

Deconstructing Correlatives: Individuals and Properties -- the case of Georgian 'rom' relatives

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Joint work with Léa Nash, Paris 8/CNRS

The literature on relativization makes reference to correlatives and internally headed relatives. Comparing Hindi-Urdu correlatives and 'rom'-relatives in Georgian, we argue that these notions can be decomposed further. Correlatives have been taken to consist of an individual denoting free relative clause that is left-adjoined to a main clause that contains a demonstrative phrase associated with the free relative. 'rom' relatives in Georgian satisfy half of this description - they are left peripheral clauses adjoined to a main clause which contains an associated demonstrative phrase. But we should that they on their own denote properties and not individuals. The definiteness found with Georgian correlatives is shown to follow from anaphora and not from the internal makeup of the relative clause. We propose that Georgian 'rom' relatives can be seen as a kind of internally headed relative. This means that correlatives can be based on internally headed relatives as well as free relatives and that they can involve both individual anaphora and property anaphora.

Crosslinguistic Relational Focus Semantics

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Joint work with Muriel Assmann, Max Prüller, Izabela Jordanoska (all UVienna)

We present a novel mechanism for deriving focus alternatives (similar to those in Rooth's seminal work), based on two simple, non-stochastic relational rules. After demonstrating the workings of the system using English, we will go on to explore how to model focus in a number of West African languages, in which focus is marked by position and morphological markers. Finally, we will present some speculations on what may be common across these systems, and how to capture the differences between the languages with as few stipulations as possible.

The work reported on here is joint work carried out in our FWF funded project "Unalternative Constraints Cross-Linguistically", based on my previous work on "unalternative semantics", see <https://homepage.univie.ac.at/daniel.buring/phpsite/index.php?lang=en&page=UAS>.

The OVO hypothesis: Originating Variation from Order

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One central challenge of contemporary linguistics is determining what factors cause cross-linguistic variation. In this talk, I will present and discuss our ongoing work under the hypothesis that a central determinant of linguistic variation is the temporal sequencing (i.e. serial order) of linguistic representations. We work under the assumption language is rooted in and intertwined with other cognitive capacities, and explore language variation from an interdisciplinary perspective, with a particular focus on language processing in bilinguals. We view language processing as the ultimate interface, posing strong demands on linguistic form. The OVO Hypothesis holds that variation emerges from linearization; we investigate the consequences that each basic linearization choice (OV/VO) has for language form and processing strategies. We investigate OVO bilinguals, that is, bilinguals with opposite linearization choices in their languages. Among the findings to be presented and discuss, early and proficient OVO bilinguals do not show signs of superficial transfer even though they reveal native/nonnative processing effects for morphosyntax; bilingual speakers deploy distinct dependency minimization strategies for OV versus VO languages, though the degree to which they resort to dependency minimization is greater in their native language than in non-native one.

In doing this, we seek to contribute to our understanding of the relationship between syntactic structure and cognitive mechanisms involved in language use, focusing on how their interplay yields linguistic diversity.

Vowel harmony in Gua and the syntax-phonology interface

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Vowel harmony has been reported to cross word boundaries, but few studies have addressed domains of harmony beyond the word. In this talk, I present joint research with Michael Obiri-Yeboah on cross-word vowel harmony in Gua (Kwa, Ghana). Gua has strict regressive +ATR harmony within roots, words and across words. ATR vowel harmony applies in a non-iterative regressive manner within either binary or ternary phonological phrases. In sentences consisting of three or four words, syntactic structure plays no role; three word sentences form a single ternary phrase, and four word sentences are consistently parsed as two binary phrases. However, in longer sentences, the language reveals a preference for phonological phrases to match with the subject noun phrase, according a role to syntactic structure. A five-word sentence with a two-word subject will phrase differently than one with a three-word subject. We explore how Match theory offers insight into the syntax-phonology interface in Gua, but also how it faces problems with longer sentences and serial verbs. In addition, we assess the non-iterative nature of cross-word vowel harmony. Previous accounts of non-iterative word-internal harmony have proposed a mechanism of feature licensing that is distinct from word-internal iterative harmony. Cross-word non-iterative harmony in Gua both undermines regular ATR harmony within words through surface disharmony, but also reinforces harmony as combinatorial glue between words. The regressive +ATR dominant nature of both types of harmony suggests that they are the same mechanism, but with limits imposed due to nested domains.

A context sensitive semantics for proper names.

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Overview. I examine nonliteral uses of names to motivate a novel semantics for them. I argue that to account for such uses we should treat names as interpretable only given a context and a speaker. In this framework, a name denotes a property chosen contextually from the set of those believed by the speaker to hold of the name’s bearer in the actual world. The analysis captures a wide range of name-uses and can be further extended to account for the acquaintance relation required for *de re* readings of singular terms. Additionally, an examination of the contexts that license non-literal name uses reveals yet another interesting role trivialities play in natural language.

The Problem. Counterfactual (1) conveys contingent content, despite its contradictory antecedent.

(1) If Stalin hadn’t been Stalin, the USSR would’ve fallen to Hitler.

Intuitively, (1) says that had Stalin *been* different somehow, Hitler would have won. However, if names are rigid designators or predicates with a fixed meaning, we cannot derive such truth-conditions. In a Stalnaker-Lewis framework, counterfactuals quantify over worlds where their antecedents hold and that otherwise resemble w_0 . Since the antecedent in (1) is contradictory, the worlds in which it holds are not accessible from w_0 . Therefore, we cannot quantify over them (and even if we do allow such quantification, we will not compute the desired meaning for (1)).

Metaphorical Exceptions? Examples like (1) are often considered marginal to the study of names. Their marginality is argued to stem from their metaphorical nature: the proposition “Nixon might not have been Nixon” says that Nixon was a different *sort* of person in some world, not that he violated the law of identity there (Kripke 1971). However, the distributional behavior of nonliteral names cannot be accounted for by positing a *literal v. metaphorical* ambiguity and provides reasons to question whether these names constitute a unified class.

First, unlike the use in (1), English metaphorical uses cannot appear in bear NP form, as illustrated in (2–3). Furthermore, the second name slot in (1) cannot be said to license a metaphorical reading *simpliciter*; when the name in the second slot differs from the one in the first, as in (4), the intended metaphorical interpretation is not computed. Finally, rigid designation in particular falls short of accounting for cases like (5), which also require an overt article but are not metaphorical.

- (2) George Wallace is a Napoleon. (4) # If Stalin hadn’t been Napoleon, ...
(3) # George Wallace is Napoleon. (5) An Alfred joined the club. (Burge 1973)

In Greek, where definite articles *mandatorily* precede names in argument positions, nonliteral uses *cannot* appear with an overt definite article, only with an indefinite one or in bare form, as in (6). A definite article can *only* precede a name used nonliterally in sentences like (7) (cf. (1) and (4)).

- (6) o Yannis ine {∅ / enas / #o} Hitler (7) An o {Hitler / #Yannis} den itan o Hiter, ...
the John is {∅ / a / #the} Hitler If the {Hitler / #John} NEG was the Hitler, ...

Proposal. I propose that we analyze names as $\langle e, t \rangle$ predicates not fully specified for content. When a name is uttered, a choice function over property sets selects a *contextually salient* property that the speaker attributes to the name’s bearer in w_0 . This is formalized in (8), where C is a context, y a speaker and f_C a choice function of type $\langle \langle \langle e, t \rangle, t \rangle, \langle e, t \rangle \rangle$. (Note: it is possible to capture the same facts by assuming that f_C is an independent operator, rather than part of the name’s lexical entry. For brevity’s sake, I will not elaborate upon that alternative here.)

- (8) $\llbracket \text{Nixon} \rrbracket^{C,y} = \lambda x_{\langle e \rangle} . [f_C(\mathcal{P})](x) \quad \mathcal{P} \stackrel{\text{def}}{=} \{P \mid \text{believe}(y)(P(\llbracket \text{the bearer of } /'nɪksən/ \rrbracket^{w_0}))\}$

I further assume that f_C selects *the metalinguistic property* “bears the name X” (hereafter: M) by default, and selects a different property if one of the two following conditions hold:

- (a) If selecting M triggers a *logical triviality* (tautology or contradiction); *or*
- (b) If: (i) the name under interpretation is not in the morpho-syntactic form of names in argument positions (which I will call the *canonical form* of names in a language); *and* (ii) selecting M triggers a triviality given the common ground (a *contextual triviality*).

The contingent content of (1) is no longer puzzling: f_C cannot select M for both occurrences of “Stalin” without triggering a logical contradiction. It therefore selects M for the first and a contextually salient property for the second. Condition (b) is met in (2); when M is selected for “Napoleon”, shared knowledge about Wallace is contradicted. Since condition (b) relies on parameters that are language specific, it accounts for the differences between English and Greek.

Discussion. My proposal is in line with *predicativism* in treating names as predicates (Fara 2015; Matushansky 2008), but differs from them in setting up a mechanism for interpretation that does not confine a name’s meaning to some variation of M. It allows names to denote properties that bear no relation to the phonological string itself, but prohibits full specification of these properties in the lexical entry (thus enabling the correct interpretation of (1)).

The role of trivialities. Conditions (a–b) are not exhaustive; other specific contexts also license nonliteral uses. However, (a–b) suffice to illustrate that trivialities *force* nonliteral interpretations of names. This observation can be incorporated in the future into a theory of trivialities in language, which ranks trivialities according to their power over the interpretation process: L-analyticities in the sense of Gajewski 2002 trigger ungrammaticality, logical trivialities force nonliteral readings and so do contextual trivialities, when other linguistic patterns are violated.

Extension to *de re* acquaintance. Lewis’s (1979) observation that *de re* attitudes require acquaintance between the attitude holder and the *res*, enables a reduction of *de re* interpretations to *de dicto* ones with *de re* acquaintance requirements. This is made explicit by Maier (2009):

- (9) X believes_{*de-re*} Y is P iff there is an acquaintance relation R between X and Y in w_0 and X believes_{*de-dicto*} the object he is R-acquainted with is P.

R plays a crucial role in shaping the truth-conditions of a *de re* report, yet does so non-compositionally: no element in the proposition corresponds to it. We can save compositionality by deriving R as a name’s meaning. For the *de re* report X believes Y is P to be felicitous, its speaker must believe that the property is the object that X is R-acquainted with holds of the *res* Y; so when a name is used to denote Y, one can employ my proposal to account for the existence of R.

- (10) I heard a noise... and thought Justin was a burglar. (Sæbø 2015)

The speaker in (10), who is also the attitude holder, is R-acquainted with *Justin* as *the thing making the noise*; therefore, f_C selects *that* property for the name. This account extends to pronouns and descriptions by making two nontrivial yet independently motivated assumptions: First, I assume Elbourne’s (2013) account of pronouns as determiners with elided noun complements. I also assume that common nouns can *behave as* names in the sense I propose; an assumption supported by non-compositional descriptions such as *The Holy Roman Empire*, which, as Voltaire quipped, was neither holy nor Roman nor an empire. We could then assume that *de re* readings of singular terms are the result of those terms being or behaving (in *de re* contexts) as proper names.

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Word stress and phrasal intonation in Georgian

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Based on novel acoustic data, this paper shows that Georgian (Kartvelian) has **(A)** word stress, which is fixed on the initial syllable and primarily cued by duration, and **(B)** phrasal intonational pitch targets that are located in the right periphery of the prosodic word (penult and ultima) and are not limited to particular discourse contexts, as has been suggested before. This paper argues that the sum of these two separate phenomena is what have led previous investigations to postulate two word stress loci in Georgian – initial and (ante)penultimate, while also emphasizing the importance of phrasal intonation as compared to word stress. **Background.** Native speakers of Georgian have no consistent intuitions about stress placement, nor are there regular stress placement patterns in conjugational/declensional paradigms or minimal pairs based on stress. Authors who advocate for the existence of word stress acknowledge its acoustic weakness and uncertainty of their observations [1]–[3]. A conclusion that can be made from the literature is that stress targets the initial syllable in di- and trisyllabic words, while in longer words there is another stress-like target on the (ante)penultimate syllable [1], [3]–[6]. In such longer words either the initial syllable or the (ante)penult have been variably analyzed as carrying (primary) stress, with the other locus possibly carrying secondary stress. The uncertainty surrounding word stress in Georgian led some authors to suggest that instead of word stress Georgian relies solely on pitch targets that constitute the prosodic make-up of a phrase/utterance [2], [7]–[11], as French [12], [13] or Korean [14]. Existing instrumental studies, while limited in scope, reveal that the final two syllables of a word are the locus for phrasal intonational pitch targets [9], [15]–[18]. Specifically, the ultima carries a pitch target associated with the right edge of an Accentual Phrase (AP; each prosodic word typically forms an AP in Georgian [16], [17]), which is analyzed as a final boundary tone of an AP in the Autosegmental-Metrical (AM) analysis and can be high (Ha) or low (La) [16], [17]. The penult, in turn, carries a low pitch target, which is found on predicates in certain discourse contexts, such as yes/no-questions (YNQs), wh-questions (WHQs) and narrow focus contexts [19], [17], [20]. This pitch target has been analyzed as a phrase accent L [17], [20], but this approach is not unproblematic, since phrase accents are typically manifested by a stretch of pitch between the final pitch accent and the boundary tone [21], [22], while in Georgian the pitch target in question is rigidly aligned with the penultimate syllable. **Data.** The data for the current study was obtained from four native speakers of Georgian (3 females: LK, NP, NA; one male: ZA; age range: 24-40), natives of Tbilisi residing in the US. The recordings were made using an Audio Technica 8022 microphone and a Scarlett 2i4 audio recorder in a soundproof booth at a 44100Hz sampling rate. The stimuli consisted of 1-6 syllable words, $n=179$, of CV structure ($C = [+cons, +voice]$, $V = \text{any vowel}$), embedded in a carrier phrase. Since there is no evidence that morphological structure plays any role in stress placement in Georgian [18], [23], [24], both mono- and polymorphemic words were included. Each word was iterated 3 times ($179 \text{ types} \times 3 = 537 \text{ tokens}$). Duration and pitch of each syllable were measured in Praat. After elimination of disfluent tokens, the resulting dataset consisted of 1966 word tokens (LK: 174 types, 515 tokens; NP: 179 types, 536 tokens; NA: 179 types, 536 tokens; ZA: 127 types, 379 tokens). Statistical analysis of the data was performed using R. **Results.** **(A)** The initial syllable is significantly longer than the second one in words of any syllable count (paired t-test, $p < .01$). There is no consistent pitch pattern either within or between the groups of words of the same syllable count. **(B)** The final syllable in all words has significantly higher F0 value than the penult, while the penult has lower F0 than the preceding antepenult or the following ultima (paired t-test, $p < .05$). This was the case regardless of syllable count (two-factor ANOVA, effect of syllable count: $p = .057$).

Analysis. (A) Georgian has fixed initial stress that is primarily cued by duration, based on the consistently greater duration of the initial syllable as compared to the following ones in words of any syllable count. This consistent durational effect cannot be easily explained as any phenomenon other than word stress. **(B)** The ultima carries a high boundary tone, as expected in broad-focus declarative contexts, according to the earlier literature. However, the penult in words of any syllable count carries another pitch target, which is very similar in nature to the phrase accent L that has been described in the literature as appearing on the penult of predicates in questions and focal contexts. The present study, therefore, shows that it has much broader distribution. Moreover, the current study highlights its problematic theoretical status, since, like the L described in the existing literature, the low pitch target described here has a very precise distribution (invariably, the penultimate syllable), which is atypical of canonical phrase accents. At the same time, such strict distribution is incompatible with the hypothesis that this low pitch target can be an on-gliding portion of a complex boundary tone LH%, which would also be more variable in placement. Similarly, another alternative hypothesis that the L on the penult is a pitch accent is difficult to maintain, since pitch accents are anchored to syllables carrying word stress – i.e., according to the current study and in consort with older literature, the initial syllable. Therefore, the Georgian data calls for recognizing another subtype of a phrase accent – a notion that has been hypothesized to be non-homogenous.

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Case Competition under ECM. Evidence from Spanish dialects.

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1. GOAL: This paper argues that ECM subjects in Spanish may receive structural or inherent Case, depending on the categorial status of the embedded clause (cf. Chomsky 1986). Building on Ormazabal & Romero (2007), we argue that if the embedded clause is a TP, the ECM-ed DP receives inherent Case (INH) while if the embedded clause is an XP (where X is a predicative category, V, Asp or P), then the ECM-ed DP receives structural Case (STR).

2. BACKGROUND DATA: The literature on Case has extensively argued that DOs can become subjects if the structure is modified (cf. Woolford 2006 and references therein). That's one of the hallmarks of passives, which show that accusative Case qualifies as *bona fide* STR:

- (1) a. French people elected *Macron* b. *Macron* was [[elected t_{Macron}]]

The same holds in ECM structures, as shown in (2) and (3), as long as the embedded clause is a TP, which is signaled by *to*:

- (2) a. I made [_{VP} *Mary* leave] (3) a. I saw [_{VP} *Mary* leave]
b. *Mary* was made [_{TP} t_{Mary} *(to) leave] b. *Mary* was seen [_{TP} t_{Mary} *(to) leave]

This indicates that, somehow, the type of Case that the ECM-ed DP is assigned (STR or INH) depends on the category of the clausal complement (here, TPs vs. vPs). Under the assumption that only CPs and TPs (but not vPs, AspPs, PPs, etc.) receive Case, this reveals some kind of “Case competition” within the relevant domain—the v*P. Ormazabal & Romero (2007) phrase this into the *Object Agreement Constraint* OAC, arguing that only one DP agrees with v*, which amounts to only one DP receiving STR—the other being licensed by an alternative strategy involving INH.

3. SPANISH DATA: These very observations apply to Spanish, but this time with interesting twists. To begin with, causative and perception verbs license an ECM dependency (as (4) and (5) show respectively); however, notice that only causative verbs allow for gerunds and participles:

- (4) Alguien vio [a María pelear / peleando / peleada] (Spanish)
someone saw ACC María fight fighting fought
'Someone saw María fight/fighting/angry (at someone)'
- (5) Alguien hizo [a María pelear / *peleando / *peleada] (Spanish)
someone made ACC María fight fighting fought
'Someone made María fight/fighting/angry (with someone)'

Given the intricacies of causative verbs (cf. Treviño 1994, Guasti 2006, Harley & Folli 2004, Torrego 2010), we concentrate on perception predicates in this paper. What is relevant for us is that passivization is worse with infinitives than it is with gerunds (cf. Fernández Lagunilla 2005):

- (6) María fue vista {?*pelear / peleando / peleada} (Spanish)
María was seen fight fighting accompanied
'María was seen fight/fighting/angry (at someone)'

An additional interesting observation is that the ECM-ed DP *María* in a sentence like (6) oscillates between accusative and dative only when it is base-generated within an infinitival clause, which we analyze as a TP: gerunds and participles rule out accusative Case assignment.

- (7) a. La vi [t_{la} {pelear / peleando / peleada}] b. Le vi [t_{le} {pelear / *peleando / *peleada}]
cl_{ACC} saw fight fighting fought cl_{DAT} saw fight fighting fought
'I saw to her fight/fighting/angry (at someone)'

What (6) and (7) reveal should be clear (the presence of an infinitival makes the ECM-ed DP receive INH, not STR), how to account for it is not. We provide a solution below.

4. MAIN IDEA: We would like to argue that the facts above follow from Ormazabal & Romero's (2007) OAC, which is spelled-out in (8):

- (8) *Object Agreement Constraint* (OAC): If the verbal complex encodes object agreement, [only one] argument can be licensed through verbal agreement.

The OAC was designed to deal with ditransitive-like configurations, where there is more than one potential agreeing element. In the context of the present discussion, we take the OAC to tell us

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that the category of the clausal complement may vary so that the DP (DO) vs. PP (IO) rivalry is replicated. Instead of DP and PP, we argue that the relevant competing dependents are TP and XP (where X = a predicative category: V, P or Asp). This can be seen in (9), where we submit that the ECM-ed DP (*Indiana*) receives STR if the embedded clause is an XP (taking gerunds and participles to involve a predicative projection; cf. Gallego 2009, Gallego & Hernanz 2010).

(9) [I saw v* [*Indiana*_{STR} [XP X (= P) [open-**ing** the Ark]]] clause = XP (receives INH)

As for (10), we assume that the DP receives INH (from matrix V), which follows from the embedded clause, a *bona fide* TP, being part of an Agree dependency with v*.

(10) [I saw v* [*Indiana*_{INH} [TP T [open the Ark]]] clause = TP (receives STR)

Given Romero & Ormazabal's (2007) AOC, and the varying categorial status of the complement, we can account for the fact that the DP receives STR and INH.

5. CONSEQUENCES AND ITS PARAMETERS: The main conclusion to be drawn from the previous section is that the ECM-ed DP of infinitival clauses receives INH (as the TP itself receives STR, under the OAC), and thus cannot be passivized. This is true of datives in Spanish more generally, but there are two pieces of crosslinguistic variation that threaten this observation: datives can be passivized in English (for which a parameter must be invoked; Harley 2003, McGinnis 2004, among others), and in certain dialects of Spanish too. The latter case is particularly relevant for our proposal. Consider the data in (11) and (12), discussed in Montalbetti (1999):

(11) a. Juan le vendió una casa a María b. *María fue vendida una casa (Spanish)
 Juan cl_{DAT} sold a house to María María was sold a house
 'Juan sold a house to María' 'María was sold a house'

(12) a. Juan le prohibió a María [TP leer el libro] (Peruvian Spanish)
 Juan cl_{DAT} prohibited DAT María to-read the book
 'Juan prohibited to María to read the book'
 b. María fue prohibida [XP de leer el libro] (Peruvian Spanish)
 María was prohibited of to-read the book
 'María was prohibited of to read the book'

The data in (11) illustrate the (well-known) impossibility for IOs to passivize in Spanish. Interestingly (and surprisingly too), (12) shows that *IOs can undergo passivization if (IF) the DO is clausal in Peruvian Spanish*. What is yet more interesting is that the embedded clause must then be introduced by a preposition: *de* (Eng. 'of'). We would like to argue that such preposition qualifies as X, which entails that the clausal complement receives INH, making it possible for the otherwise IO to receive STR. This alone accounts for passivization under our OAC-based approach.

So-called 'deista Spanish' provides an important piece of evidence that *de* is an INH-marker and not the mere PF realization of C or T (or Fin, in a cartographic analysis). As Camus (2013) reports, in this variety of Spanish, *de* can optionally introduce clauses selected by perception verbs. Crucially for our purposes, *de* blocks extraction; this can be seen in (14), a case of clitic climbing:

(13) a. Te vi [TP traerla] (Spanish) (14) a. Te vi [XP de traerla] (deista Spanish)
 cl_{DAT} saw bring-her cl_{DAT} saw of bring-her
 b. Te la vi [XP traer t_{la}] (Spanish) b. *Te la vi [XP de traer t_{la}] (deista Spanish)
 cl_{DAT} cl_{ACC} saw bring cl_{DAT} cl_{ACC} saw of bring
 'I saw you bring her' 'I saw you bring her'

If nothing else, Camus' (2013) data in (14) simply reveal that clauses introduced by *de* pattern like PPs (INH-marked dependents), thus providing more evidence that there is a "Case competition" situation like those where Ormazabal & Romero's (2013) OAC applies.

6. CONCLUSIONS: This paper has argued that ECM structures in Spanish provide new evidence that the assignment of structural Case is subject to locality constraints. We have phrased this in terms of the OAC here (following Ormazabal & Romero 2007), but there are similar alternatives: minimality (Rizzi 1990), distinctness (Richards 2010), etc. We have further built on dialectal data to show that the relevant constraint seems to be parametrized. This is already known for datives crosslinguistically, but dialectal data pose further questions about the structural / inherent cut.

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Finding phrases: Does co-verbal visual information help adults and infants parse speech?

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Infants and adults readily integrate auditory and visual facial information while processing language. Co-verbal facial gestures have indeed been shown to facilitate processing at the segmental and lexical levels. However, their role in processing larger linguistic units, e.g., phrases, has received less attention. Here, we tested 10 groups of monolingual and bilingual adults, as well as 4 groups of monolingual infants in an artificial grammar task investigating how they integrate phrasal prosody and its concomitant co-verbal facial gesture, head nods, to parse a continuous audiovisual speech stream into phrases. Specifically, we tested whether this information helps participants segment the stream into phrases with word orders corresponding to that of their native language(s), as has been shown for auditory cues alone (Gervain & Werker 2013, Gervain et al. 2013). Monolingual participants were all English-speakers/learners. The basic word order of English is V(erb)-O(bject), functor-initial (e.g. *in London*). Bilinguals spoke English and another language whose basic word order was the opposite, i.e. O(bject)-V(erb), functor-final (e.g. Japanese: *Tokyo ni* [Tokyo to]).

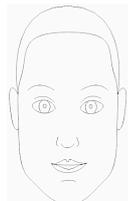
The artificial grammar (Figure 1A), similar to Gervain et al. (2013) and Gervain & Werker (2013), consisted of a strict alternation of frequent words, mimicking functors and infrequent words, mimicking content words (e.g. ...*fiSEnuSApeLEfiMUnuLlpeMEfiTI*...). Three frequent words and three categories of infrequent words were used with adults, two with infants (yielding an underlying structure *aXbYcZ* and *aXbY*, respectively). The beginning and end of the stream were ramped in amplitude, rendering the stream structurally ambiguous between a frequent word (i.e. functor) initial and a frequent word (i.e. functor) final parse (*fiSEnuSApeLE* vs. *SEnuSApeLEfi*). With this basic structure, 5 different grammars were created for adults, adding phrasal prosody either typical of functor-initial (a durational contrast) or of functor-final languages (a pitch contrast), and/or head nods aligned with frequency and prosodic information (Figure 1B). For infants, two grammars were created, with head nods aligned or misaligned with prosody. Test items implemented a frequent-initial or a frequent-final order (Figure 1A). Adults were tested in a 2-alternative forced choice task (familiarization ~10min, 36 test trials), infants in the headturn preference procedure (familiarization 4min, 8-16 test trials). We expected monolingual English participants to show a preference for the frequent-initial order, and bilingual participants to select the word order indicated by the prosodic and/or visual information.

Both adult bilinguals and monolinguals (Figure 1C) used head nods to parse new input. In addition, both populations used frequency and prosody, though they exhibited interesting differences. Interestingly, the bilinguals' segmentation preferences seemed to be modulated by the language of the context, i.e. the language used during the experiment.

In infants (Figure 1D), 4- and 8-month-olds were tested, before and after perceptual attunement to native prosody. Four-month-olds displayed no preference for either order. Similarly, no preference was found in 8-month-olds presented with aligned auditory and visual cues, unlike in auditory-only studies (Gervain & Werker 2013), whereas 8-month-olds exposed to misaligned cues displayed an almost significant frequent-initial preference, i.e. the preference characteristic in their native language. These results suggest that, at least at 8-months of age, infants try to integrate aligned audiovisual cues, but these gestures seem to be too complex for them to process. When misaligned, infants appear to disregard the conflicting visual information and rely on the more stable auditory cues.

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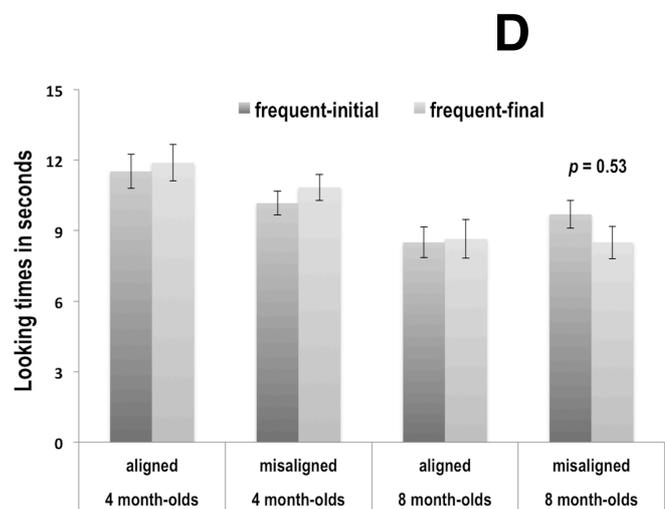
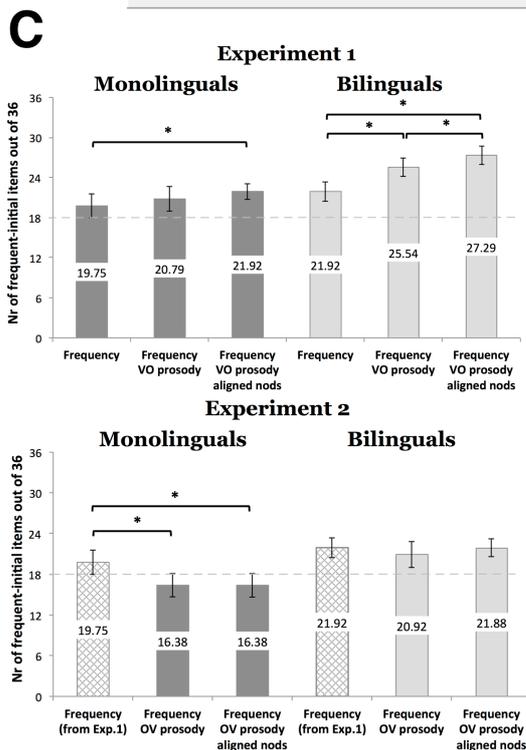
(a) CATEGORIES AND TOKENS	a: fi	X: FE, KA, LA, MU, NE, PA, SE, TI, TO	A
	b: nu	Y: FU, KO, LI, FA, MO, NA, DA, SA, TE	
(b) AMBIGUOUS FAMILIARIZATION		Z: FO, KE, KU, LE, MA, DI, PO, TA, ME	
	TWO SEGMENTATIONS:		
<i>frequent-initial</i>	...aXbYcZaXbYcZaXbYcZaXbYcZ...	...fiSEnuSApeLEfiMUUnuLipeMEfiTI...	
OR			
<i>frequent-final</i>	...[fiSEnuSApeLE]fiMUUnuLipeMEfiTI...	...fi[SEnuSApeLEfi]MUUnuLipeMEfiTI...	
(c) TEST PAIRS (36)	peMAfiKAnuFA	SApeKEfiMUUnu	B
	PAnuFApeMEfi	peFOfiMUUnuNA	
	nuLipeKUfiTO	KUfiNENUMOpe	
	

EXPERIMENT 1: ARTIFICIAL LANGUAGES

FREQUENCY: alternating frequent & infrequent elements	...fiSEnuSApeLEfiMUUnuLipeMEfiTI...
FREQUENCY AND VO PROSODY: short - long contrast [- —]	...fiSEnuSApeLEfiMUUnuLipeMEfiTI...
FREQUENCY, VO PROSODY AND ALIGNED HEAD NODS: peak in infrequent / long element	...fiSEnuSApeLEfiMUUnuLipeMEfiTI...

EXPERIMENT 2: ARTIFICIAL LANGUAGES

FREQUENCY AND OV PROSODY: high - low contrast [* .]	...fiSEnuSApeLEfiMUUnuLipeMEfiTI...
FREQUENCY, OV PROSODY AND ALIGNED HEAD NODS: peak in infrequent / high element	...fiSEnuSApeLEfiMUUnuLipeMEfiTI...



The Phrasal Status of Early English Negative Markers

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Negation in childhood English provides an interesting puzzle for language acquisition research since, as Klima and Bellugi (1966) first demonstrated, children use a combination of non-target and target forms to express verbal negation:

- (1) * They not go there
- (2) * It not fit there
- (3) I don't want that

This research presents a corpus-based investigation into the role of Minimalist syntax in the acquisition of negative markers in child English. In particular, it tests a theory of syntactic acquisition which characterizes English negator development as the setting of a parameter that specifies whether negation occurs adverbially (as a vP-adjunct) or requires a Negation Phrase (NegP) projection (Zeijlstra 2004; 2008). Applied to the problem of first language acquisition, this proposal claims that all early negators are both adverbial and monomorphemic (Thornton and Tesan, 2013; Thornton and Rombough, 2015), such that (1)-(3) have the same underlying syntactic structures. The acquisition of *n't* as a morphosyntactic head is said to correlate with the child's productive use of *doesn't* and marks their convergence to the target grammar.

Three corpus-based statistical analyses were performed using the Manchester corpus (Theakston et al. 2001) from the CHILDES (MacWhinney 2000) database of child speech transcripts. The use of the Manchester corpus extends previous research by including a larger number of children (12) than previous studies, and by utilizing naturalistic, as opposed to elicitation, data. The findings of these analyses suggest that negator development cannot be captured by the proposed parameter alone; children do not treat *don't* adverbially, and already have *do*-support in place when producing non-target forms.

Analysis 1

This analysis tested whether verbs are inflected in negative constructions when *no/not* and *don't* are used as verbal negators (e.g. *That don't fits, I not fits*). A mixed effect logistic regression analysis was performed on the relationship between inflection on the verb and the negator type. Results showed a significant effect for Negator Type's influence on Inflection ($\chi^2(1) = 21.00$, $p < 0.001$). There was no significant difference when Age ($\chi^2(1) = 2.19$, $p = 0.14$) and the interaction between Age and Negator Type ($\chi^2(1) = 0.16$, $p = 0.69$) were added to the model. With respect to Negator Type's influence on Inflection, there was a significant difference in inflection production when *don't* was the Negator ($B = -6.40$, $SE = 0.85$, $p < 0.001$) compared to the when *not/no* was the Negator ($B = 4.23$, $SE = 0.90$, $p < 0.001$). Converting these values to probabilities, the probability of verbal inflections for *not/no* constructions was 10% [CI 6% - 16%] compared to 0.2% [CI 0.03% - 0.8%] when *don't* was the negator. These results suggest a difference in verbal inflection between the two negators.

Analysis 2

The second analysis tested whether the emergence of *doesn't* correlates with the decrease of non-target *no + V* and *not + V* utterances produced by the child. A linear mixed effect analysis was performed

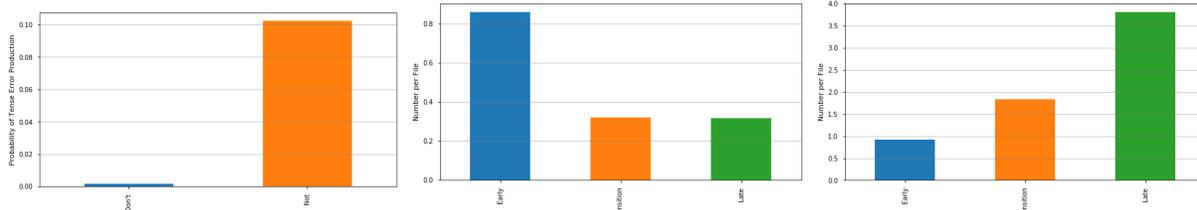
on the relationship between instances of *not/no + V* utterances per transcription file and Developmental Period as measured by *doesn't* productivity. A main effect for Developmental Period (Early: M = 0.9 N = 12; Transition: M = 0.44, N = 9, Late: M = 0.32, N = 6) was analyzed, with Children used as random effects. Results showed a significant effect for Developmental Period on Per-File counts ($\chi^2(2) = 9.21, p < 0.001$). Post-hoc tests showed that the difference between Early and Late periods was statistically significant ($t(19.84) = 2.8, p < 0.05$), whilst the differences between Early and Transition ($t(19.11) = 2.4, p = 0.054$) and Late and Transition ($t(18.45) = -0.744, p < 0.466$) were not. The results suggest that the *not/no + V* is correlated with the emergence of *doesn't*.

Analysis 3

This analysis assessed the influence of *doesn't* emergence on *do*-support. One potential indication of the monomorphemic status of *don't* would be that *do* is used infrequently. A linear mixed effect analysis was performed on the relationship between occurrences of auxiliary-*do* utterances per transcription file and Developmental Period as measured by *doesn't* productivity. A main effect for Developmental Period (Early: M = 0.91 N = 12; Transition: M = 1.84, N = 9, Late: M = 3.81, N = 6) was analyzed, with Children used as random effects. Results showed a significant effect for Developmental Period on Per-File counts ($\chi^2(2) = 16.13, p < 0.001$). Post-hoc simple t-tests with Holm-adjustment were conducted to determine whether the differences between each developmental period were significant. The difference between Early/Late ($t(19.93) = -4.337, p = 0.01$) and Early/Transition ($t(18.48) = 2.554, p < 0.05$) periods were statistically significant, whilst the differences between Late and Transition ($t(19.12) = -2.042, p = 0.0552$) was not. The results suggest that auxiliary-*do* is correlated with the emergence of *doesn't*, but interestingly, the number of occurrences per file of auxiliary-*do* during the Early Period is the same as the number of *not/no + V* constructions per transcription found in Analysis 2.

Discussion and Conclusion

Taken together the results show that the parameter values as conceived do not account for the development of English-learning children undergo when acquiring negative markers. *Don't* does not evoke verbal inflection in the naturalistic data (Analysis 1), whilst the rate of auxiliary-*do* production (Analysis 3) is the same as the rate of non-target *Not+V* constructions (Analysis 2) during the Early Developmental Period. Since *don't* does not pattern like *not* with respect to inflection, and the necessary conditions for *do*-support are already in place, there is no reason to think of early *don't* as monomorphemic and adverbial.



(a) A1: Verb Inflection by Negator

(b) A2: *Not + V* by Period

(c) A3: *Aux-Do* by Period

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8-month-olds use word frequency to establish the lexical categories of function and content words

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The division of labor hypothesis between function words (like: articles */the/*, prepositions */on/* and pronouns */her/*), signaling grammatical structure, and content words (nouns */giraffe/*, verbs */bring/* and adjectives */scary/*), carrying meaning, is linguistic universal^{1,2}. In addition to their distinct linguistic functions, the two lexical categories differ in their phonological makeup and their frequency of occurrence.

Function are much more frequent than content words and it has been shown that 8-month-olds prefer the relative order of frequent and infrequent words that match the distributions found in their native language(s)³. Thus frequency alone seems sufficient in order to build a rudimentary representation of the native word order^{3,4}. Nevertheless whether infants as young as 8 months, possess the ability to map frequent words onto the lexical category of functors and infrequent words onto content words, it was still unexplored.

Taking into account that content words come in an open class whereas function words in a closed class⁵, one way to test our hypothesis was to examine whether infants are flexible to accept new test items within the infrequent category, but not in the frequent one.

Using the Headturn Preference Paradigm (HPP), we familiarized five groups of 8-month-old monolingual French-learning infants with an artificial language in which frequent words (F), mimicking functors, and infrequent words (I), corresponding to content words, strictly alternated (e.g. ...*gefofibugedefikogepafimogekufina*.... Frequent words were nine times more frequent than infrequent ones.

We then tested the first group of infants, the baseline group (experiment 1), on test sequences taken from the familiarization stream. Half of the test sequences started with a frequent word (*F-I-F-I* condition: e.g. *fifogebi*), the other half with an infrequent word (e.g. *I-F-I-F* condition: e.g. *bagebofi*). French being a functor-initial language, here we predicted that infants would show a preference for the frequent-word initial (*F-I-F-I*) sequences.

For a second group of infants (experiment 2), we replaced the infrequent words in the test items with novel ones (*F-N-F-N*: e.g. *fifogene* vs. *N-F-N-F*: e.g. *tafifuge*). If infants expect infrequent words to be content words, and thus belonging to open classes, they should maintain their frequent word initial preference despite the novel words, as the frequent “functors” providing the structural skeleton of the sequences remain in place.

For a third group of infants (experiment 3), we replaced the frequent words with novel ones (*N-I-N-I*: e.g. *sefoshobi* vs. *I-N-I-N*: e.g. *bashobose*). We expected this manipulation to disrupt infants’ preference, as they could no longer rely on the frequent words as structural anchors.

To make sure that the predicted null preference in experiment 3 is not simply a memory effect, but a genuinely linguistic one, as a control, we tested a fourth group of infants (experiment 4), who were presented with pairs of infrequent words from the familiarization stream contrasted with pairs of novel words (e.g. *I-I*: *kuna* vs. *N-N*: *tigo*). A preference for the novel words, i.e. a decreased interest in the familiar infrequent words, would indicate that infants recall the infrequent words from the stream

Finally, a fifth group of infants (experiment 5) was tested as a further control for the predicted null preference in experiment 3 with the aim of investigating whether infants encoded the position of infrequent words at all. We presented infants with test items where frequent words were replaced by novel syllables in the initial position (as in the *N-I-N-I* test items in experiment 3) versus items in which both frequent and infrequent words were replaced by novel ones (*N-N-N-N*: e.g. *sefoshobi* vs. *senushoti*). These latter items carry neither frequency, nor positional information. If infants under these conditions show a preference for the items in which infrequent words are in place and are in the

native-like final position, then that would suggest that even if they do not readily rely on infrequent words as structural anchors when making a word order choice as in experiment 3, they may nevertheless have some knowledge about their expected sequential position.

Infants tested with familiarized sequences (experiment 1) and the sequences in which the infrequent words were replaced by novel ones (experiment 2), showed the predicted word order preference in the test phase, looking longer at sequences starting with a frequent word. However, when the frequent words were replaced with novel items, infants no longer showed a preference (experiment 3). This result is not simply due to a better recall of the frequent words, as infants readily discriminated the familiarized infrequent tokens from novel ones (experiment 4). Importantly, by showing a significantly longer looking time for items in which infrequent items were not replaced, infants demonstrated that they could encode the position of infrequent words alone (experiment 5).

Generally, our findings present the first evidence that 8-month-old infants are already able to extract frequency and positional information from language input to establish the basic lexical categories of function and content words, and use these to build rudimentary representations of grammar.

Figure 1: Artificial grammar task used in Experiment 1, 2, 3, 4 & 5

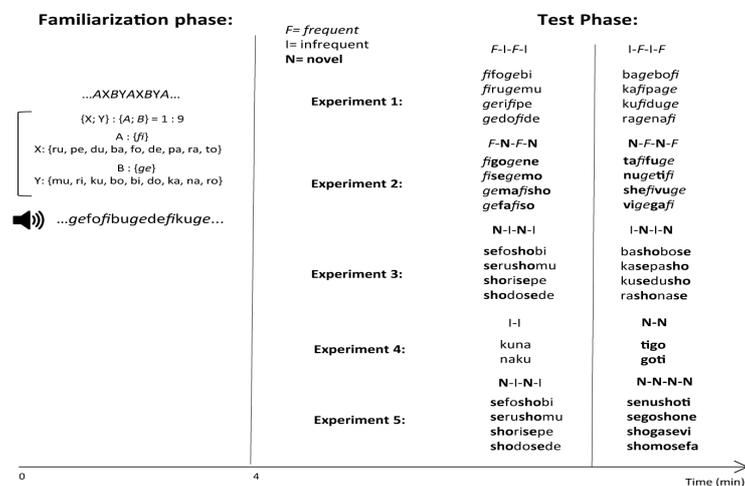
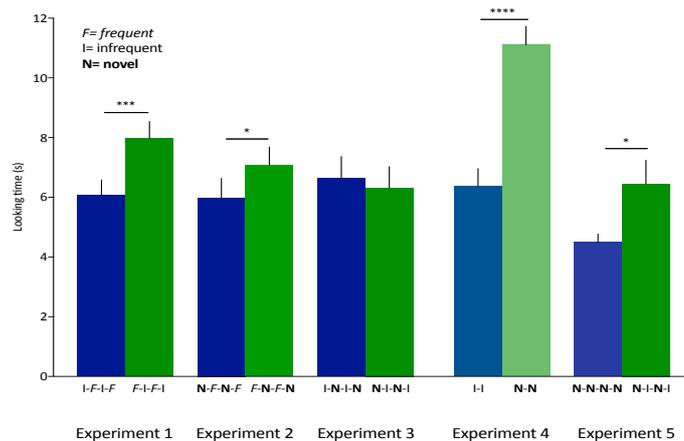


Figure 2: Results of experiments 1-5: Looking time results for experiment 1, 2, 3, 4 & 5. The x-axis shows the different experimental groups. The y-axis shows looking time in seconds. Error bars represent the s.e. of the mean.



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have argued that QACs are clausal (Wilbur 1994, 1999, Caponigro & Davidson 2011). In general, arguments provided in favor of a clausal analysis (e.g. no doubling of the *wh*-word as in embedded questions, non-manual marking different from the one used in the corresponding matrix interrogative) have concerned *wh*-QACs; polar QACs do not involve *wh*-words and show the same non-manual marking as polar questions. Negative answer patterns provide an argument that polar QACs, as with *wh*-QACs, are not question-answer pairs at the discourse level since they are more restricted. Moreover, analyses of QACs as pseudoclefts (Wilbur 1994, 1999) specifically exclude structures involving polar questions (*[*Whether John bought a book*] is [*no/he didn't*]), so data from negative answers to polar questions more specifically support an analysis of QACs as embedded question-answer pairs (Caponigro & Davidson 2011).

2. Evidence against strong typology of SL negation. Zeshan (2006) has argued that sign languages can be divided into two typological classes based on negation: (i) in non-manual dominant languages, the occurrence of non-manual negative markers (in most cases, the negative headshake represented as $\overline{\text{hs}}$) is obligatory and negative signs are unable to negate a sentence on their own, while (ii) in manual dominant languages, manual negative signs are required to negate a sentence. ASL is classified as a non-manual dominant language, but the negative questions in (2) and QAC in (4) interestingly show that negative signs such as NOTHING need not co-occur with a negative headshake. This pattern extends to other negative signs (NEVER, NONE, NOT), which also do not co-occur with the negative headshake when appearing in a question.

3. Double negation readings. While the primary reason for using *positive* QACs is focus/emphasis, *negative* QACs also provide a way to express wide scope readings of negation and double negation readings (cf. (4b)); ASL otherwise shows strong negative concord (Wood 1999). This is consistent with other negative concord languages (e.g. Romanian), which have been argued to allow double negation readings when a negative word is used as a fragment answer to a negative question (Fălăuș & Nicolae 2016).

Toward a modified analysis of QACs. To account for the possible answers for negative questions, the theory must be restricted to rule out $\overline{\text{NO}}^{\text{hs}}$ expressing negative polarity in negative QACs (4a). Our data point toward either further restrictions on the embedding of answer particles (or restrictions on the number of interpretations available when answer particles are embedded) or refinements of the current QACs structure. We discuss how languages vary regarding their ability to embed answer particles: either none of the answer particles can be embedded (e.g. English) or all of them can (e.g. French). Although diagnosing embedding presents problems of its own in ASL, ASL seems to allow embedding of the answer particle $\overline{\text{NO}}^{\text{hs}}$, and crucially when embedded, the latter can convey both interpretations (5), suggesting that rather than restrictions on embedding, a modified analysis of QACs is required.

(5) Ben (to Zoe): AMY IX_{AMY} HOMEWORK $\overline{\text{NOTHING}}^{\text{brow-raise?}}$

‘Does Amy not have any homework?’

a. Zoe: I THINK $\overline{\text{NO}}^{\text{headshake}}$, IX_{AMY} $\overline{\text{NOTHING}}^{\text{headshake}}$

‘I think that she doesn’t have any homework.’

b. Zoe: I THINK $\overline{\text{NO}}^{\text{headshake}}$, IX_{AMY} HAVE

‘I think that she does have some homework.’

Conclusion. Answers to negative questions in ASL indicate its place in a larger picture of possible ways to divide answer particles, and provides insights into several separate phenomena in ASL as well. Looking ahead, while we haven’t found any sign language with three answer particles yet, we predict that only the third (e.g. equivalent to French *si*) would be used in response to negative QACs.

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When Agree bleeds movement: Evidence from Arabic

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Based on the findings of Miyagawa (2010), Alshamari (2017) and Jarrah (to appear), we argue that Agree as viewed in Chomsky (2001) may bleed movement in Arabic grammar. According to Jarrah (to appear), if the probe assigns Morphological Case to its goal, the probe may not bear a ϕ -affix that expresses the ϕ -content of the goal. This indicates that Morphological case on the goal (assigned by the probe) blocks overt ϕ -agreement (of the goal) on the probe. Jarrah makes use of this analysis to account for the observation that the complementizer *?inn* in Arabic varieties (Modern Standard Arabic (MSA), Jordanian Arabic and Lebanese Arabic) does not bear a ϕ -affix that expresses the ϕ -content of the goal when it assigns its goal Morphological case (consider (1a), an example from MSA). On the other hand, when the goal cannot receive a morphological case because the goal is a pro (as in (1b), another example of MSA) or because the language does not obtain Morphological case (including Arabic dialects) (consider (1c), an example from Jordanian Arabic), *?inn* should bear a ϕ -affix that expresses the ϕ -content of the goal.

- (1) a. *?inna*(*hu) *?al-walad-a* *qara?a* *?ad-dars-a*
 Comp DEF-boy-ACC read.Past.3SG.M DEF-lesson-ACC
 ‘The boy read the lesson.’
- b. *?inna**(hu) *qara?a* *?al-walad-u* *?ad-dars-a*
 Comp read.Past.3SG.M DEF-boy-NOM DEF-lesson-ACC
 ‘The boy read the lesson.’
- c. *?if-fab* *?i?taraf* *?inn-hum*
 DEF-young man confess.Past.3SG.M Comp-3PL.M
 ?ixwat-uh *z^harab-u* *?il-walad*
 brothers-his hit.Past-3PL.M DEF-boy
 ‘The young man confessed that his brothers hit the boy.’

According to Jarrah, *?inn* agrees with a pro that is situated in Spec,TP in (1b). Given that the pro does not have a phonological form and hence cannot bear Morphological case, *?inn* bears a ϕ -affix (-hu) that shows the ϕ -content of the pro. This affix is taken as a morphological outcome of the Agree relation between *?inn* and the pro. In (1a), *?inn* agrees with the preverbal subject (which is assigned Accusative Case by *?inn*). Here, *?inn* is not allowed to bear a ϕ -affix displaying the ϕ -content of its goal as the Agree relation between them is RECORDED through the morphological Case. The complementary distribution between Morphological case and ϕ -agreement is ruled by the postulated interface principle *Agree Chain Record* which demands that Agree relations must have a PF record (i.e. an overt Case marking on the goal or, if not, a ϕ -affix on the probe).

In an independent work, AlShamari (2017) shows that there are two types of topic particles (lexical words that mark the element serving as a topic in the sentence) in North Hail Arabic: agreeing particles and non-agreeing particles. Agreeing particles can bear a ϕ -affix that expresses the ϕ -content of the element that functions as the topic of the sentence as in (2a,b) below, whereas non-agreeing particles do not bear such a ϕ -affix; see (2c).

- (2) a. **redi**-hin l-banaat *faf-an* as-sayarah bi-a-sa:ħah
 PRT-3P.F DEF-girls see.PST-PL.F Def-car in-Def-yard
 ‘The girls saw the car in the yard.’
- b. **redi**-ah rkub-u-ah as-sayarah *?al- ?i?jaal*.
 PRT-it drive.PST-3PM-it Def-car Def-boys
 ‘The boys drove the car.’

c. al-hazi:mah	ʕad	ʔal-laʕibi:n
the-defeat	PRT	Def-players
lazim	jidʕtahdu:n	l-taweet-ah
must	work harder	to-compensate-it

‘As for the defeat, the players must work harder to compensate for it.’

The agreeing particle *ʕedi* agrees with the subject in (2a) and with the object in (2b). According to Alshamari (2017), the subject and the object in (2a) and (2b), respectively, are topics which are marked by *ʕedi* that functions as a topicalizer heading the Topic Phrase in the CP-domain (Rizzi 1997). On the other hand, in (2c) the topicalized element, i.e. *alhazi:mah*, should move to the Spec position of the Topic Phrase headed by the non-agreeing particle, *ʕad*. Note here that when the topicalizer is an agreeing particle, the topic remains in situ (as long as it is visible to the probe as is the case of the subject) or should at least move to a position from where it becomes accessible to the probe (as is the case of the object).

We interpret AlShamari’s data as follows. When the probe can agree with its goal and bear a ϕ -affix that displays the ϕ -content of its goal, the goal should NOT move to the Specifier position of the XP headed by the probe. This implies that an overt ϕ -agreement blocks movement; otherwise it would become mysterious why topics should not move to the Spec position of Topic Phrase (at least at PF). On the other hand, when an overt ϕ -agreement is not an option because the topicalizer does not bear uninterpretable ϕ -features, the goal should move to Specifier position of the Topic Phrase.

Combining the results of Jarrah (to appear) and Al-Shamari (2017), we reach the following situation. Morphological Case blocks an overt ϕ -agreement, which in turn blocks overt movement (Morphological Case > overt ϕ -agreement > overt movement). This analysis, if true, implies that overt movement is just a mechanism to record the Agree relations between the probe and the goal. Miyagawa (2010) argues for a similar finding regarding this function of Move. However, Miyagawa does not link Move to morphological Case or ϕ -Agree in that Move may not occur at PF when the Agree relations between the probe and the goal are secured through an overt ϕ -Affix on the probe, a result that Al-Shamari (2017) implicitly argues for. However, Al-Shamari (2017) does not examine the instances where the topicalizer may assign Morphological Case to its goal. That might be attributed to the assumption that topicalizers do not assign Case, and North Hail Arabic (of whose data Alshamari (2017) draws on) does not obtain Morphological case. Jarrah (to appear) succeeds in examining this relation between Case and ϕ -Agree, given that MSA is a morphological Case language, hence the interaction between Case and overt ϕ -agreement becomes possible.

The ultimate finding of this paper is that evidence from Arabic varieties point to the assumption that Agree relations should have a PF record which can first be secured through Morphological Case. If morphological case is not possible, such a PF record is secured through overt ϕ -agreement. If the latter option is also not available, Move is used as a last resort to secure this PF record.

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Linguistic internal and external factors in processing Chinese islands

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[Introduction] Since Ross (1967), much ink has been spilled on syntactic islands. One consistent finding is that *wh*-island effect can be weakened with a D-linked *wh*-phrase. Two main theories exist that can account for this. On the one hand, the Featural Relativized Minimality (FRM) (Rizzi, 2001, 2004) reduces D-linking to partial feature overlap between the *wh*-filler and the *wh*-intervener as a D-linked *wh*-phrase carries an additional {+N} feature not shared by the intervener. The working memory (WM) account (Hofmeister & Sag, 2010; Goodall, 2014), on the other hand, argues that the D-linking effect is due to easier retrieval of the NP-restricted *wh*-phrase during the filler-gap integration because a D-linked *wh*-phrase has lexical content. Therefore, these two different accounts give us different predictions on D-linking effect in syntactic islands without *wh*-interveners. The WM account predicts a D-linking effect, while FRM does not. In this study, we looked at D-linking in Chinese sentential subject and RC islands. Unlike their English counterparts which are strong islands and movement from which is usually ungrammatical (even with D-linked *wh*-phrases), Chinese subject and RC islands are “selective” in that overt *wh*-movement from islands is acceptable under non-episodic eventuality (N. Zhang, 2002; M. Zhang, 2009) while covert *wh*-movement has been claimed to be always grammatical (Huang, 1982; Tsai, 1994, 1997). These features of Chinese provide an ideal testing ground for examining the influence of linguistic internal (eventuality) and external (WM) factors. Further, by including both types of islands, we also expect to test the movement (N. Zhang, 2002; M. Zhang, 2009) vs. base-generation analysis (Tsai, 1997; Hsu, 2008) in accounting for the underlying structure of Chinese *wh*-ex-situ islands. If there is actual movement from islands, we should expect extraction from RC islands to be more difficult given its more embedded structure and adjunct status.

[Methodology] Two grammaticality judgement experiments (1-7 Likert scale) were conducted. In Exp. 1 on D-linking, factors *Wh-phrase* (Bare/D-linking), *Island* (RC/Subject), and *Movement type* (Ex-situ/In-situ) are fully crossed (see example (1) with verbatim English translation). Movement type was included to control for the lexical and structural differences that exist between RC and subject islands. In Exp. 2 on episodic eventuality, factors *Eventuality* (Episodic/Non-episodic), *Movement type* (Ex-situ/In-situ), and *Sentence type* (Wh/Dem) are manipulated (see example (2)). In Exp. 2, in addition to verifying the effect of eventuality on overt *wh*-movement, we also aim to look at its effect on covert *wh*-movement in as in-situ islands are simply assumed to be violation free (Huang, 1982). Further, sentences with demonstratives *nà* (‘that’) which are homophonous with the *wh*-phrase *nǎ* (‘which’) were included to control for predicate differences (i.e. *not many* vs. *have arrived*). Twenty-four sets of target items plus 36 fillers were created in both experiments. Thirty-three and 34 Chinese participated in Exp. 1 and Exp. 2, respectively.

(1) **Subject island, Ex-situ:**

Who/Which doctor, you think [_{SUB} *t* treat this patient] more appropriate?

‘Who/which doctor *x* do think *x* treating this patient is more appropriate?’

RC island, Ex-situ:

Who/Which doctor, you think [_{RC} *t* treat DE] patient recover more quickly?

‘Who/which doctor *x* do you think the patients which *x* treats recover more quickly?’

Subject island, In-situ:

You think [_{SUB} *who/which doctor* treat this patient] more appropriate?

‘Who/which doctor *x* do think *x* treating this patient is more appropriate?’

RC island, In-situ:

You think [_{RC} *who/which doctor* treat DE] patient recover more quickly?

‘Who/which doctor *x* do you think the patients which *x* treats recover more quickly?’

(2) **Wh, Ex-situ:**

Which book, [[_{RC} read-ASP *t* DE] people not many /arrive-ASP]?

Wh, In-situ:

[[_{RC} Read-ASP *which book* DE] people not many /arrive-ASP]?
 ‘Which book x is it such that the people who have read x are not many/have arrived?’

Dem, Ex-situ:

That book, [[_{RC} read-ASP *t* DE] people not many /arrive-ASP].

Dem, In-situ:

[[_{RC} Read-ASP *that book* DE] people not many /arrive-ASP].

‘People who have read that book are not many/have arrived.’

[Results] Mixed-effect linear models were fitted for both experiments. In Exp. 1 (see Fig. 1), main effects of *Wh-phrase* and *Island* were both found to be significant ($ps < .000$) such that D-linked conditions are more acceptable and that subject island is easier to process than RC island. The factor *Movement type* also showed significant interactions with both *Wh-phrase* and *Island* ($ps < .05$). Post-hoc comparisons suggest that D-linking effect and subject island processing advantage only exist for overt *wh*-movement ($ps < .000$), but not for covert *wh*-movement with in-situ islands ($ps > .05$). Thus, the null effect for *wh*-in-situ controls suggests that the inherent lexical/structural differences cannot account for D-linking and island type effects associated with *wh*-ex-situ. In Exp. 2 (see Fig. 2), all main effects were found to be significant ($ps < .000$) such that non-episodic structures are more acceptable than episodic ones and that (Dem-)declaratives are easier than *wh*-questions. There was also a significant interaction of *Eventuality* and *Movement type* ($p < .000$) such that episodic eventuality incurred more processing cost in overt movement than in in-situ structures. Interestingly, the interactions for interrogatives and declaratives are different in nature: while episodic eventuality affects both overt and covert *wh*-movements (left panel in Fig. 2), it only impacts overt DP movement in declaratives (right panel in Fig. 2). This is expected as an in-situ Dem does not undergo any movement (overt or covert) at all. Besides, the null result between the episodic and non-episodic conditions within the Dem/in-situ structure suggests that the significant results associated with episodic eventuality found in Exp. 2 cannot be reduced to predicate/aspect differences (i.e. ‘not many’ vs. ‘have arrived’).

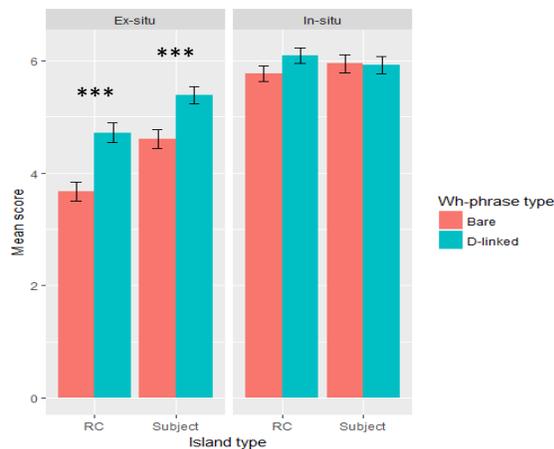


Fig. 1. D-linking effect in RC and subject islands.

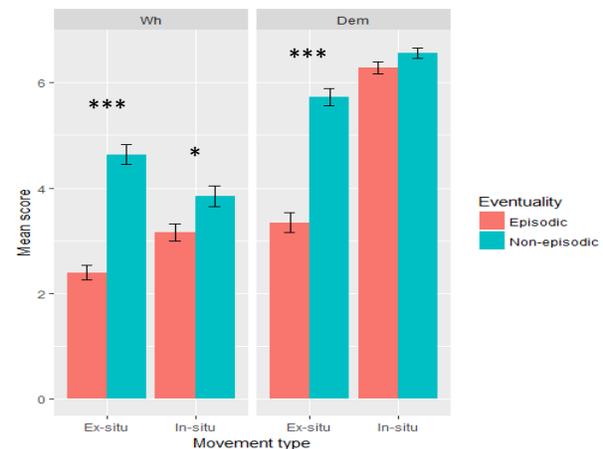


Fig. 2. Episodic eventuality effect in RC islands.

[Discussion] The current study has shown that both linguistic internal and external factors have a role to play in Chinese islands. Specifically, we found that D-linking facilitates and episodic eventuality interferes with island processing (even for in-situ islands). The former result supports a WM account and is inconsistent with a FRM approach; the latter result can be explained if we postulate the existence of a Presupposition Operator at the left end of the main clause (N. Zhang, 2002) which blocks movement under episodic eventuality (also in LF given the new evidence from this study), the spirit of which can be traced back to the definiteness effect in complex NP island (Pollard & Sag, 1994). Furthermore, a subject island processing advantage was found which suggests that the ex-situ *wh*-phrases in Chinese islands have undergone actual movement.

The alternatives of bare and modified numerals

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Introduction. A lot has been written on bare numerals (BNs), comparative-modified numerals (CMs), and superlative-modified numerals (SMs), yet we still lack a unified theory. In light of old and new literature, I revisit four basic phenomena that any such theory needs to address. I observe that none of the existing theories gets all the patterns. I propose a theory that does so, and where any similarities and differences fall out in a principled way from the morphology.

Data. (Entailments) $3 P Q$, *more than* $3 P Q$, *at least* $3 P Q$ entail a lower bound; *less than* $3 P Q$ and *at most* $3 P Q$ entail an upper bound.

- (1) a. Alice has 3 / more than 3 / at least 3 diamonds, #if not less.
 b. Alice has less than 3 / at most 3 diamonds, #if not more.

(Scalar implicatures) In an unembedded context BNs can give rise to a scalar implicature ($3 P Q \rightsquigarrow$ *not* $4 P Q$) (Horn 1972), but CMs and SMs don't (Krifka 1999 a.o. since), (2). However, if the granularity of the scale is made coarser, CMs and SMs suddenly do (cf. exp. work by (Cummins et al. 2012), (3). (CMs and SMs also give rise to the predicted (direct or indirect) scalar implicatures in the scope of a universal operator, or in the antecedent of a conditional.)

- (2) Alice has 3 / more than 3 / less than 3 / at most 3 / at least 3 diamonds.
 $\rightsquigarrow \neg$ Alice has 4 / *more than 4 / *less than 2 / *at most 2 / *at least 4 diamonds.
- (3) *Context: People who solve more than 5 problems but fewer than 9 problems get a B, and people who solve 9 problems or more get an A.* (example from (Spector 2014:42))
 John solved more than 5 problems. Peter solved more than 9.
 $\rightsquigarrow \neg$ John solved more than 9.

(Ignorance) In an out-of-the-blue unembedded context, e.g., (2), BNs don't give rise to speaker ignorance inferences, CMs can (cf., e.g., Nouwen 2015, exp. work by Cremers et al. 2017), and SMs must (Geurts and Nouwen 2007 a.o.).

(Acceptability in DE environments) BNs and CMs can take scope below negation but SMs can't (Nilsen 2007, Cohen and Krifka 2014, Spector 2015), (4). All are fine in DE environments such as the antecedent of a conditional or the restrictor of a universal, (5-a)-(5-b).

- (4) Alice doesn't have 3 / more than 3 / less than 3 / *at least 3 / *at most 3 diamonds.
- (5) a. If Alice has 3 / more than 3 / less than 3 / at most 3 / at least 3 diamonds, she wins.
 b. Everyone who has 3 / more than 3 / less than 3 / at most 3 / at least 3 diamonds wins.

Previous theories. None of the existing theories (whether semantic or pragmatic) (can) capture all these facts. For example, many are by design such that CMs and SMs *can't* give rise to scalar implicatures, or such that SMs but not CMs can give rise to ignorance (or parallel effects) (in one way or another, all of Krifka 1999, Geurts and Nouwen 2007, Nouwen 2010, Fox and Hackl 2006, Coppock and Brochhagen 2013, Mayr 2013, Kennedy 2015, etc.). Also, in the alternative-based theories the type, number, and nature of the alternatives is usually stipulated.

Proposal. (Truth conditions and presupposition) I propose that in BNs, CMs, and SMs the numeral is just a degree (which in BNs can be typeshifted into a predicate e.g. using Buccola and Spector 2016's *isCard* typeshifter), (6), and *much/little* are positive/negative extent indicators (cf. the extents theory of adjectives in Seuren 1984, Kennedy 1997), (7). BNs have the traditional existential truth conditions in e.g. Krifka (1999), (8). CMs and SMs are defined as in (9)-(10). [sup] carries a presupposition that the domain of $|P \cap Q|$, i.e., the set of degrees denoted by $\llbracket \text{much/little} \rrbracket (n)$ should contain at least two degrees (paralleling the presupposition of [sup] in adjectives, cf., e.g., Gajewski 2010), (11).

- (6) $\llbracket n \rrbracket = n$ (type d) $\llbracket \text{isCard} \rrbracket (n) = \lambda x. |x| = n$
 (7) $\llbracket \text{much} \rrbracket (n) = \lambda d. d \leq n$ $\llbracket \text{little} \rrbracket (n) = \lambda d. d \geq n$
 (8) $\llbracket n P Q \rrbracket = (\exists ((\llbracket \text{isCard} \rrbracket (n))P))(Q) = 1$ iff $\exists x[|x| = n \wedge P(x) \wedge Q(x)]$

(9) $\llbracket \text{more/less than } n \text{ P Q} \rrbracket = \llbracket \llbracket \text{comp} \rrbracket (\llbracket \text{much/little} \rrbracket) \rrbracket (n)(P)(Q) = 1$ iff $|P \cap Q| \in \overline{\llbracket \text{much/little} \rrbracket (n)}$

(10) $\llbracket \text{at most/least } n \text{ P Q} \rrbracket = \llbracket \llbracket \text{sup} \rrbracket (\llbracket \text{much/little} \rrbracket) \rrbracket (n)(P)(Q) = 1$ iff $|P \cap Q| \in \llbracket \text{much/little} \rrbracket (n)$

(11) $\llbracket \text{sup(much/little)} \rrbracket (n)(P)(Q)$ defined iff $|\llbracket \text{much/little} \rrbracket (n)| \geq 2$

(Scalar alternatives) Replace n in the truth conditions of BNs, CMs, and SMs with its scalar alternatives (other numerals, typically from \mathbb{N}). **(Subdomain alternatives)** Replace $\llbracket \text{much/little} \rrbracket (n)$ / $\llbracket \text{much/little} \rrbracket (n)$ in the truth conditions of CMs / SMs with its subsets. Because cf. (11) for SMs $\llbracket \text{much/little} \rrbracket (n)$ has at least two elements by presupposition, that means that SMs have two subdomain alternatives preloaded, which I take to mean that they must be factored into meaning via implicature. **(Implicature calculation system)** I will adopt Chierchia (2013)'s version of the grammatical theory of implicatures. Specifically, I will use the silent exhaustivity operator O (given a sentence S and a set of alternatives ALT, $O_{\text{ALT}}(S)$ asserts the conjunction of S and the negations of all those members of ALT that can be excluded together without contradiction) and its presuppositional version O^{PS} (same as O , but exhaustification crashes if it does not lead to a properly stronger meaning). I assume that the scalar alternatives of BNs, CMs, and SMs are exhaustified with O_{ScalAlts} and the subdomain alternatives of CMs and SMs with $O_{\text{SubDomAlts}}^{PS}$. I also assume that exhaustification parses may include a silent matrix universal epistemic modal \square (cf. Kratzer and Shimoyama 2002, Chierchia 2013's silent last resort \square / (neo-)Gricean Bel_S / Meyer 2013's K).

Results. (Entailments) Straightforwardly captured, as the reader can verify. **(Scalar implicatures)** O_{ScalAlts} yields all the attested (direct or indirect) scalar implicatures (essentially the same results as the original Gricean story, plus additional desirable ones, i.e., the embedded scalar implicatures for BNs discussed by Kennedy 2015). The unattested ones leading to 'exactly n ' meanings for CMs and SMs in fact never arise – O_{ScalAlts} clashes with $O_{\text{SubDomAlts}}^{PS}$ (see Ignorance below) and the clash can only be resolved by pruning the offending scalar implicature (which is essentially what coarse granularity contexts do by default). **(Ignorance, acceptability in DE environments)** (Reasoning here parallel to, e.g., Kennedy 2015's neo-Gricean implicature account of Ignorance for SMs and to Spector 2015's grammatical implicature account of Ignorance and infelicity under negation for SMs.) I derive these patterns from the subdomain alternatives of CMs and SMs. To simplify our discussion, observe that CMs and SMs are of the form $|P \cap Q| \in D$, and their SubDomAlts are of the form $|P \cap Q| \in A$, where $A \subseteq D$. Also recall that the subdomain alternatives of SMs must be used, so SMs can only have parses with $O_{\text{SubDomAlts}}^{PS}$, and are bad if $O_{\text{SubDomAlts}}^{PS}$ crashes. Now consider the potential positive and negative LFs of CMs and SMs in (12)-(13). In the positive case there are two coherent parses: (12-a) with no $O_{\text{SubDomAlts}}^{PS}$ and (12-c) yielding ignorance. CMs can have either one of them (optional ignorance) but SMs are restricted to the $O_{\text{SubDomAlts}}^{PS}$ one (obligatory ignorance). In the negative case there is just one coherent parse, the (12-a) parse with no $O_{\text{SubDomAlts}}^{PS}$. This parse is open to CMs (acceptable under negation) but not to SMs (bad under negation). The felicity of SMs in presuppositional DE environments such as (5-a) and (5-b) can also be derived if we consider the effect of O^{PS} on the presupposition (Chierchia 2013, Spector and Sudo 2017, Nicolae 2017).

- | | |
|---|---|
| <p>(12) a. $P \cap Q \in D$
 b. $*O_{\text{SubDomAlts}}^{PS} (P \cap Q \in D)$
 c. $O_{\text{SubDomAlts}}^{PS} \square (P \cap Q \in D)$
 $(\forall A \subset D:) \rightsquigarrow \neg \square (P \cap Q \in A)$</p> | <p>(13) a. $\neg(P \cap Q \in D)$
 b. $*\neg O_{\text{SubDomAlts}}^{PS} (P \cap Q \in D)$
 c. $*O_{\text{SubDomAlts}}^{PS} (\neg(P \cap Q \in D))$
 d. $*O_{\text{SubDomAlts}}^{PS} (\square \neg(P \cap Q \in D))$</p> |
|---|---|

Conclusion. I provide a unified implicature account of bare and modified numerals where their similarities and differences fall out in a principled way from their morphological parts. The theory covers more ground than existing literature, and with fewer stipulations.

Selected references. Chierchia (2013). Logic in grammar. Cummins et al. (2012). Granularity and scalar implicature in numerical expressions. Gajewski (2010). Superlatives, NPIs, and *most*. Kennedy (1997). Projecting the adjective. Nicolae, A. C. (2017). Deriving the positive polarity behavior of plain disjunction. Spector (2015). Why are class B modifiers global PPIs?

not always systematic, and sometimes it might be influenced by the articulatory components of the sign itself that might force the movement of the body towards a specific direction.

A particular structure in coordination that is claimed to show contrast between its elements is gapping. As stated by Winkler (2005), the arguments in each conjunct in gapping are marked with CT and CF, respectively. In LSC, as well, both topics and foci are contrasting through the use of body lean and contrast in space towards opposite directions (2).

- (2) $\frac{\text{left bl+sp.}}{[\text{ROSA}]_T [\text{TEA T-E}]_F \text{PAY}} \frac{\text{right bl+space}}{[\text{JORDI}]_T [\text{CROISSANT}]_F \text{PAY}}$
 ‘Rosa paid for a tea and Jordi for a croissant.’

NMMs such as head and body leans, and also the use of both sides of space are always present in the expression of contrast, as in (1-2). Moreover, it is not just one marker that contributes to this, but it is the interaction between more than one.

Contrast in subordination. While in coordination contrast is always present, this is not the case for subordination. In (3), for instance, the elements in the main clause and the subordinate clause are not contrasting with each other. In this example, thus, the markers found for contrast in coordination are not present (i.e., body leans are addressed towards the same direction in space in both clauses).

- (3) $\frac{\text{left bl}}{\text{IF ANIMALS LOVE MEAT EAT}^{\wedge}\text{NOT.}}$
 ‘If you love animals, you don’t eat meat.’

However, some subordinate clauses can contain elements that show parallel contrast (contrast due to similarity plus dissimilarity) with elements in the main clause, as in (4). In this example, head leans towards left and right are displayed in order to express contrast between the two TPs. Further evidence is found in (5). Unlike other languages studied until now, LSC allows gapping in subordination, which implies the presence of parallel contrast, and therefore the same markers for contrast are again displayed.

- (4) $\frac{\text{right hl}}{\text{IF JORDI CAKE BURN ROSA CROISSANT BUY.}}$ $\frac{\text{left hl+space}}{\text{BUY.}}$
 ‘If Jordi burns the cake, Rosa will buy a croissant.’
- (5) $\frac{\text{right bl+space}}{\text{IF ROSA CROISSANT BUY JORDI CAKE BUY.}}$ $\frac{\text{left hl+bl+space}}{\text{BUY.}}$
 ‘If Rosa buys a croissant, Jordi will buy a cake.’

Conclusions. In this paper, we give evidence from LSC in favor of the analysis of contrast as a separate category in IS by describing its markers. Comparing coordination with subordination, we further support the view that contrast due to similarity plus dissimilarity is found by default in coordinated sentences. In subordination, instead, it can only be present if elements in the clauses are contrasted, whether there is gapping or not. In both types of sentences, contrast is expressed through the same combination of markers. Additionally, this paper also contributes to a better understanding of gapping in subordination, which has not received much attention in the existing literature. Finally, a cross-modal account at the syntax-IS interface is provided.

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Minimal Sufficiency Readings with a Covert *Even*

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We put forward a novel analysis of what Grosz (2012) calls the *minimal sufficiency reading* of exclusive particles like *just*, exemplified by (1) (see also Coppeck & Beaver 2014).

(1) **Just** the smell of beans makes me hungry.

PREVIOUS ANALYSES: Grosz (2012) and Coppock & Beaver (2014) both propose that the exclusive particle takes scope within the subject DP and expresses a scalar meaning (although their analyses differ in compositional details). According to them, the subject of (1) would roughly mean, ‘something that is as low on the relevant scale as the smell of beans’.

We argue, however, that these analyses fail to capture the distribution of the minimal sufficiency reading. In particular, we observe that material outside of the DP also matters for its availability, contrary to their expectation. For instance, (2) does not have a minimal sufficiency reading, i.e. it cannot mean ‘Something as insignificant as the smell of beans was in the kitchen’, which would be compatible with the presence of other things in the kitchen, but it only has an exclusive meaning, which entails that there was nothing else that was relevant in the kitchen.

(2) **Just** the smell of beans was in the kitchen.

OUR ANALYSIS WITH A COVERT *EVEN*: In order to account for the contrast between (1) and (2), we propose that the scalar meaning of the minimal sufficiency reading in examples like (1) comes from a covert *even* (Chierchia 2006; see also Krifka 1995, Crnič 2011), rather than from the exclusive particle itself, and that the exclusive particle contributes the exclusive meaning only. In fact, the minimal sufficiency reading of (1) can be expressed with an overt *even* as well, as in (3).

(3) **Even** just the smell of beans makes me hungry.

Following the authors mentioned above, we assume that the covert and overt *even* have essentially the same semantics. Specifically, we assume for the relevant reading of (1) and (3) that *even*, covert or overt, associates with *smell of beans*, takes scope over the rest of the sentence (including the VP), and triggers two inferences: (i) a scalar inference that its prejacent is low ranked on a contextually relevant scale, most probably, the scale of (subjective) likelihood; and (ii) an additive inference that there is at least one alternative to *smell of beans* that is higher on the scale and makes the sentence true. For the examples at hand, the following sentences are conceivable higher-ranked alternatives for the prejacent of *even*. (The exclusive particle *just* is perhaps vacuous in (4b))

- (4) a. Just the smell and sight of beans make me hungry.
b. (Just) the smell, sight, and taste of beans make me hungry.

With these alternatives, the scalar inference is that the prejacent is not so likely (but nonetheless true), and the additive inference is that there’s at least one alternative that is true. This in fact seems to capture the intuitive meaning of (3), which is essentially identical to that of (1).

This analysis not only captures the synonymy between (1) and (3), but also explains why (2) does not have a minimal sufficiency reading, which is for the same reason why (5) is infelicitous.

(5) #Even just the smell of beans was in the kitchen.

In this case, first of all, the alternatives do not sound very felicitous:

- (6) a. Just the smell and sight of beans were in the kitchen.
b. (Just) the smell, sight, and taste of beans were in the kitchen.

In addition, (2) and (5) have an additive inference that contradicts what is asserted. Specifically, the additive inference amounts to that at least one of (6) is true, but they are not compatible with what is asserted in (2) and (5), due to the exclusive particle. On the other hand, for (1) and (3), the alternatives are compatible with the assertion due to their generic meaning.

MODALITY AND MINIMAL SUFFICIENCY READINGS: One prediction this analysis makes is that the

minimal sufficiency reading is facilitated by modality, as it makes the alternatives compatible with each other, and this prediction seems to be borne out. The examples that the previous works discuss are generic sentences just like (1), and episodic sentences like (2) seem to generally lack minimal sufficiency readings (but see below for some exceptions). In addition, the corresponding sentences with an overt *even* track the judgments, as expected under our analysis. Here are some additional examples with modals that license minimal sufficiency readings.

- (7) a. (Even) just her profile picture **was sufficient/enough** to make him faint.
- b. He **might** get a heart attack (even) just by glancing at her.
- c. (Even) just one cat **can/will** overwhelm Patrick.

And below are some episodic sentences that don't license minimal sufficiency readings.

- (8) a. I added a comment to (#even) just her profile picture.
- b. (#Even) just one cat was in the park.

One complication, however, is that (9), although episodic, is as acceptable as (1) and (3), with or without an overt *even* (similar remarks apply to other examples in (7)).

- (9) (Even) just the smell of beans made me hungry.

This example is not necessarily problematic for our analysis given that the version with an overt *even* is acceptable, but it needs to be explained why the additive inference does not interfere here. That is, (9) does not seem to imply that at least one of the following was also true. In fact, the sentence would be perfectly felicitous and true in a context where the speaker only perceived the smell of beans and felt hungry.

- (10) a. Just the smell and sight of beans made me hungry.
- b. Just the smell, sight, and taste of beans made me hungry.

We suggest two possible solutions here. One way to make sense of this is by assuming that (9) contains a covert modal that essentially makes the sentence synonymous with (11).

- (11) (Even) just the smell of beans **could/was enough to** make me hungry.

The additive inference would now be that at least one of the following is also true.

- (12) a. Just the smell and sight of beans could make me hungry.
- b. Just the smell, sight, and taste of beans could make me hungry.

This solution, however, might perhaps sound a bit *ad hoc*, and also it needs to be somehow made sure that the sentence entails that the smell of beans actually made me hungry, and also that this actuality entailment should be absent in the alternatives.

Another possible solution is that *even* is not always associated with an additive inference. This is perhaps not so outlandish, given examples like (13) (Rullmann 1997, Schawrz 2005, Crnič 2011).

- (13) a. Patrick even won a silver medal in the beer pong tournament.
- b. Patrick even danced with only one girl.

We have to leave open exactly how the presence/absence of the additive inference of *even* should be captured, but whatever explains the absence of an additive inference in (9) with an overt *even* will explain the lack of an additive inference of (9) with a covert *even*.

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Encoding coreference on agreeing heads: anaphoric agreement as Multiple Agree

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This paper proposes to analyse anaphoric agreement, i.e. a "special" type of agreement that surfaces when the target is an anaphor, as multiple agreement between a functional head and an anaphoric DP on the one hand and its antecedent DP on the other hand. The present analysis refines an insight proposed by Arregi & Hanink (to appear) on *switch reference* in Washo as complementizer agreement. It extends it across domains to *anaphoric object agreement* on *v* in Swahili and anaphoric possessor agreement on D in Inuit, known as *proximate agreement*. This paper innovatively proposes the unification of the three phenomena as anaphoric agreement, and motivates the role of referential [ID]-features in encoding coindexing relations.

SWITCH REFERENCE Washo has a switch reference system that tracks whether the subjects of two dependent clauses have the same referent (Jacobsen 1981, Hanink & Bochnak 2017, Arregi & Hanink to appear). When the subject of the main clause and that of the embedded clause are disjoint in reference, the complementizer assumes the form *-š*, glossed as DS (disjoint reference). On the other hand, when the subject of the main clause and that of the embedded clause have the same reference, the form of the complementizer is *-∅* (SS: same subject).

- (1) daʔmóʔmoʔ_i [_{CP} k'ák'aʔ_j dá: gé:gel-i -š] -ge yá:maʔ
woman heron there 3.sit-IND -DS -NOM 3.speak-DEP
'The woman_i spoke to a heron_j who was sitting there.'
- (2) Adele_i [_{CP} daláʔak ʔ_i-ígi-yi -∅] -ge hámpup'áy-e:s-i
Adele mountain 3-see-IND -SS -NOM 3.forget-NEG-IND
'Adele_i remembers that she_i saw the mountain.'

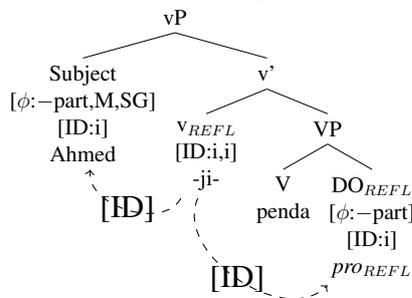
Arregi & Hanink (to appear) analyse these switch reference morphemes as complementizer agreement. The first element of their proposal is that the embedded C agrees with both subjects, in an instance of Multiple Agree. C agrees downwards with the embedded subject and upwards with the matrix subject. The second ingredient is the nature of the agreeing feature on C: they propose that the probe in C is an unvalued [ID] feature, i.e. a referential index. Switch reference morphemes reflects feature (mis)matching on C. When the probe is valued with a pair of matching indices [ID:i,i], SS morphology surfaces. When it is valued with mismatching indices [ID:i,j], then DS morphology is licensed. In what follows, I develop this analysis and apply it to two different domains, anaphoric object agreement in Swahili and proximate possessor agreement in Inuit. I argue that all three phenomena should be unified as anaphoric agreement, understood as multiple agreement of a functional head with an anaphoric DP and its antecedent. This data will also strengthen the motivation for the existence of referential [ID] features and their role in anaphoric relations.

ANAPHORIC OBJECT AGREEMENT In Swahili, reflexives are expressed by a verbal reflexive marker that surfaces in the position of the object agreement marker. As illustrated by the examples below, Swahili cannot resort to the regular *∅*-paradigm (here Cl.1 object agreement *-m-*) when the object is an anaphor, and makes use instead of a special anaphoric agreement morpheme *-ji-* (4).

- (3) Ahmed a- na- m/*ji- penda Halima.
Ahmed SM1- PRES- OM1/*REFL- love Halima
'Ahmed loves Halima.'
- (4) Ahmed a- na- ji/*m- penda (myenyewe).
Ahmed SM1- PRES- REFL/*OM1- love (himself)
'Ahmed loves himself.' (Vitale 1981:137 in Woolford 1999:264)

As the examples illustrate, *-ji-* is in complementary distribution with other object agreement markers. I take its locus to be *v*, like regular object agreement. Crucially, the *-ji-* marking on

the verb in (4) only occurs with reflexive arguments, is not default agreement and is not attested elsewhere in the ϕ -agreement paradigm of the language. Furthermore, anaphoric agreement in Swahili does not vary according to the ϕ -features of its antecedent. It therefore should not be taken to reflect any ϕ -features (see also Déchaine & Wiltschko 2017). I propose to analyse *-ji-* as the morphological expression of matching [ID]-features on the agreeing head *v*. *v* agrees with the subject that immediately c-commands it and with the covert reflexive object. It encodes coindexation of both arguments as a paired value [ID:i,i], surfacing as anaphoric agreement.



Anaphoric object agreement is thus the result of feature matching on a functional head, just like SS morphology in Washo, but this time in the *vP* domain. When there is a mismatch of indices, i.e. when the object is non-anaphoric, then Swahili resorts to the regular ϕ -paradigm and agreement on *v* is then "normal" object agreement.

The morphological form of *-ji-* as well as the reflexive reading that it yields cannot be captured by an analysis in terms of ϕ -agreement only, but get accounted for with [ID]-features.

PROXIMATE POSSESSOR AGREEMENT Anaphoric agreement is also found in the DP domain. In Inuit, anaphoric agreement morphology surfaces on possessed DPs, sometimes analysed as proximate agreement or 4th person agreement.

- (5) Anguti-p irni-a taku-j-a-a.
 man-ERG son-3SG.ABS see-PART-[+tr]-3SG.3SG
 'The man_i sees his_{*i/j} son.'
- (6) Anguti-p irni-ni taku-j-a-a.
 man-ERG son-3SGPROX.ABS see-PART-[+tr]-3SG.3SG
 'The man_i sees his_{i/*j} son.'

(Johns 1996:123)

In the examples above, the possessed NP *irni-* 'son' in the absolutive bears an agreement marker that reflects features of the possessor. When the reference of the possessor is disjoint from the subject, then *irni-* bears the 3SG marker *-a*. When the possessor has the same reference as the subject, i.e. is anaphoric, then *irni-* bears a different possessive agreement morpheme *-ni*, i.e. an anaphoric agreement morpheme. I take the locus of possessor agreement to be a D head. Similarly to the now familiar analyses of Washo and Swahili, I propose that the anaphoric possessor agreement on D is the reflex on multiple agreement of an unvalued [ID] probe on D with the subject of the clause (i.e. the antecedent) on the one hand and with a coindexed *pro* possessor on the other hand. Here again, ϕ -features only would be at a loss to account for the difference between anaphoric and non-anaphoric 3rd person agreement. Indeed, it is unclear how classical person feature geometries could account for a putative 4th person, person agreement being generally understood as consisting of only three classes: author, addressee, non-participant (e.g. Harley and Ritter 2002).

CONCLUSIONS This abstract argues that anaphoric object agreement on *v* in Swahili, proximate possessor agreement on D in Inuit and switch reference morphology on C in Washo should be analysed on a par as instances of anaphoric agreement in different domains. Anaphoric agreement encodes a three-way relation between a probe on a functional head, and two coindexed DPs. As such, an analysis in terms a Multiple Agree seems to capture adequately these dependencies. Finally, this paper shows that the use of referential [ID] features, adopted without further explanation in Arregi & Hanink's analysis, is actually motivated by the Swahili and Inuit data: ϕ -features do not seem to be able to capture the interpretative and morphological characteristics of anaphoric agreement.

Definiteness in the Temporal Domain
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I will discuss definiteness in the temporal domain, adopting the **familiarity theory of definiteness** (Bolinger 1977, Heim 1983, 1991, 2011, Prince 1992). In particular, I will provide a novel analysis of the present perfect, and show that in English, the present perfect is indefinite (discourse new) and the simple past definite (discourse old). I argue that this analysis explains the various readings and constraints of the present perfect that previous accounts struggle with, such as the current relevance/hot news reading, and the Present Perfect Puzzle (Klein 1992). It also derives the same kind of crosslinguistic variation of (in)definites in the nominal and temporal domains, as a result of the presence or absence of a definite competitor.

Temporal and Nominal Definiteness: As illustrated in (1)-(2), in English, the simple past and the present perfect contrast with respect to an antecedent time. In (1), it is when John visited Rome, and in (2), it is the time of John's trip. The simple past (1a,2a) refers to this time, while the present perfect (1b,2b) cannot and must refer to a new time. This parallels with the definite and indefinite DPs in (4)-(5). In (4), the antecedent is the chair John sat on, and in (5) it is the spider. The definites (4a,5a) refer to the antecedent, unlike the indefinites (4b,5b). When there is no antecedent in the context as in (3) and (6), the simple past and the definite are infelicitous.

Simple Past vs. Present Perfect		Definite vs. Indefinite Noun Phrases	
(1)	John has visited _i Rome. He went _i there with some friends. Mary a. went _{i/#j} too. b. has visited _{j/#i} Rome too.	(4)	There were four chairs. John sat down on a chair _i . Then Mary a. knocked the chair _{i/#j} over. b. knocked a chair _{j/#i} over.
(2)	<i>Mary knows that John had a trip to Italy last month_i, and she's asking if he visited Rome during the trip.</i> a. Did _i you visit Rome? b. Have you visited _{j/#i} Rome?	(5)	<i>There is a giant spider_i in the house. Everyone is scared.</i> a. The giant spider _i may be in this room. b. A giant spider _{j/#i} may be in this room.
(3)	<i>Mary asks about John's experience (out of the blue).</i> #Did you visit/Have you visited Rome?	(6)	<i>John saw a giant spider, but Mary doesn't know anything about it.</i> John: I just saw #the/a giant spider!

The time/entity introduced by the present perfect and indefinite DPs as new discourse referents can be picked up in the subsequent sentence by the simple past (7a) or a definite DP (7b).

- (7) a. John has lived_i in London. He lived_i there with his parents. b. I put some food_i in the garden and a cat_j appeared. The cat_j loved the food_i

In narration, the simple past can be used in a sequence, to refer to the time in the preceding sentence or the time 'just after' it, (8). The present perfect cannot be used in such a sequence.

- (8) a. Mary was_i crossing the road. She was_i careless. She turned_i around just in time. A truck rushed_i by.

The English simple past also parallels with definite DPs in having **bridging uses** (Clark 1975), where the antecedent (building time in (9b)) is not explicitly introduced but inferred from the trigger. In these cases, the indefinite DP and the present perfect cannot be used.

- (9) a. I got a letter. The envelop/#an envelop was broken. b. (Pointing at a church) Who built/#has built this church?

To capture the fact that the definite form must be used when referring to an antecedent, Heim (1991, 2011) among others introduced the principle of **Maximize Presupposition (MP)**. MP dictates that if two alternatives are contextually equivalent (i.e. having the same truth value in all worlds in the context set), the speaker must use the one with stronger presuppositions if it is felicitous in the context. Heim proposes that indefinites do not presuppose any antecedent while definites presuppose discourse familiarity. I propose that the present perfect and the simple past also differ only in this presupposition for an antecedent. As a result, MP rules out the indefinites and the present perfect in the examples above.

When the indefinite is not ruled out by MP, an **antipresupposition** (Percus 2006, etc.) arises that the presupposition of the definite is not met. This is the source of the 'discourse new' and the

The syntax and semantics of subcomparatives

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Inequality comparatives like (1) are named *subcomparatives* (henceforth *SCs*) because an underlying measure-phrase modifier is *subdeleted* or removed from the standard of comparison (*cf.* Bresnan 1975). The subdeleted string may be thought of as “*x* many”, an unspecified number with which the standard or referent for comparison is established.

(1) They have many more enemies than *we have* *_friends*. [standard marked in *italics*]

In this paper I focus on the properties of *SCs* like (2)-(3). Based on observations from typologically distinct languages, concretely, English (Napoli 1983) and Spanish (Sáez 1999), as well as novel evidence from Basque, I formalize the observations first expressed by Napoli (1983) that in this type of *SCs* [**A**] the standard of comparison does not derive from a clausal source, in contrast with the *SC* in (1); and that [**B**] the two compared elements stand in a coordinated relation mediated by the standard marker *than*.

(2) More women than *_men* attended the event.

(3) The room was filled with more supporters than *_opponents* of Mao.

[A] Phrasal *SCs*. A clausal analysis of the standards in (2)-(3) is untenable because [**A1**] this type of *SCs* do not pass the clausal expansion test (*cf.* (4); the same argument applies to parallel Spanish and Basque *SCs*). [**A2**] Moreover, Basque clearly evidences the phrasal status of the standard in comparatives like (2), in which a single case marker surfaces for the whole comparative complex (see (5)). In Basque, bare nominals like *enpresari* in (5) are banned from argumental positions. Hence, this nominal is not functioning as the subject of a (partially elided) clause. The absence of case-marking on the nominal in the standard in Basque thus signals its non-clausal status. [**A3**] Furthermore, a clausal analysis of *SCs* like (3) would involve an impossible type of ellipsis, one that elides a prepositional head without its complement (*cf.* (6); where elements that are presumably elided have been shaded).

(4) More women than *men* {**did/*attended the event/*came yesterday*} attended the event.

(5) *Enpresari* baino langile gehi-ago-**k** jotzen dute egoera larritzat.
business-owner THAN worker many-ER-ERG consider AUX situation grave
'More workers than business-owners consider the situation grave.'

(6) ✗ The room was filled with more supporters than [_{IP} the room was filled [_{PP} with opponents of Mao]]. ((6) cannot be the underlying structure of (3))

[B] Comparative coordination. It is well known that clausal *SCs* like (1) show coordination-like behaviour (*cf.* Corver 1993), for example, in that these constructions allow *Gapping* (see (7)) or *Right-Node-Raising* (8); i.e. *Conjunction Reduction* ellipsis operations that are restricted to coordinated structures and comparatives (Hendriks 1991). Crucially, the properties in [**B1**]-[**B3**] below evidence the fact that the coordination-like behaviour of *SCs* is not restricted to clausal *SCs* (*cf.* (1),(7),(8)) but extends to phrasal *SCs* as well (*cf.* (2),(3),(9a)).

(7) John knows more Romance languages than Pete knows Germanic languages.

(8) More women like, than men hate [the man with the red beard].

That *SCs* like (2)-(3) involve a coordinated structure is evidenced by the fact that [**B1**] they only allow extraction if it is *across-the-board* (compare (9a) with (9b) from Napoli 1983); [**B2**] *SCs* involve parallel constituents to the right and left of the standard marker ((2),(3),(9a)); and [**B3**] a single PP complement can be shared by the two nominals connected by *than* in phrasal subcomparatives with complement-taking nouns such as (3) (see also (10)). This behaviour regarding shared PPs is identical to that of common phrasal coordination (compare (3) with (11)).

- (9) a. Nancy Reagan, I've seen more pictures of _ than books about_.
 b. *Nancy Reagan, I've seen more pictures of Ronald Reagan than books about_.
 (10) The room was filled with many {supporters/opponents}*(of Mao).
 (11) The room was filled with many supporters and opponents of Mao.

The proposal and its advantages. Both clausal and phrasal SCs make use of a coordinating -*er/than*&. In particular, I propose that the behaviour of *than*& is similar to *and not* in that it involves coordination of two alike categories (Munn 1993) and negation (Seuren 1973). This proposal has the welcoming result of accounting for [I] the coordination-like behaviour of SCs (cf. [B]), and [II] the typologically prominent use of coordinating conjunctions introducing the standard of comparison (Stassen 1985; in fact, Basque *baino* 'than' has a second function as the adversative coordinator 'but'). Accordingly, [III] the availability of both clausal and phrasal (cf. [A]) standards of comparison is expected since coordinating conjunctions can combine both types of elements.

Formalization. I assume the standard quantificational analysis of the degree head -*er*. Concretely, the comparative data are better explained following the *A-not-A* analysis of comparison (Seuren 1973) by which *er/than* introduces existential quantification over degrees, coordination and negation. I propose that in coordinating -*er/than*&, these markers divide their labour and have the denotations in (12)-(13). A simplified version of the denotation of example (2) is given in (2')-(2'').

$$(12) \llbracket -er \& \rrbracket_{\langle \langle d,t \rangle, t \rangle} = \lambda D_{\langle d,t \rangle} . \exists d [D(d)]$$

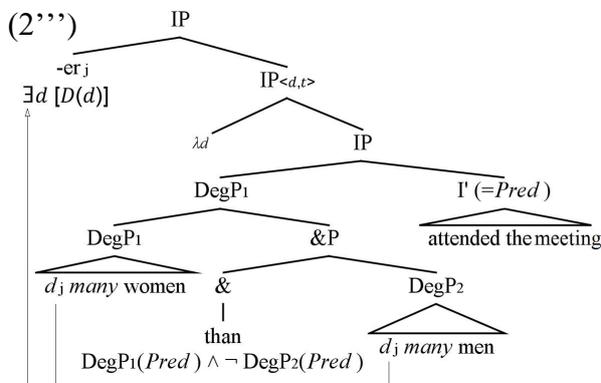
$$(13) \llbracket than \& \rrbracket_{\langle \tau, \langle \tau, \tau \rangle \rangle} = \lambda Q_{\langle \langle e,t \rangle, t \rangle} \lambda R_{\langle \langle e,t \rangle, t \rangle} \lambda P_{\langle e,t \rangle} . R(P) \wedge \neg Q(P)$$

$$(2') \llbracket -er \rrbracket_i \lambda d [d_i \text{ many women } than \& d_i \text{ many men attended the event}]$$

$$(2'') \exists d [\exists y [|y| \geq d \wedge \text{women}(y) \wedge \text{attend}(y, ev)] \wedge \neg \exists x [|x| \geq d \wedge \text{men}(x) \wedge \text{attend}(x, ev)]]$$

There exists a degree *d* and there exist some women *y* that attended the event whose cardinality reaches at least degree *d* and it is not the case that there exist some men *x* that attended the event whose cardinality reaches degree *d*.

I adapt Cover's (1993) proposal for English clausal SCs and argue that *comparative coordination* in both clausal and phrasal SCs involves symmetric ATB binding of two degree variables, one in each conjunct, by the \exists quantifier over degrees introduced by -*er*. I defend that *than*& has the standard semantics of *and* (meet operator; cf. Partee & Rooth 1983) plus negation of the first argument (the standard).



Main contributions. [1] Novel supporting evidence from Basque for a phrasal analysis with coordination of SCs like (2)-(3) and for the *A-not-A* analysis of inequality comparatives. [2] Shedding light on the long-standing debate about the internal structure and semantic composition of subcomparatives like (2)-(3) (cf. Bhatt & Takahashi 2011). [3] A fully compositional syntactic and semantic analysis of these understudied phrasal SCs involving a coordinating -*er/than*&.

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Worlds are not enough: Quotation as a modality (Jan Wiślicki, University of Warsaw)

In a long-standing research on quotational expressions (QEs), a relatively small progress has been made in understanding the relation between quotation and the quoted content, as well as the properties of the latter. Logic and philosophical investigations inspired by Tarski (1933/1983) take QEs as semantically atomic. So do formal semantic approaches (cf. Pafel 2011; Potts 2007), where QEs are treated as constants defined on phonological strings. First, I discuss pure, mixed and recursive quotation to show that QEs are not atomic *simpliciter*. Next, I define enquotation as a modal operation involving access to another model where the quoted content is defined.

1 The data. Let us first have a look at the following examples:

- (1) Alfred_k said ‘I_k am smart’, and I think he_k really is Δ . [where Δ =smart]
- (2) Peter said that Alfred is ‘smart’.
- (3) */✓/? John said that Mary ‘bishbadcah’ him. [from Maier 2014]
- (4) Peter said (quoting Rudolf) ‘‘Alfred is smart’’.

(1) illustrates two facts: (i) QEs provide context-shifts (CS) for pronouns; (ii) recoverability of ellipsis shows that semantics of QEs must secure access to the content of the quoted phrase, not just its phonological form. Second, in mixed QEs as in (2) intensional predicates (what Peter means by *smart*) can take extensional arguments. Third, the acceptability of mixed-quoted phrases is not obvious. As Maier (2014), who generally rejects (3) as ungrammatical, points out, for a mixed QE ‘ α ’ to be acceptable, α must be recognized as correct (in this context) in some language. Thus (3) is acceptable if *bishbadcah* is recognized as a transitive verb of John’s idiolect. Finally, recursive enquotation as in (4) provides access to QEs embedded in QEs.

2 Preliminaries. While these data are not new, they show, contra Tarski (1933/1983) and its offshoots, that QEs are not atomic expressions whose meaning depends only on their form. Rather, the operation of enquotation seems to have the following properties:

- It does not block access to the content of the quoted expression. The proviso is that the latter is defined relative to the way and form it is used by the quoted speaker, as in (3).
- The above proviso provides scope: arguments on which the quotational predicate (‘*smart*’) is defined can lie within, as in (1), or outside, as in (2), this scope;
- Defining that kind of scope is a recursive operation. Thus (4) provides access to the expression which in turn provides access to the originally quoted *Alfred is smart*.

Conceived of along these lines, QEs seem to be driven by essentially modal-like mechanisms: (i) they are intensional expressions for which enquotation provides access to the intended content as in (3); (ii) quotes seem to correspond to an operator which allows not only scope modifications, as in (1)–(2), but also a recursive application, as in (4). I argue that these effects can be naturally accounted for if quotes are taken as a modal operator providing access across models.

3 Quotation as a modality. Maier (2014) draws an account of mixed quotation where QEs are interpreted intensionally, but the quoted content is not simply blocked; rather, its interpretation is switched to the one meant by the quoted speaker:

- (5) $\llbracket \ulcorner \varphi \urcorner \rrbracket =$ the x that the speaker S expressed with her use of the string $\ulcorner \varphi \urcorner$

I extend and specify this approach in model-theoretic terms by letting enquotation be a modal operation switching interpretation across models. The switch is a natural consequence of the metalinguistic character of QEs and corresponds to interpreting the quoted content as interpreted by another speaker, as in (5). That kind of model-switching operator was proposed by Lindström (2006) in his account of logical truth. He proposes a new operator L defined as follows:

- (6) $\mathcal{M}, w \models_g L\varphi$ iff for every model \mathcal{N} it is true that $\mathcal{N}, @_{\mathcal{N}} \models_g \varphi$

Let $F = \langle W, R, D, \mathcal{D} \rangle$ be a frame such that W is a set of worlds, R is an accessibility relation over W , D is a set of objects, $\mathcal{D} : W \rightarrow \mathcal{P}(D)$ is a function such that $\mathcal{D}(w)$ is a set of objects that exist in $w \in W$. D includes, a.o., individuals x_e and utterances z_u (cf. Potts 2007). Next, assume a pair $\langle \mathcal{M}, \mathcal{R} \rangle$ where \mathcal{M} is a set of models such that each $\mathcal{M}_i \in \mathcal{M}$ is a pair $\mathcal{M}_i = \langle F, I_i \rangle$ where I_i is an interpretation function; \mathcal{R} is an accessibility relation over \mathcal{M} .

Drawing on (6), I propose an operator Q providing access from the model \mathcal{M}_i of the actual interpretation to \mathcal{M}_j where the quoted expression is defined, provided $\mathcal{M}_i \mathcal{R} \mathcal{M}_j$. Apart from this Q behaves as standard modal operators yielding basic *de dicto* as in (7a) or, after LF-raising leaving a trace t as in (7b), *de re* readings relative to Q :

$$(7) \quad \begin{array}{ll} \text{a. } [Q[\lambda x_\sigma.f(x) \ c]] & \rightsquigarrow \langle Q\lambda x_\sigma.f(x) \rangle(c) \\ \text{b. } [c[\lambda_{c,\sigma}[Q[\lambda x_\sigma.f(x) \ t_c]]]] & \rightsquigarrow \langle \lambda x_\sigma.Qf(x) \rangle(c) \end{array}$$

This simple strategy secures the sufficient flexibility allowing to derive mixed and pure quotation:

- (8) a. **Mixed quotation is defined upon a *de re* interpretation relative to Q :**
 $I_i(Qsmart, w) = \lambda x_e.\lambda w_s.Qsmart(x, w) =_g 1$
iff there are $\mathcal{M}_j, w' : \mathcal{M}_i \mathcal{R} \mathcal{M}_j, wRw'$ and $I_i(x, w)$ is an element of the interpretation I_j of some predicate represented at w' as $\ulcorner smart \urcorner$; **accordingly:**
 $I_i(Qsmart, w)(I_i(Alfred, w)) = \langle \lambda x_e.\lambda w_s.Qsmart(x, w) \rangle(I_i(Alfred, w)) = 1$
iff there are $\mathcal{M}_j, w' : \mathcal{M}_i \mathcal{R} \mathcal{M}_j, wRw'$ and $I_i(Alfred, w)$ is an element of the interpretation I_j of some predicate represented at w' as $\ulcorner smart \urcorner$
- b. **Pure quotation is defined upon a nominalized *I am smart* :**
 $I_i(Q[_{NP}I am smart], w) = \lambda z_u.\lambda w_s.refer(z, Q[_{NP}I am smart], w) = 1$
iff there are $\mathcal{M}_j, w' : \mathcal{M}_i \mathcal{R} \mathcal{M}_j, wRw'$ and z refers at w to the interpretation I_j of some proposition represented at w' as $\ulcorner I am smart \urcorner$

Q shifts the interpretation from \mathcal{M}_i to \mathcal{M}_j where the interpretations of the relevant expressions are defined. The machinery naturally accounts for effects discussed above. First, by switching interpretations between models it achieves the effect sketched in (5), required by the intensionality of QEs. Second, the operator Q , which essentially works analogously to \diamond , provides a principled way of retrieving the quoted content via an \mathcal{R} -accessible model \mathcal{M}_j . This explains the recoverability of ellipsis as in (1). Third, the modal operation explains CS as in (1). The pronoun I is evaluated in a different world of a different model, hence CS. Fourth, tinkering with the scope of Q allows to account for mixed QEs. They behave like *de re* reports in placing arguments outside the scope of the operator, as in (8a). A plausible result is that the proposed account makes use of standard mechanisms combining modal logic and LF-raising over operators; this allows to derive both *de re* and *de dicto* readings. Fourth, thanks to the accessibility relation \mathcal{R} over models it allows to encode the acceptability of mixed-quoted idiolects, as in (3). This fragment of grammar is absent from earlier proposals of Maier (2014) or Shan (2010). Within the present modal logic account, the acceptability of (3) depends on whether the model \mathcal{M}_{John} standing for John's idiolect is \mathcal{R} -accessible from the model \mathcal{M}_i of the actual interpretation. Finally, Q can be used iteratively, viz. $\ulcorner Q \dots Q\lambda x \dots \urcorner$, hence the recursive enquotation as in (4).

4 Conclusion There are at least four results of the offered account. **First**, it proposes a novel approach to QEs explaining how the quoted content is retrieved by means of standard modal logic mechanisms. Importantly, the applied logic specifies and extends earlier ideas of Maier (2014) and Shan (2010). **Second**, it provides a model-theoretic account of such challenging effects as intensionality of QEs, CS, mixed-quoted idiolects and recursive enquotation. **Third**, it marks some crucial properties distinguishing pure and mixed QEs in terms of scopes of operators. **Finally**, it opens up a new path for future research by showing how intensionality rooted in metalinguistic devices can be accounted for by so far underdeveloped model-shifting modality.

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A correlational cross-linguistic observation regarding sluicing

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Claim: Based on data from wh-in-situ Turkish, we claim that a language that disallows the adverbial ‘how’ and an accusative marked wh-phrase in copular structures, but nonetheless allows these expressions as remnants in sluice structures must have at its disposal both Ross/Merchant style sluicing operations (i.e. move & elide) as well as mechanisms that don’t rely on isomorphic sources for the sluice. In other words, we postulate the following correlational observation: *a wh-in-situ language that allows manner modifier ‘how’ and accusative-marked remnants in SLC must have sluicing whose E-site is isomorphic to the antecedent clause derived via Move & Elide.*

Background and Data: Since Ross 1969 and later Merchant 2001, it is generally assumed that sluicing involves overt wh-movement with subsequent PF-deletion of the (IP/TP) clause in which the wh-phrase originates, call it the Move & Elide (M&E) approach (also see Hankamer and Sag 1976): 1.[John saw someone_{correlate}]antecedent clause, but I don’t know who_i [~~TP John saw t_i ellipsis site~~]

Given this approach, wh-in-situ languages are predicted to lack this English style sluicing (for such a consideration for Turkish see Hankamer (2012)). However, the M&E analysis of sluicing by Ross/Merchant allows a wh-in-situ language to dislocate a wh-phrase remnant to the left periphery of a clause via a mechanism other than overt wh-movement culminating in a sluice like construction (SLC) string (see, e.g., van Craenenbroeck & Lipták 2013, and Potsdam 2007, a.o). Ince ‘s (2007, 2012) analysis of Turkish SLCs exemplifies this possibility by positioning the wh-remnant clause-initially via focus movement (2).

2. Can-Ø biri-yle konuş-uyor, ama kim-le, [~~TP Hasan-Ø t_i konuş-uyor~~] bil-mi-yor-um.
Can-NOM one-COMM talk-PROG-3Sg but who-COMM [~~TP...~~] know-NEG-PRES-1Sg
‘Hasan is talking to someone, but I do not know who with.’

Generally, though, wh-in-situ languages exhibit SLCs involving a copula (for Mandarin Chinese see e.g. Adams & Tomioka 2012; for Japanese see Kizu 1997, Kuwabara 1997, Fukaya and Hoji 1999, for Uzbek see e.g. Gribanova 2010, 2013, for Malagasy see Paul & Potsdam 2012, a.o). Turkish is no exception (additionally, see Hankamer 2012, also Ince 2006, 2012):

3. Dün biri sen-i ara-mış-tı, ama kim-di hatırla-mı-yor-um.
yesterday someone-NOM you-ACC call-EVID-PST-3S but who-PST remember-NEG-PROG-1S
‘Yesterday someone called you, but I don’t remember who it was.’ (Ince 2006 (#1))

4. Mehmet-Ø birşey söyle-di ama, ne-y-di hatırla -mı -yor -um
M-NOM one thing told but what-be-PAST. remember-NEG-PROG-1s
‘Mehmet said something, but I don’t remember what (it) was.’ (pg.113, # (4))

Previously unreported data involving *else* modification actually supports the employment of both strategies in Turkish SLC: first, à la Merchant (2001) where the wh-remnant is modified with *else* supporting an isomorphic parse for the E-site as in (5a):

5. Can Meryem-den hoşlanıyor, ama (daha) başka kim-den bilmiyorum.
Can Meryem-ABL likes but (else/too) other who-ABL I-don’t-know
‘Can likes Meryem, but I don’t know who else.’

Full structure of E-site:

a.ama başka kim-den [~~pro kimden hoşlanıyor~~] bilmiyorum.
.....but other/else who-ABL [pro who-ABL likes] I-don’t-know
b. *....ama başka kim-den-Ø/i-di bilmiyorum.
..... but other/else who-AB-COP/COP-PST I-don’t-know

Second, à la Barros (2012, 2014) where the correlate occurs with *else* supporting a non-isomorphic parse for the E-site as in (6b):

6. Can Meryem'den hoşlanıyor ve baska birin- den daha hoşlanıyor ama
Can Meryem-ABL likes and else someone-ABL else/too likes but
a. # ..kim-den hoşlanıyor bilmiyorum b. ...kim-den-Ø/i-di bilmiyorum.
...who-ABL he likes I don't know. ...who-ABL-COP-PST I-don't-know.

Now that we've shown that both copular and isomorphic sources are possible for SLC in a wh-in-situ language such as Turkish, we learn that only the isomorphic source of the E-site supports the presence of the adverbial 'how' and accusative marked wh-remnant. In Turkish, similar to Chinese *zenme(yang)* in Adams & Tomioka (2012, p 224 # 15a,b), *nasıl* 'how' quantifying over manners/methods as a remnant in a pseudo sluice (i.e. copular source) is not possible:

7. * Can araba-yı tamir etti, ama nasıl-dı bilmiyorum.
Can car-ACC fixed but how-COP I-don't-know
'Can fixed the car but I don't know how.'

In contrast, in the absence of an overt copula, analogous to the isomorphic E-site structure, a *nasıl* remnant is possible in Turkish:

8. Can araba-yı tamir etti, ama nasıl [_{TP} pro araba-yı nasıl tamir etti] bilmiyorum.
Can car-ACC fixed but how [_{TP} pro araba-yı nasıl tamir etti] I-don't-know
'Can fixed the car but I don't know how.'

Moreover, ACC-marked nominals are not possible in copular constructions (9) while an ACC-marked wh-remnant in an isomorphic source for E-site is possible, as in (10):

9. *Can biri-ni seviyor, ama kim-i-y-di bilmiyorum.
Can someone-ACC likes but who-ACC-COP-PST I-don't-know
'Can likes someone, but I don't know who (it is).'
10. Can biri-ni seviyor ama kim-i [_{TP} pro kim-i seviyor] bilmiyorum
Can someone-ACC likes but who-ACC [_{TP} pro kim-i seviyor] bilmiyorum
'Can likes someone but I don't know who (he likes)'

According to Gribanova (ibid), only a very small number of Uzbek speakers who allow accusative marked wh-phrases in copular constructions also allow accusative marked wh-remnants in SLC. This is not the case in Turkish. Either way, though, the Uzbek observation is not contradictory to the correlation above since ACC marked nominals in copular construction are possible to begin with in that language for these limited number of speakers. The majority of Uzbek speakers should fall along Turkish speakers regarding the correlational observation; those that don't allow accusative marked wh-phrases in copular construction, don't allow them in SLC (as is reported by Gribanova), suggesting that Uzbek, unlike Turkish does not have at its disposal M&E type sluicing.

Conclusion: Turkish patterns with other wh-in-situ languages in occasioning the copula in SLCs while at the same time exhibiting English type sluicing involving an isomorphic ellipsis site. We claim that the correlation above holds for Turkish based on the contrasting grammaticality of *nasıl* and accusative marked wh-remnant in (non)isomorphic sources.

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