he was representing which war criminal?
B: Cochrane Milosevic, and Derschowitz Sharon. (Merchant 2004)
(19) A: Who said you should talk about which topic? [*single-pair only*] B: *John about linguistics
(20) A: [CP who_i [TP t_i ... [CP .... which topic...]
E: [CP $John_i$ about $linguistics_j$ [TP t_i ... [CP .... t_j ...]
^ *not parallel!*

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Poster Session I
Friday 2:45 - 4:45

Directionality and intervention in nominal concord: Evidence from Zazaki *ezafe*

Is nominal concord established in the syntax by Agree, the same feature copying mechanism that derives subject-predicate agreement, or postsyntactically by some other operation at PF (Mallen 1997, Carstens 2000, Baker 2008, Kramer 2009, Norris 2011)? Using our own fieldwork data, we investigate *ezafe* in Zazaki (Northwest Iranian, Indo-European) — a morpheme that occurs on dependents of the noun — whose form varies in number, gender, and case. We argue that this concord employs a mechanism with the properties of Agree, as restrictions on nominal concord in Zazaki echo restrictions on verbal agreement. It is sensitive to defective intervention and φ-agreement is blocked with obliques. In addition, since Zazaki *ezafe* is sensitive to the syntactic features of material above and below it, we present an analysis that exploits the idea that Agree may operate both upward and downward (Nichols 1985, Adger 2003, Baker 2008), with a preference for the latter. As such, our proposal has repercussions for the analysis of concord and the formulation of Agree.

The *ezafe* morpheme. In many Iranian languages, dependents of the noun — adjectives and oblique arguments (e.g. possessors) — are introduced by the *ezafe* morpheme (Samiian 1983, a.o.). While, in Zazaki, *ezafe* forms a constituent with the adjective (1a) or the possessor (1b), it cliticizes to the left (data not shown). Its form *always* varies with the φ-features (gender and number) of the head noun — (1a) vs. (2a) and (1b) vs. (2b).

(1) a. [$_{DP}$ ju kutık [**=o** gırs]]
one dog **=EZ.M.NOM** big
'a big dog (m.)'

b. [$_{DP}$ ga [**=ê** Alik=i]]
ox **=EZ.M.OBL** Alik=OBL.M
'Alık's ox (m.)'

(2) a. [$_{DP}$ a mang [**=a** spi]]=e
that.F goat **=EZ.F** white=F
'that white goat (f.)'

b. [$_{DP}$ bız [**=a** Alik=i]]
goat **=EZ.F** Alik=OBL.M
'Alık's goat (f.)'

With masculine nouns, which have a nominative-oblique case distinction, *ezafe* also agrees in case — but only when it introduces adjectives (3a–b). When it introduces possessors — which receive oblique case realized as the marker *=i* — *ezafe* invariably takes the oblique form *=ê* (4).

(3) a. [$_{DP}$ kutık [**=o** gırs]]
dog **=EZ.M.NOM** big
'the big dog (m. nom.)'

b. [$_{DP}$ kutik [**=ê** gırs]=i]
dog **=EZ.M.OBL** big=OBL.M
'the big dog (m. obl.)'

(4) [$_{DP}$ Kutik [**=ê** Alik=i] [=o gırs]] goşt wen-o.
dog **=EZ.M.OBL** Alık=OBL.M =EZ.M.NOM big meat eat.PRS-3SG.M
'Alık's big dog (m. nom.) is eating meat.'

Basic proposal. Assuming that concord is derived by Agree (Mallen 1997, Carstens 2000, Baker 2008), we propose that the difference between adjectives and possessors arises because possessors independently receive oblique case, which *ezafe* Agrees with. We treat *ezafe* as a functional head (Ez) that takes a nominal dependent as complement. Possessors are introduced in Spec-PossP by a (null) P that assigns them oblique case (Sportiche 1998), while adjectives adjoin lower, to NP. The noun raises past both possessors and adjectives to a position below D (data not shown).

(5)

a. [$_{DP}$ D N [$_{EzP}$ Ez [$_{AP}$ A]] ⟨N⟩]
φ
case

b. [$_{DP}$ D N [$_{EzP}$ Ez [$_{PP}$ P DP]] ⟨N⟩]
φ
case

The Ez head bears unvalued φ- and case features. When Ez is merged with AP (5a), it probes downward into AP. Since adjectives have neither φ- nor case features, Ez must probe upward once EzP is merged in the noun phrase. It Agrees with N in φ-features and with D in case features, so that the form of *ezafe* covaries with the case of the entire DP (nominative or oblique). When, however, Ez merges with a possessor (5b), it can Agree downward with the oblique case feature on P, so that the form of *ezafe* is invariantly realized as the oblique. φ-agreement with the possessor is blocked, however, since obliques are inaccessible for agreement (cf. Rezac 2008, Bobaljik 2008, Preminger 2011), which can be shown independently in Zazaki (data not shown). Ez must then probe upward to Agree with N in φ-features. Since the valued case feature originates either below Ez (an oblique possessor) or above it (oblique case on the entire DP), Agree must be able to operate both downwards and upwards (Nichols 1985, Baker 2008).

Intervention effects. When there is more than one nominal dependent, they are each introduced by an *ezafe* that Agrees with the φ-features of N. Only the highest *ezafe*, however, can Agree in oblique case — regardless of whether it introduces an adjective (6a) or a possessor (6b). Subsequent occurrences of *ezafe* are realized in the nominative (=*o*).

(6) a. Ez [$_{DP}$ ê kutik [$_{EzP}$ **=ê** gırs] [$_{EzP}$ **=o** rınd]]=i vinen-a.
I that dog **=EZ.M.OBL** big **=EZ.M.NOM** good=OBL.M see.PRS-1SG
'I see that big, good dog (m. obl.).'

b. Ez [$_{DP}$ kutik [$_{EzP}$ **=ê** Alik=i] [$_{EzP}$ **=o** gırs]]=i vinen-a.
I dog **=EZ.M.OBL** Alık=OBL.M **=EZ.M.NOM** big=OBL.M see.PRS-1SG
'I see Alık's big dog (m. obl.).'

We argue that this pattern arises from the defective intervention condition on Agree (Chomsky 2000). Regardless of whether the highest EzP values its case feature as oblique through upward or downward Agree, it acts as an intervener for all EzPs below it, which must probe upward to get case from D. Since they cannot be valued as oblique, they get default case, which in Zazaki is nominative. No intervention effect arises for φ-agreement, however, because valued φ-features originate lower than case. If N raises to its surface position through all intermediate functional projections (Travis 1984), there is a stage in the derivation for each Ez head where nothing intervenes between it and N.

Theoretical consequences. We have argued that concord in the Zazaki noun phrase is sensitive both to directionality and locality. These are properties of Agree, and so we conclude that the featural covariation found in nominal concord arises from this syntactic relation. If our account is on the right track, this suggests that Agree cannot be inherently directional — it is possible if the probe c-commands the goal or if it is c-commanded by it. Note, however, that Agree is triggered as soon as a licit goal is available. In a bottom-up derivation, this means that downward Agree is *preferred* when a choice arises, because this is the configuration is established first. As such, downward Agree takes precedence over upward Agree (cf. Béjar & Rezac 2009).

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"Believe possible" verbs: Would you believe they're possible after all?

I discuss the nonfactive epistemic attitude predicates (hereafter NEAPS) of K'ichee', a Mayan language of western Guatemala. These are of a type which has long been known to be logically possible, but which has not so far been found lexicalized in any natural language; they bear the same relation to English 'believe' as epistemic 'might' bears to epistemic 'must,' and involve existential rather than universal quantification.

Background Since Hintikka (1969), 'believe' has been analyzed as universally quantifying over worlds:

$$[\![x \text{ believes } p]\!]^{M,w} = 1 \iff \forall w' \in \mathrm{Dox}_x(w), [\![\mathrm{p}]\!]^{M,w'} = 1$$

Now, in most linguistic domains in which there is universal quantification, there is also existential quantification. And so the question has been raised whether any natural language has lexicalized the existential counterpart of 'believe' that could fill the blank below (see von Fintel and Heim 2011).

$$[\![x \text{ \_\_\_ } p]\!]^{M,w} = 1 \iff \exists w' \in \mathrm{Dox}_x(w), [\![\mathrm{p}]\!]^{M,w'} = 1$$

Note that if we do not limit ourselves to lexicalized predicates, the question becomes trivial. If we are willing to ignore compositionality, we could give an existential analysis of English multiword expressions such as 'believe it possible that' or 'entertain the possibility that.' But if we do restrict ourselves to lexicalized predicates, then the answer so far has seemed to be "no, there are no existential NEAPS."

Specifically, it seems the lexical NEAPS in English and other well-studied languages are *consistency-enforcing*.

(1) An attitude predicate $\mathcal{A}$ is *consistency-enforcing* iff $(p \wedge q \vDash \bot) \iff (\mathcal{A}_x p \wedge \mathcal{A}_x q \vDash \bot)$ for any x, p, q.

Even intuitively "weak" NEAPS such as 'suspect' are consistency-enforcing, as seen by the infelicity of (2). But an existential NEAP, would not have this property. Thus, even 'suspect' and similar words cannot be existential.

(2) #John suspects that Obama will win and suspects that Romney will win.

An existential NEAP in K'ichee' I show that in K'ichee', we do find lexicalized existential NEAPS. Indeed, the K'ichee' lexicalization pattern appears to be the opposite of the English one: based on the field data I have collected, no *universal* NEAPS have been lexicalized in K'ichee'. The existential NEAPS, being strictly weaker than their universal counterparts, are used to describe either full belief or the mere entertaining of a possibility.

The most common existential NEAPS in K'ichee' are the verbs *-chomaaj* and *-kojoh*. *-Chomaaj* is generally translated 'think,' and is used in the frame *-chomaaj cher p* which is generally translated 'think that *p*.' *-Kojoh* is polysemous; but on the relevant sense it is generally translated 'believe,' and *-kojoh cher p* is generally translated 'believe that *p*.' These translations are inaccurate, though, since they suggest a universal meaning, whereas the data suggests an existential meaning for both predicates. Examples like (3), judged felicitous by native K'ichee' speakers, show that *-chomaaj* is not consistency-enforcing.[1] Thus the gloss in (3a) is inappropriate. Asked to explain what sort of situation (3) describes, they will say (for instance) "Well, he can't rule out either one. They're both doing well. For all he knows, either one will win." This suggests that the gloss in (3b) is the correct one, and that an existential analysis is viable. Speakers give similar judgments for clauses with *-kojoh*.

(3) *K-u-chomaaj cher k-ch'ayon ri Pérez Molina, choq k-u-chomaaj cher k-ch'ayon ri Baldizón.*
IMPF-3SG-chomaaj that IMPF-win the Pérez Molina also IMPF-3SG-chomaaj cher IMPF-win the Baldizón.

a. #"He thinks P'erez Molina will win and he thinks Baldizón will win."

b. "He thinks it's possible Pérez Molina will win and he thinks it's possible Baldizón will win."

[1] The names here are of the two most viable candidates in the recent Guatemalan presidential election. As in the United States, Guatemalan electoral law guarantees one and only one eventual winner.

In other respects, however, *-chomaaj* and *-kojoh* have similar properties to English 'think' and 'believe,' and this includes properties discussed in the epistemological literature as necessary conditions for attributing belief. For instance, K'ichee' speakers feel that the attitude described by these verbs 'aims at the truth' just as belief does — if an agent has this attitude towards a false proposition, then they feel he has made a mistake, and if he discovers his mistake then he ought to change his attitude (see Shah 2003; Williams 1973). This suggests that the difference between the K'ichee' verbs and their English near-counterparts is really just a difference in quantificational strength, and not a difference in the type of attitude which they describe.

Similarly, one might worry that this data points to a psychological or cultural phenomenon rather than a linguistic one. I show that this is not the case. Significantly, K'ichee'-Spanish bilinguals who accept (3) will *reject* Spanish sentences such as (4) — and, pressed for a reason, point out that you cannot *creer* 'believe' in two mutually exclusive outcomes. This shows that we are looking at a linguistic difference between K'ichee' and better-studied languages, and not a logical error on the part of my K'ichee' consultants or a difference between K'ichee' culture and other cultures in folk-metaphysics or folk-epistemology. What's more, some of the bilinguals who I have worked with are K'ichee'-dominant, so the result in (3) is not an error due to the burden of working in a non-dominant language, or due to misunderstanding or mistranslation.

(4) # *Cree* *que* *Alemania* *ganaré* *y* *cree* *también* *que* *España* *ganaré.*
believes that Germany will.win and believes too that Spain will.win

"He believes that Germany will win and he also believes that Spain will win."

Now there is the question of whether K'ichee' has any lexicalized universal NEAPs. While it is difficult to prove a negative, I will show evidence suggesting that it does not; after an extensive search, the only expressions with universal NEAP meaning I have been able to find are the obvious Spanish loanwords *seguro* 'sure' and *cierto* 'certain' and the idiomatic multiword expression *-bij wih* 'be certain' (literally 'really say'), suggesting that the universal meaning has not been lexicalized elsewhere in the language.

Note though that this does not limit the expressive power of K'ichee' — any more than English is limited for lacking a lexicalized existential NEAP. When a distinction between full belief and entertaining-a-possibility is needed, K'ichee' speakers will fill in the lexical gap with multiword expressions or loanwords. When the distinction is not needed, they will use the existential NEAPs to attribute either full belief or entertaining-a-possibility. Since there is no stronger NEAP to compete with them, use of an existential NEAP does not generate a scalar implicature (compare Deal 2011) and so is pragmatically compatible with full belief.

A typological question I close with a broader typological question. We have seen that some languages have lexicalized only universal NEAPs, and some have lexicalized only existential NEAPs. But could there be a language with both? The question becomes even more interesting if we consider the related semantic domain of epistemic modals. Here we find languages which have lexicalized both existential and universal modals (including English, with both epistemic 'might' and epistemic 'must'); and we find languages such as Nez Perce (Deal, 2011) which has lexicalized only existential modals; but no language has yet been reported which has lexicalized only universal modals.

This suggests a broader research program for semantic fieldworkers. Can the asymmetrical gaps in Table 1 be filled in? And if they cannot, then can semantic theory provide an explanation for *why*?

	Existential only	Universal only	Both
Epistemic modals	Nez Perce	**???**	English
NEAPs	K'ichee'	English	**???**

Table 1: The typological picture so far

Deal, A.R. (2011). "Modals without scales." *Language*. * von Fintel, K. and Heim, I. (2011). *Intensional Semantics*. * Hintikka, J. (1969). *Models for Modalities*. * Shah, N. (2003). "How truth governs belief." *The Phil. Review*. * Williams, B. (1973). "Deciding Not to Believe," in *Problems of the Self*.

Why-stripping targets Voice Phrase

Introduction. This paper considers the phenomenon of *why* with fragments ((1); Freeman 1976, Collins 1991). The phenomenon in (1a,b,c) is referred to as *why*-stripping by Nakao et al. (2012).

(1) a. John ate natto. Why natto? d. Why go to Italy on holiday?
b. Jane left. Why Jane? e. Why be hung for a lamb when you could be shot for a sheep?
c. They left on Tuesday. Why on Tuesday?

Nakao et al. propose that the pronounced fragment in *why*-stripping is moved to the specifier of a Focus head in the CP layer, which then licenses the ellipsis of its TP complement (by bearing an [E] feature, along the lines of Merchant 2001). The *why* is base-generated in [Spec, CP], which Nakao et al. argue is motivated for independent reasons, and explains the lack of (e.g.) *where*- or *how*-stripping; only *why* may be base-generated and triggers the association with focus licensing the focus head. I will argue that, while Nakao et al. are right to argue that *why* is base-generated and that fragments as in (1a-c) are the result of movement to the Spec of an ellipsis-licensing Focus head, they are incorrect in identifying *why*-stripping as TP ellipsis. On the basis of various diagnostics, I propose that a CP containing *why* is base-generated above Voice Phrase, with no TP in the structure (2a). I argue that cases like (1d, e) (which I will call *why*-fragments) are by contrast not ellipsis, but rather *why* taking a non-finite TP as complement (2b,c).

(2) a. $[_{CP}$ Why $[_{FP}$ on Tuesday $F_{[E]}$ <$[_{VoiceP}$ $[_{vP}$ we $[_{VP}$ leave]]]>]]
b. $[_{CP}$ Why $[_{TP}$ PRO$[_{VoiceP}$ $[_{vP}$ $[_{VP}$ go to Italy on holiday]]]]]
c. $[_{CP}$ Why $[_{TP}$ PRO$[_{VoiceP}$ be $[_{vP}$ $[_{VP}$ hung for a lamb]]]]]

Reasons to believe that *why*-stripping selects VoiceP. An analysis in which *why*-stripping targets VoiceP (rather than TP or v/VP) can explain some otherwise mysterious properties of *why*-stripping.

• <u>*Why*-stripping does not tolerate Voice mismatches,</u> as pointed out by Nakao et al. (2012). The ellipsis-licensing head should then be above vP, as vP-ellipsis does tolerate Voice mismatches (Merchant 2007).

(3) I know why MARY took out the garbage. *Why by JOHN, though?

• <u>*Why*-stripped verbs are untensed.</u> This is expected if *why*-stripping targets a constituent below TP.

(4) Mary danced. Why dance(*d)? (only "metalinguistically" = "Why are we saying 'danced'"?)

• <u>*Why*-stripping does not preserve tense.</u> (5) below can be interpreted with a different tense from the antecedent. Assuming a syntactic matching requirement between ellipsis and antecedent (Merchant 2007 a.o.), this is unexpected if the ellipsis site contains Tense (the past tense should be 'copied over'), but can be explained if it does not (with the temporal location of the event perhaps derived pragmatically).

(5) *Context: There is an empty bowl of what clearly was stew. John wipes his mouth, changes his spoon, and is about to dig into a bowl of natto.* I understand why John ate the stew. Why the natto, though?
$[_{CP}$ Why $[_{FP}$ the natto$_1$ <$[_{VoiceP}$ $[_{vP}$ John eat t_1]]>]] (no past tense node)

• <u>*Why*-stripping preserves root modality but not epistemic modality.</u> Compare (6a) and (6b).

(6) a. I understand why John can access the guest account. Why the superuser account, though?
b. [Detectives' conference – debating possible hypotheses]
I understand why John might be in Stockholm (a witness saw someone answering to his description). ??Why in Oslo, though? (OK: 'why might John be in Oslo?')

Root modality is preserved in the ellipsis in (6a) (= "why can John access the account"), but epistemic modality is not preserved in (6b) (≠ "why might John be in Oslo"). If root modality is generated below T but epistemic modality above (following Hacquard 2006 and refs therein), this behavior can be explained.

Support from the behavior of subjects. If TP is not present in the structure of *why*-stripping, then subjects cannot receive nominative Case from T. Given a principle like the Case Filter, we expect overt subjects to be disallowed in *why*-stripping, as they cannot receive nominative Case. I argue that this is what leads to the ungrammaticality of (7a). Objects, however, can receive accusative Case in the normal way, and so are licensed, leading to the grammaticality of (7b).

(7) a. I understand why Bill left. Jane left too, though. *Why Jane? (OK: '...why did Jane?')
b. I understand why you ate the beans. You ate the natto too, though. Why the natto?
($[_{CP}$ why $[_{FP}$ the natto$_1$ <$[_{VoiceP}$ you eat t_1]>]])

There are various apparent counterexamples to this general principle, discussed below. I will argue that none are real counterexamples to the generalization that *why*-stripping targets Voice Phrase.

• Apparent *why*-stripped subjects are actually objects of clefts. (8a) (=(1b)) shows an apparently clear case of a *why*-stripped subject. I argue, however, that (8a) involves ellipsis of a cleft sentence, as in (8b).

(8) a. Jane left. Why Jane? b. [$_{CP}$ Why [$_{FP}$ Jane$_1$ <[$_{VoiceP}$ it was t$_1$ that left]>]]

Following Reeve (2011)'s syntax for clefts, the copula *was* is generated in vP, and so can be captured by the ellipsis. Merchant (2001) argues against a cleft analysis for sluicing ('pseudosluicing'), but Merchant's counterarguments do not apply to *why*-stripping. Clefts bring about a uniqueness presupposition; when that presupposition cannot be accommodated, as in (7a), the structure is ungrammatical. Furthermore, subjects like *nothing* or *nobody*, which are degraded in clefts, show the same degree of degradation in *why*-stripping, although in object position they are fine.

(9) a. Nothing appeared. ??Why nothing? (??Why was it nothing that appeared?)
b. You ate nothing. Why nothing? ([$_{CP}$ Why [$_{FP}$ nothing$_1$ <[$_{VoiceP}$ you eat t$_1$]>]])

• *Why*-stripped subjects in passives. Subject *why*-stripping in passives seems better than actives.

(10) I understand why Bill was fired. John was fired too, though. (?)Why John?

(Compare (10) to (7a).) The grammaticality of (10) is surprising, as it represents a case where a subject has been extracted from the ellipsis site, contrary to the conclusion reached for cases like (7a). Such a subject should fail to pass the Case Filter, or equivalent principle. However, we independently know that accusative case can be assigned in English passive constructions if T is not present, as shown by absolute constructions like (11a,b), while this is not possible e.g. in unaccusatives or active unergatives (11c,d):

(11) a. [The ban lifted], the publishers could proceed. b. [Him paid], the building can start.
c. *[The manager arrived], the meeting could start. d. ?*[Him sleeping], we could go to bed.

We can sketch an account for (10) in the current framework by arguing that the suppression of accusative Case in (standard) passives is due to the presence of T, following for example a 'hierarchical' model of Case assignation as in Marantz 1991, where T introduces a nominative Case which must be assigned to some argument. *Why*-stripping is one environment, along with absolute constructions, in which there is no T to introduce Nominative, so internal arguments are free to receive accusative Case.

***Why*-fragments without ellipsis.** Given this analysis of *why*-stripping, it is tempting to extend it to cases such as (1d,e). However, I argue that *why*-constructions with full verb phrases are not elliptical and cannot be identified with *why*-stripping; specifically, I argue that these fragments do contain (non-finite) T.

• *Why*-fragments license PRO subjects, such as those which appear in other non-finite contexts in English. This can be detected from the binding requirements imposed by a subject pronominal.

(12) a. I thought, why overexert myself/*me?
b. Why PRO$_{arb/*1}$ teach me$_1$ Spanish? c. Why PRO$_{1/*arb}$ teach myself$_1$ Spanish?

• *Why*-fragments contain modality common to non-finite contexts. Bhatt 1999 discusses the teleological modality in non-finite contexts such as *Hafdis knows where to get gas* (≈ "Hafdis knows where one should get gas"). *Why*-fragments show the same teleological modality:

(13) Why go to Italy? ≈ "Why should one go to Italy?"

• *Why*-fragments do not license accusative Case on passive subjects. This behavior contrasts with instances of *why*-stripping such as (10). It can be explained if the suppression of accusative Case is due to T, as argued above; if T is present in structures such as (14), accusative Case cannot be assigned.

(14) *Why him be fired? *[$_{CP}$ Why [$_{TP}$ him$_1$ T$_{nonfin}$ [$_{VoiceP}$ be [$_{vP}$ fired t$_1$]]]]

Conclusion. This paper extends the analysis of *why*-stripping provided by Nakao et al. (2012) and provides evidence that *why* and its ellipsis-licensing Focus associate must merge with a VoiceP, rather than a TP. This expands our knowledge of which constituents can be selected for ellipsis. It also illustrates a difference between the syntax of *why*-fragments and *why*-stripping, despite surface similarities; *why*-fragments select non-finite T, not VoiceP, clarifying the syntax of this understudied construction.

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Aaron Steven White, Rachel Dudley, Valentine Hacquard
& Jeffrey Lidz (University of Maryland)

Poster Session II
Saturday 4:00 - 5:30

Discovering classes of attitude verbs using subcategorization frame distributions

Introduction. A verb's syntactic distribution and its semantic content are correlated ([5], [1], [6]). This correlation has been argued to be a potentially useful cue for the verb learner, especially as a verb's semantic content becomes more abstract ([2]). Indeed, knowledge of syntactic distribution is a virtual necessity in learning to distinguish classes of attitude verbs---e.g. doxastic, desiderative, etc.---since very little non-linguistic contextual evidence is available. In this paper, we show that the syntactic distributions of a wide-variety of attitude verbs in English are informationally rich enough to make fine-grained distinctions among different verb classes.

Background. To assess the informativity of syntactic distribution, we adapt experimental methods developed by [1] and apply cluster analysis techniques common in Natural Language Processing to the results. [1] gathered two types of data: semantic similarity judgments and acceptability judgments. Their aim, like ours, was to assess whether clusterings of verbs derived from syntactic distribution could recapitulate clusterings derived from semantic similarity judgments of experimental participants. Semantic similarity was operationalized with their triad task.

In this task, every possible combination of three verb types from a set of verb types is generated. For each combination, two participants are asked to choose the verb that is least like the other two. Each time a verb is chosen, the similarity score between the other two is incremented. This results in a square matrix of similarity scores with each row (and each column) corresponding to a verb. Each row can be thought of as a point in a high dimensional "verb space". Cluster analyses can then be used that look for areas of density in the verb space.

[1] operationalized (idealized) syntactic distribution with acceptability judgments. From the set of all subcategorization frames the verbs from the previous task occur in, each possible verb-subcategorization frame pairing was generated. For each pair, they elicited acceptability judgments on a standard 1-to-7 scale. The average of the judgments for each pairing was then entered into a matrix with rows corresponding to verbs and columns corresponding to frames. Each verb can be thought of as a point in a high-dimensional "frame space". As with the similarity judgments, cluster analyses that look for areas of density in this frame space can then be used.

Current Study. From clustering analyses on these two matrices, [1] found that some classes derived from the semantic similarity clustering were recapitulated by the the syntactic distribution clustering. Quantitative analysis of the fit between the two was not performed, however. One way we improve on [1]'s methods is in providing explicit quantitative measures of this fit. Another is in distinguishing information about acceptability of a subcategorization frame---a bundle of syntactic features---from each syntactic feature alone---e.g. a finiteness feature on the verbs complement. This distinction turns out to be important in that raw syntactic features can improve classification significantly.

It should also be noted that, where [1] were testing verbs from a wide variety of subclasses, we are interested specifically in subclasses of attitude verbs. This significantly raises the bar since the distinctions among classes of attitude verbs will be at least as hard to find as distinctions among subclasses of verbs across the entire lexicon.

Experiment. For 30 attitude verbs from 13 classes described in [4] (see Table 1), we gathered semantic similarity judgments (3 per triad) from 60 participants using Amazon's Mechanical Turk. For 34 frames, 9 acceptability judgments for each possible verb-frame pair (instantiated as 9 different sentences) were gathered in the same way from 90 participants. We then derived a syntactic feature matrix from the syntactic frame matrix. The features represented by each frame were coded, resulting in 22 distinct features. For each verb, we then averaged the acceptability judgment scores for each frame instantiating that feature. These averages were entered in a verb-by-feature matrix.

Classification. We applied k-means clustering to each matrix---*semantic similarity*, *frame feature*, and *(derived) syntactic feature*---100 times, each time with random initialization points. Each run of the k-means algorithm produces a partition on our 30 verb types. These partitions correspond to classes that our unsupervised classifier posited.

Evaluation. We compared each set of 100 partitions to a gold standard partition of our verb set taken from [4]. This comparison was done using the normalized Variation of Information (VI) measure [7]. VI is an information theoretic measure of similarity between two partitions of the same set of objects. Its normalized variant ranges over [0, 1]. A score of 0 is received only for two identical partitions. Figure 1 summarizes the VI scores of each of the 100 sample sets.

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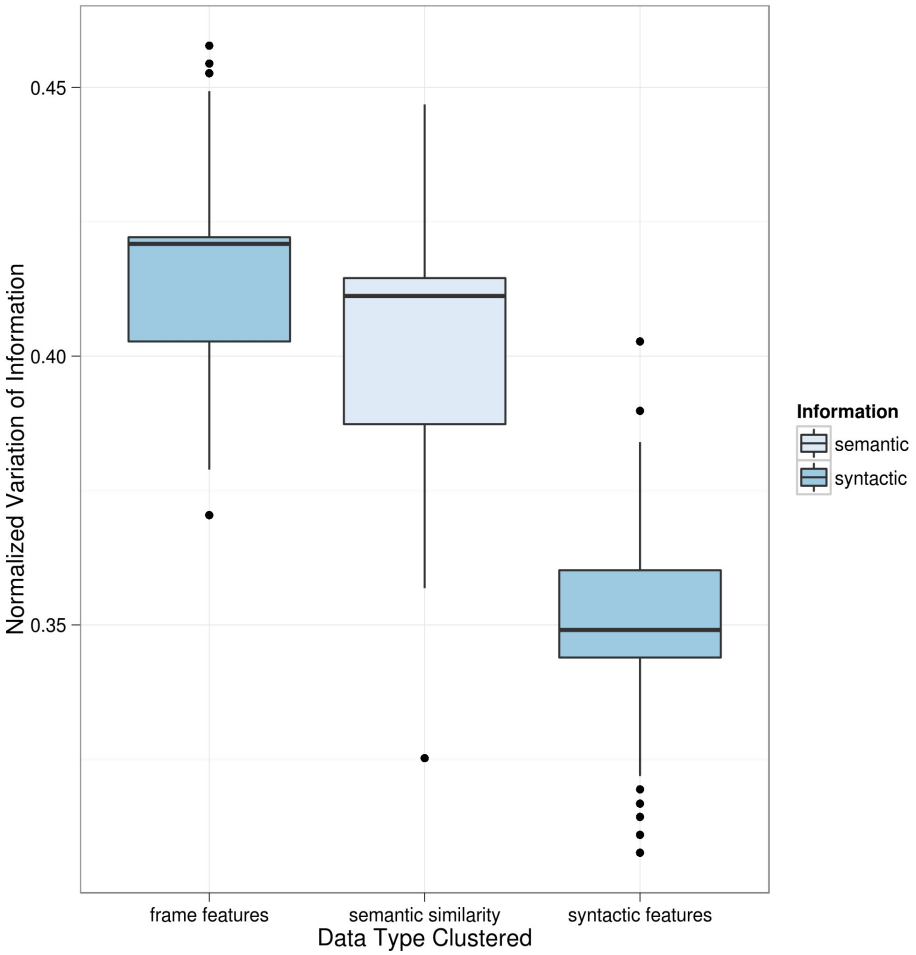
Discussion. It is initially surprising that clustering over syntactic features does significantly better than the semantic similarity judgments, since in [1]'s study, clusters on these judgment were taken as a sort of gold standard. But not all non-syntactic features of a lexical item are part of their semantics. Interference from pragmatic knowledge about a word may enter into a naïve informants judgments. As such, it seems more lucrative to treat semantic similarity judgments as a baseline that we'd like to do as well as or better than. Either source of syntactic distribution information we use---raw frame scores or derived syntactic feature scores---meets this criterion, showing that syntactic distribution is highly informative about a verb's semantic content.



Verbs and [4]'s clusterings

believe	*doxastic*
think	*doxastic*
understand	*doxastic*
doubt	*certainty*
say	*arg/com*
suppose	*arg/com*
tell	*arg/com*
deny	*arg/com*
forget	*semifactive*
realize	*semifactive*
remember	*semifactive*
amaze	*emot factive*
bother	*emot factive*
hate	*emot factive*
love	*emot factive*
promise	*commissive*
hope	*emot doxastic*
worry	*emot doxastic*
need	*desiderative*
want	*desiderative*
allow	*permit/comm*
demand	*permit/comm*
forbid	*permit/comm*
see	*perception*
hear	*perception*
feel	*perception*
expect	*conjecture*
guess	*conjecture*
imagine	*fiction*
pretend	*fiction*

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Charles Yang, Kyle Gorman & Jennifer Preys
(University of Pennsylvania) Saturday 3:00

Productivity and Paradigmatic Gaps

Summary As young children vividly illustrate (the famous *wug* test; Berko 1958), productivity, the ability to extend observed patterns to novel items, is a key design feature of language. It is thus puzzling that there are corners of the grammar where productivity unexpectedly fails. In a classic paper, Halle (1973) draws attention to paradigmatic gaps; for instance, there are around 75 Russian verbs, all belonging to the second conjugation, that lack a first person singular (1sg.) non-past form, a fact which cannot be predicted on phonotactic grounds alone (Sims 2006). In this study, we use a model of productivity in language acquisition (Yang 2005, 2010) to predict paradigmatic gaps in the inflectional systems of English, Spanish, and Russian from quantitative considerations.

Background Even undisputedly productive generalizations only reach productivity after extensive linguistic input. For instance, children acquiring English past tense typically follow a U-shape learning curve (Pinker 1999), whereby irregular verbs are initially inflected early on, but are later subject to overregularization (*hold-*holded*), signaling the onset of the productive "add /-d/" rule. Since regular verbs are on average less frequent than irregulars, it takes time for the child to encounter enough regulars to posit a productive "add /-d/" rule in the face of exceptional irregulars.

The model The question is how many regulars are "enough" to counter exceptions. Yang (2005) approaches the question through online computational efficiency: a productive rule can tolerate a certain number of exceptions only if treating them as exceptions leads to an lower expected real-time processing time than simply listing all items sorted by frequency. This model is motivated by the psycholinguistic findings that idioms (Cutler & Swinney 1979) and irregulars (Clashen et al. 2004, Penke & Krause 2005) are generally processed faster than compositional phrases and regulars, respectively, even after controlling for frequency; a consequence is that too many exceptions may delay average processing time. Under very general assumptions about word frequencies (i.e., Zipf's law), it is possible to show that if a rule is applicable to $\boldsymbol{N}$ lexical items, the maximum number of exceptions it can tolerate while still maintaining productivity, is $\boldsymbol{N} / \ln \boldsymbol{N}$ (see Yang 2005). Consider a straightforward application. There are approximately 150 irregular verbs in English, which means that there need to be 1000 verbs in total, and 850 (= 1000 - 150) regulars, to ensure the productivity of the "add /-d/" rule (since $1000 / \ln 1000 \approx 150$); in fact, there are 1,252 underived verbs that occur at least once per million words in the COBUILD corpus.

A filibuster-proof majority It is easy to see that a rule followed by a mere majority of items within its scope is not necessarily productive. For instance, nearly 90% of English words place primary stress on the initial syllable (Cutler & Carter 1987), though English metrical stress can only be accurately described by taking syllable weight into account; see Legate & Yang (2012) for an application to this productivity model to evaluate theories of metrical stress and its acquisition. Likewise, it is possible *not* to obtain productivity if the lexical items are subject to several alternations which constitute exceptions for each other, with the result that none reach productivity. We argue this is precisely when paradigmatic gaps arise: the lack of a productive rule means that the learner must hear the inflected forms of these lexical stems, but their absence in the input renders them ineffable.

Case study I: English past tense verbs It is well known (e.g., Pinker 1999) that several English irregular verbs lack preterites (*forgo-*forwent/*forgoed/*forgone-forgone*) or past participles (*stride-strode-*strided/*stridden/*strode*), and corpus statistics confirm the reality of these gaps. At the same time, the majority (102 out of 150) of irregular verbs have syncretic preterites and participles (e.g., *keep-kept-kept*, *bring-brought-brought*). But in order for the syncretism to be automatically extendable, there can be no more than 30 ($\approx 150 / \ln 150$) exceptions, when there are in fact 48 (= 150 - 102). Thus, even though the preterite-past participle syncretism holds for more than twice as many items, it fails to reach the productivity threshold. We correctly predict that the learner will be at a loss when in need of a preterite for *forgo* or a past participle for *stride*.

Case study II: Spanish mid-vowel diphthongization In some but not all Spanish verbs, an unstressed *e* or *o* in the final root syllable becomes *ie* [je] and *ue* [we] under primary stress (e.g., *negar-niego* 'deny',

aprobar-apruebar 'approve of', but cf. non-alternating *pegar-pego* 'stick onto', *robar-robo* 'steal'). This alternation is found in all three conjugations, but at different type frequencies (verbs occurring at least once per millon tokens in LEXESP; Sebastián et al. 2000). Following Harris (1969), we assume a single rule of dipthongization accounts for *e-ie* and *o-ue* alternations, but that the *i-e* alternation in words like *pedir-pido* derives from underlying /i/, and thus outside the scope of diphthongization.

conjugation		***e-e, o-o***	**e-*ie*, *o-ue***	**productivity threshold**	
first	(*-ar*)	1050	125	166	(yes)
second	(*-er*)	189	29	43	(yes)
third	(*-ir*)	19	33	13	(no)

The model predicts "no change" to be productive in the first and second conjugations; this is supported by children's frequent underapplication of diphthongization in these conjugations (Clahsen et al. 2002), a type of over-regularization. By contrast, the model assigns no productive rule to the third conjugation, and that is exactly where one finds inflectional gaps when primary stress falls in a root mid vowel (e.g., *abolir-*abolo/*abuelo* 'abolish', *colorir-*coloro/*coluero* 'colorize'; Real Academia Española 1992). We compare this prediction to those of Albright's (2003) model of Spanish diphthongization gaps, which incorrectly predicts gaps in other conjugations and fails to reliably predict the gaps recorded in the 3rd conjugation.

Case study III: Russian 1sg non-past verbs Returning to the classic case of Russian, we note that the root-final *t* of many verbs of the Russian second conjugation is realized as *č* in the 1sg. non-past (e.g., *metit'-meču* 'mark') but many verbs instead mutate to *šj* (e.g., *smutit'-smušju* 'confuse') or have a gap in the 1sg. non-past (e.g., *očutit'sja-*očučus'/*očušjus'* 'find oneself'; Halle 1973, Sims 2006). We use the Zaliznjak (1977) morphological dictionary to count each outcome, combining verbs which share roots but which take different prefixes or the reflexive *-sja* (for these always share the same mutation—*č* or *šj*—or are gapped; Pesetsky 1977) and eliminating verb roots not occurring at least once per million tokens in the Russian Reference Corpus (Sharoff 2005). There are 59 verbs belonging to this class, and19 of these verbs follow the minority (*t-šj*) pattern, exceeding the threshold of 14 (≈ 59 / ln 59) needed for productivity. Thus, inflectional gaps in Russian are entirely predictable as a consequence of productivity detection in language acquisition.

Conclusion Paradigmatic gaps arise when productivity fails (Halle 1973), and this is correctly predicted by a formally precise model of language acquisition (Yang 2005, 2010).

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The Processing of Backward Sluicing and Island Constraint

One of the problems in the processing of ellipsis constructions is how the parser searches for the antecedent of the ellipsis site. In the processing of ellipsis constructions, the parser must find the antecedent for the ellipsis, and "recover" the content of the elided clause from the antecedent. This study aims to uncover the mechanism behind this online ellipsis resolution process by paying a special attention to the processing of the Backward Sluicing construction.

Backward Sluicing (henceforth BwS) e.g., (1a), is a construction in which a clausal-ellipsis ([$S_{Ellipsis}$]) in an embedded wh-interrogative precedes the antecedent-clause ([S_{ANT}]) that provides the content of [$S_{Ellipsis}$]. By studying the online processing of BwS, we specifically show the following three points: (i) in the processing of BwS, the parser actively searches for the antecedent-clause and achieves the interpretation of ellipsis, once the parser recognizes the ellipsis site; (ii) this active antecedent search process drives the active search for the licensing verb of wh-phrases, like in wh-filler-gap dependency formation in non-ellipsis context (henceforth WhFG) as in (1b); (iii) however, unlike WhFG, this search in BwS is not constrained by islands.

There are two possible scenarios for online clausal-ellipsis resolution: the parser waits until an element that unambiguously marks the antecedent clause, or the parser actively searches for the antecedent clause whereby the closest clause to the ellipsis site is taken as the antecedent. In terms of the processing of BwS, the parser waits until an indefinite phrase, e.g., "a writer" in (1b), in the first scenario (the so-called delay strategy). This is so because in sluicing constructions, the wh-phrase normally has an indefinite noun phrase that serves as the antecedent for the wh-phrase. Thus, the indefinite noun phrase can tell that the clause that contains it is mostly likely the antecedent clause for the clausal ellipsis site. On the other hand, in the second scenario, the so-called active strategy, the parser starts searching for the antecedent clause upon recognizing the ellipsis site. Therefore, in this scenario, the parser searches for the antecedent clause in the position closest to the ellipsis site, e.g., immediately after the clausal connective 'but' in (1b).

The Wh-dependency processing in BwS can tease apart these hypotheses since, like WhFG dependency, BwS involves wh-phrases that must be licensed by a verb, which itself must be contained in the antecedent clause. Thus if the antecedent clause is found, so is the licensing verb. The first experiment tests these hypotheses utilizing the plausibility manipulation paradigm (Phillips 2006, Traxler and Pickering 1996). 40 participants read the sentences in (2) in a moving-window study: we compare BwS against WhFG dependency, where semantic congruency of verbs and wh-phrases are manipulated. We find a main effect of plausibility: verbs in (2a/b) are read significantly slower than verbs in (2c/d) (P's<.05). Thus, like WhFG dependency formation, the parser connects wh-phrases with their closest licensing verb, suggesting the parser actively searches for the antecedent clause.

The second experiment tests the island sensitivity of this search process. Islands have been debated between grammatical accounts (Chomsky 1981, Phillips 2006, Ross 1967) and processing-complexity accounts (Hofmeister and Sag 2010, Kluender and Kutas 1993). If storage of the wh-filler and the processing of the resource-demanding intervening element induce island effects, the parser should not try to connect the wh-phrase to the licensing verb in an

island domain during BwS processing due to processing-overload. Conversely, if the parser computes grammatical constraints related to BwS, the parser may search for the licensing verb inside an island. This is so because sluicing, unlike non-elliptical wh-interrogatives, is insensitive to islands (Chung, Ladusaw and McCloskey 1995, Merchant 2001, Ross 1969). Employing the plausibility paradigm again, we manipulate plausibility of verbs inside a relative clause island in subject position and compared BwS and WhFG in terms of semantic congruency between the wh-phrase and the verb:(3). We find an interaction of dependency type and congruency; incongruent verbs are read slower than congruent verbs in the BwS condition ((3a/c)) but no such differences in WhFG conditions ((3b/d)) (P's<.05). Thus, the results suggest that the parser employs an active search strategy while ignoring islands in sluicing conditions.

In summary, in this study we found the following. First, the processing of BwS, like WhFG, employs active search for licensing verbs, which is motivated by the active search for the antecedent clause of ellipsis. Second, even though the processing of the two construction shows similarities in the active search for the licensing verb, BwS processing shows difference from WhFG processing: BwS processing ignores islands while WhFG processing is constrained by islands. This finding potentially argues against the processing-based accounts of islands since they do not predict the plausibility effects, which is the mark of dependency formation, in the island domain.

(1) a. I don't remember which writer [$S_{Ellipsis}$], but [S_{ANT} the editor notified a writer about a new project]
b. I don't remember which writer the editor notified __ about a new project.

(2) a./b. Incongruent: I don't remember which book {, but/ø} the editor notified the publisher about {a new book/__}…
c./d. Congruent: I don't remember which writer {, but/ø} the editor notified the publisher about {a new book/__}…

(3) a./b. Incongruent: I don't remember which book {, but/ø} [RC the editor who notified the publisher about some science book had recommended {a new book/__} to me.
c./d. Congruent: I don't remember which writer {, but/ø} [RC the editor who notified the publisher about a fiction writer had recommended {a new writer/__}to me.

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Poster Session I
Friday 2:45 - 4:45

(Just) about: an analysis

Sauerland and Stateva (2007) compare the approximators *about* and *approximately* and suggest that *about* occurs in a particular subset of *approximately*-contexts. Here I highlight two complications for the analysis they put forth: *about* is infelicitous in *approximately*-felicitous contexts that imply speaker certainty, and *about* is felicitous with select maximum-standard gradable adjectives. To account for these, I propose that *about* has an epistemic possibility component, and when *about* appears with a maximum-standard adjective, it is actually an instance of *just about* with a covert *just*.

Previous analysis Sauerland and Stateva (2007) claim that the approximator *approximately* can only combine with non-endpoint expressions as shown in (1), and the approximator *about* is restricted to a subset of these expressions, specifically, numerals and temporal expressions, as shown in (2).

(1) a. approximately three/north/the same (non-endpoint)
b. #approximately dry/pure/white (endpoint)

(2) a. about three, at about noon, at about midnight, at about the same time (non-endpoint)
b. #about north/open (non-endpoint)
c. #about clean (endpoint)

This characterization of *about*, however, seems simultaneously not restrictive enough and too restrictive. First, not all numerals and temporal expressions are felicitous with *about*, demonstrated by the expressions in (3), which many speakers find marked.

(3) a. ?There were about two people at the party.
b. ?He'll arrive on about Tuesday.
c. ?It's about Thanksgiving.
d. ?It's about 2010.

Second, not all endpoint expressions are infelicitous with *about*. Notably, many maximum-standard gradable adjectives are felicitous, shown in (4a) (Rotstein and Winter, 2004, a.o.).

(4) a. about full/empty/straight
b. about ?dry/?certain/?closed/#invisible/#pure

Epistemic content To account for the data in (3), I propose that *about* marks speaker uncertainty. This epistemic component is apparent in contexts like (5), where the speaker is assumed to know his own age.

(5) [The speaker is 23 years old, and someone is seeking a 25-year-old]
a. I'm approximately 25.
b. ? I'm about 25.

As expected in this new analysis, felicity of *about* improves when the context supports speaker uncertainty. If the speaker in (5) just awoke from a coma and does not know how old he is currently, *about* becomes felicitous. In (3a), the infelicity may related to the fact that people are less likely to be uncertain about small numbers of atomic nouns; if only two people were at the party, you could easily count them, but if the numeral is less countable (e.g. *fifty*), felicity improves. Similarly, if (3b) is uttered in a context where schedules are sufficiently vague, its felicity improves (e.g. *John is stopping by our house on his cross-country bike ride. His schedule depends heavily on the weather, but he thinks he'll arrive about Tuesday.*). Likewise, making the examples in (3) temporally more remote (i.e. such that the speaker is not expected to remember precisely) improves their felicity (e.g., *It was about Thanksgiving/1990 because it was right around the time my brother was born*).

Additional support for assigning an epistemic component to *about* can be seen in its interaction with epistemic predicates like *might* and *seem*. Here, as shown in (6), *about* (but not near-synonym *approximately*) gives rise to modal concord readings.

(6) a. John is about six feet tall. $\approx$(6b,d), $\not\approx$(6c,e)
b. John might be about six feet tall. c. John might be approximately six feet tall.
d. John seems about six feet tall. e. John seems approximately six feet tall.

This epistemic behavior is captured in (7) and (8), where *about* and *approximately* differ in that only *about* directly expresses that the uttered numeral is epistemically possible, implicating lack of speaker certainty.

(7) $[\![\textbf{about}]\!] = \lambda n_d.\lambda D_{\langle dt\rangle} : \exists m_d \in \{y|n-\sigma \leq y \leq n+\sigma\}.D(m)\ \&\ \diamond D(n)$

(8) $[\![\textbf{approximately}]\!] = \lambda n_d.\lambda D_{\langle dt\rangle} : \exists m_d \in \{y|n-\sigma \leq y \leq n+\sigma\}.D(m)$
'presupposes that D is true of some degree that falls within some contextually-determined distance (σ) from the uttered degree'

(Just) about To account for the data in (4) I propose that these examples contain instances of directional *just about* with a covert *just*, not approximative *about*. Note that when *about* modifies a maximum-standard adjective, it behaves similar to other directional modifier (*just about*, *almost*, *nearly*, etc.): following Nouwen (2006), it has a polar component, shown in (9), but this polar component is not prominent, shown in (10).

(9) a. just about full $\rightarrow$ not full
b. about full $\rightarrow$ not full
c. (about ten $\not\rightarrow$ not ten)

(10) a. #Fortunately, the glass was just about full when it fell.
b. #Fortunately, the glass was about full when it fell.
c. (Fortunately, the glass was not full when it fell.)

So, when *about* appears with certain maximum-standard adjectives, it patterns like *just about*, not like approximative *about*, supporting the analysis of this *about* as being a conventionalized form of *just about*. And while this form has been established for adjectives in (4a), it has not been for those in (4b). I assume that this distinction is frequency-based; note that many paraphrases are infelicitous with *about*.

(11) a. about full/?brimming/?saturated/?adequate/?loaded b. about empty/?vacant/?blank/?barren

Conclusion Here we have glimpsed Sauerland and Stateva (2007)'s take on *approximately* and *about*, as well as some ostensible problems. While I maintain that approximative *about* occurs in a subset of contexts allowed by *approximately* (directional, not approximative, *(just) about* occurs with adjectives), the presence of an epistemic component requires some revamping of their proposed licit contexts and denotation for *about* (which, like their *approximately*, simply adjusts scale granularity, $[\![\textbf{about D}]\!]^{\text{gran}}$ = coarsest(gran)($[\![\textbf{D}]\!]$)).

Interestingly, this epistemic *about* parallels Geurts and Nouwen (2007)'s analysis of *at most*: both assert that expressed numeral is possible, but (unlike assertions) neither seems to allow direct denial of this content. In (5), neither (5)b nor *I'm at most 25* is felicitous, but neither can be directly denied (*You're wrong, you know you're not 25* vs. *Hey, wait a minute, don't you know how old you are?*). And while this epistemic content does not show pure at-issue behavior, it does not exhibit the projection behavior of presuppositions or CIs. This behavior, however, appears general to epistemic expressions (*I might be 25* shows the same deniability pattern), affirming the proposed epistemic content in *about* and *at most*.

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