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Distributive numerals in Albanian[1]

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This paper investigates *nga*-marked numerals in Albanian. They qualify as distributive numerals, since the presence of *nga* on the numeral yields a distributive reading of the sentences they belong to. Beyond their differences, most of the previous accounts rely on the hypothesis that distributive numerals introduce some kind of semantic feature, e.g. a covariation feature; an evaluation plurality requirement, also called a post-suppositional plurality requirement; or a distributivity force. Our main claim goes against this trend of thinking. We propose that distributive numerals do not carry any semantic feature but only a formal syntactic feature that needs to enter a syntactic dependency relation with a distributivity feature. The analysis is implemented in terms of Zeijlstra's (2004) UPWARD AGREE.

KEYWORDS: Albanian, C-command, distributive numerals, feature-checking, locality, scope

1. INTRODUCTION

This paper is concerned with the Albanian *nga*, which qualifies as a DISTRIBUTIVITY MARKER in that it marks an indefinite determiner phrase (DP) that obligatorily covaries with an entity that ranges over a set that is introduced either by a plural DP (or by a conjunction of DPs, not illustrated here) or by (the restriction of) a universal quantifier:

(1) (a) Fëmijë-t dëgjuan (**nga**) dy këngë
children-DEF listen-PST.3PL (nga) two songs
'The children listened to two songs each.'

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(b) Secili fëmijë dëgjoi (**nga**) dy këngë.
each child listen-PST.3PL (nga) two songs
'Each child listened to two songs.'

As indicated by the brackets, the presence of *nga* is optional in both examples. In example (1a), the version with *nga* is only compatible with the distributive reading on which each of the children listened to two possibly different songs, whereas the version without *nga* is ambiguous, also allowing a collective reading on which the children listened to the same two songs together. In example (1b), the distributive reading is independently triggered by the presence of the distributive quantifier *secili* 'each', but *nga* itself is not felt as redundant.

The facts just described have been investigated for similar markers in unrelated languages, e.g. the Korean *ssik* (Gil 1982; Choe 1987); the suffix *-gáa* in Tlingit (Cable 2014); the Romanian *câte* (Farkas 2002; Panaitescu 2018, 2019); and the numeral reduplication in Hungarian (Farkas, 1997a, 2001), Telugu (Balusu 2006), and Kaqchikel (Henderson 2014).

These various markers are comparable to the so-called BINOMINAL *EACH* (see the gloss of (1a) above) but clearly differ from it because not only are they morphologically unrelated to the distributive determiners of these various languages but also their distribution is larger than that of binominal *each.* Some previous proposals have insisted on the common properties of the two types of markers Champollion (2016), whereas others have stressed their differences Zimmerman (2002). In the limits of the present paper, we do not compare *nga* and binominal *each.*

We leave aside many aspects of the distribution of *nga*, which are parallel to what we know about its crosslinguistic counterparts listed above. We thus do not examine those examples in which the *nga*-marked cardinal depends on a temporal or spatial adjunct, as in example (2). The example shows that the *nga*-marked cardinal co-varies in the scope of the quantificational adjunct *në ditë* 'per day'. Example (2a) would be true in a scenario where Mary reads two (different) poems every day. We also ignore the so-called ADVERBIAL *NGA*-MARKED NUMERALS illustrated in (2b), where *nga* can be used to form reduplicated numerals akin to the English construction *Num by Num* (see Brasoveanu & Henderson 2009). For a more detailed description of the distribution of *nga,* see Rushiti (2019) and Bajrami et al. (2020).

(2) (a) Maria lexon (nga) dy poema në ditë.
Mary read-PRS.3SG (nga) two poems in day
'Mary reads two poems per day.'
(b) Fëmijë-t dolën dy nga dy.
children-DEF leave-PST.3PL two nga two
'The children left two by two.'

This paper makes an original contribution in the documentation and analysis of distributively marked numerals in Albanian, a little-studied language. But we also aim toward a better understanding of this phenomenon by making a new theoretical proposal,

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which we expect to extend to distributive numerals (DistNums) across languages (*modulo* possible parametric variation coming either from the properties of the DistNums themselves or from other language-particular items, e.g. pluractional markers).

Beyond their differences, most of the previous accounts rely on the hypothesis that DistNums introduce some kind of semantic feature, either a covariation feature (Farkas 1997a); an evaluation-plurality requirement (Brasoveanu & Farkas 2011), also called a post-suppositional plurality requirement (Henderson 2014; Kuhn 2015); or a distributivity operator (Kuhn 2019). Our main claim is that DistNums are semantically vacuous in the sense that they do not carry any semantic feature but only a formal syntactic feature that needs to enter a dependency relation with a distributivity feature. According to our view then, the covariation meaning triggered by DistNums is not due to a semantic feature but can instead be explained as a consequence of being read off 'distributivity concord', a purely syntactic dependency relation, which we implement in terms of the UPWARD AGREE mechanism that Zeijlstra (2004) proposed for the analysis of negative concord (NC).

That distributive concord should be handled by the syntax and not be viewed as a semantic phenomenon is motivated by the fact that the relation between the *nga*-marked element and a (overt or covert) distributive operator strictly obeys syntactic locality. This contrasts with the relation between a narrow-scoped unmarked indefinite and a distributive operator.

This paper is organized as follows. Section 2 introduces the puzzle: *nga* triggers a distributive reading in sentences with no overt distributive quantifiers but does not yield 'double distributivity' when co-occurring with a distributive quantifier. Section 3 reviews previous accounts, and Section 4 contains our new proposal in terms of distributive concord. Section 5 examines those configurations in which *nga* is licensed by a silent distributive operator. Section 6 concludes.

2. THE PUZZLE OF DISTRIBUTIVE NUMERALS

The examples in (3) show the contrast between distributive numerals and unmarked numerals in Albanian.

(3) (a) Fëmijë-t lanë dy këlysh të bardhë.
children-DEF wash-PST.3PL two puppies AGR white
'The children washed two white puppies.'

(b) Fëmijë-t lanë nga dy këlysh të bardhë.
children-DEF wash-PST.3PL nga two puppies AGR white
'The children washed two white puppies each.'

Example (3a), built with an unmarked cardinal indefinite, is ambiguous between a collective and a distributive reading. The collective reading can be paraphrased as *the children together washed two white puppies.* The distributive reading can be paraphrased as *each of the children washed two (potentially) different white puppies.* Example (3b) contains the distributive marker *nga.* Due to its presence, the sentence as a whole can only receive a distributive reading.

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The plural DP in the subject position of (3a) is the 'key', i.e. the constituent that supplies the set over which the distribution of puppies (in 'shares' of two) takes place. The terms KEY and SHARE are abbreviations of Choe's (1987), 'Sorting Key' and 'Distributive Share'.

The example in (4) shows that *nga* cannot be licensed by a singular DP:

(4) Fëmi-u la-u (*nga) dy këlysh të bardhë.
child-DEF wash-PST.3SG nga two puppies AGR white
'The child saw two monkeys (*each)'.

This constraint is identical to that of binominal *each*, as observable in the translation.

Note now that *nga*-marked DPs can also be licensed by distributive quantifiers, such as *secili* 'each', which may appear either in a determiner or in a 'floated position'; see examples (5) and (6) or *çdo* 'every' (7):

(5) (a) Secili fëmijë la-u dy këlysh të bardhë.
each child wash-PST.3SG two puppies AGR white
'Each child washed two white puppies (each>two; two>each).'
(b) Secili fëmijë la-u **nga dy** këlysh të bardhë.
each child wash-PST.3SG nga two puppies AGR white
'Each child washed two white puppies (each>two; *two>each).'

(6) (a) Fëmijë-t la-në secili dy këlysh të bardhë.
children-DEF wash-PST.3PL each two puppies AGR white
'The children washed two white puppies (each>two; two>each).'
(b) Fëmijë-t la-në secili **nga dy** këlysh të bardhë.
children-DEF wash-PST.3PL each nga two puppies AGR white
'The children washed two white puppies each (each>two; *two>each).'

(7) (a) Çdo fëmijë la-u dy këlysh të bardhë.
every child wash-PST.3SG two puppies AGR white
'Every child washed two white puppies (every>two; two>every).'
(b) Çdo fëmijë la-u **nga dy** këlysh të bardhë.
every child wash-PST.3SG nga two puppies AGR white
'Every child washed two white puppies (every>two; *two>every).'

The (5a), (6a), and (7a) examples, in which the object indefinite is unmarked, can have two interpretations. According to the first interpretation, there are two white puppies in the discourse context such that each of the children washed those two white puppies. This reading is traditionally analyzed as involving the 'wide scope' of the indefinite, hence the notation 'two>each' in the gloss above.[2]

[2] This notation is used here only for descriptive purposes; it does not mean that we adhere to the scopal analysis of indefinite DPs (see Farkas 1997a, 1997b, 2001; Reinhart 1997; Steedman 2003, 2006, among others, for choice-functional analyses of what had been traditionally analyzed as a

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According to the second reading, puppies co-vary with children; each child is reported to have washed two (different) white puppies. This reading is traditionally analyzed as involving the narrow scope of the object, hence the notation 'each>two'. The (5b), (6b), and (7b) examples can only have the narrow scope reading.

Putting together the observations made so far, we obtain a disjunctive constraint:

(8) A *nga*-marked indefinite can be licensed either (i) by a plural DP or (ii) by a distributive quantifier.

On the descriptive level, this generalization is well documented for other languages that have distributive numerals (see among others Farkas 1997a, for Hungarian; Balusu 2006, for Telugu; Oh 2001, 2006, for Korean; Gryllia 2007, for Greek; Henderson 2012, 2014, for Kaqchikel; and Panaitescu 2018, 2019, for Romanian). Some examples are given:

(9) Romanian (Panaitescu, 2019)
  (a) Copiii au văzut **câte două** maimuțe.
  children have seen câte two monkeys
  'The children saw two monkeys each.'
  (b) Fiecare copil a văzut **câte două** maimuțe.
  each child has seen câte two monkeys
  'Each child saw two monkeys (each>two; *two>each).'

(10) Greek[3]
  (a) Oi fititis egrapse **apo tria** arthra.
  the students wrote apo three articles
  'The students wrote three articles each.'
  (b) O kathe fititis egrapse **apo tria** arthra.
  the each students wrote apo three articles
  'Each student wrote three articles (each>three; *three>each).'

(11) Hungarian (Farkas, 2015)
  (a) A gyerekek hoztak **két-két** könyvet.
  the children bought two-two books
  'The children brought two books each.'
  (b) Minden gyerek hozott **két-két** könyvet.
  every child bought two-two books
  'Every child brought two books (each>two; *two>each).'

(12) Czech (Dotlačil, 2015)
  (a) Kluci dostali **po kusu** chleba.
  boys got po one book
  'The boys got one book each.'

scope ambiguity). As is made clear later in the paper, we assume a choice-functional analysis for unmarked indefinites but NOT for marked cardinals (see Section 4.2).

[3] The Greek examples in (10) are from Arhonto Terzi and Nikos Angelopoulos, personal communication to one of the authors.

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(b) Každý kluk dostal **po kusu** chleba.
each boy got po one book
'Each boy got one book (each>one; *one>each).'

(13) Korean (Oh, 2006)
(a) Haksayngutl-i nonmwun **twu**-pyen-**ssik**-ul cecwulhayssta.
students-NOM paper two-CL-ssik-ACC submitted
'The students submitted two papers each.'
(b) Haksayngutl-i kakkak nonmwun **twu**-pyen-**ssik**-ul cecwulhayssta.
students-NOM each paper two-CL-ssik-ACC submitted
'Each student submitted two papers (each>two; *two>each).'

(14) Japanese (Oh, 2006)
(a) Shoonen-tati-ga sosegi-o **fu**-tatsu-**zutsu** tabeta.
boy-PL.NOM sausage-ACC two-CL-zutsu ate
'The boys ate two sausages each.'
(b) Sorezore-no shoonen-tati-ga sosegi-o **fu**-tatsu-**zutsu** tabeta.
each-GEN boy-NOM sausage-ACC two-CL-zutsu ate
'Each boy ate two sausages (each>two; *two>each).'

(15) Telugu (Balusu, 2006)
(a) Pilla-lu **renDu renDu** kootu-lu-ni cuus-ee-ru.
kid-PL two two monkey-PL.ACC see-PST.3PL
'The children saw two monkeys each.'
(b) Prati pillavaaDu **renDu renDu** kootu-lu-ni cuus-ee-Du.
every kid two two monkey-PL.ACC see-PST.3SG
'Every kid saw two monkeys (every>two; *two>every).'

In sum, the disjunctive constraint in (8) appears to be empirically well-grounded but is theoretically problematic because it acknowledges the inability to give a uniform characterization of DistNums. Beyond their differences, existing accounts attempt to reduce the disjunction by assuming one of the two conjuncts to be primitive and attempting to derive the other conjunct as a consequence of the first.

3. Previous approaches

Although theoreticians agree on the main empirical generalizations regarding DistNums, no common consensus has been reached on the theory of these markers.

A large majority of existing theories assume that DistNums are endowed with an built-in semantic property that forces covariation but they diverge regarding the analysis of covariation, and correlated to it regarding the source of distributivity: is it contributed by the context or by DistNums themselves?

Regarding the covariation requirement, some theoreticians propose to capture it by assuming that the entity denoted by the marked DP must be plural. For Cable (2014), the relevant notion of plurality is the currently used one, also called domain or

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ontological plurality, i.e. reference to a non-atomic entity, to be distinguished from Brasoveanu's (2007, 2008) 'evaluation plurality', which 'involves non-atomic reference relative to the whole matrix of variable assignments' (Brasoveanu & Farkas 2011). In other words, the requirement of evaluation plurality postulated by Brasoveanu & Farkas as being the semantic contribution of DistNums is a 'post-suppositional condition' in the sense of Henderson (2012, 2014), which means that the plurality condition is checked on the output of the semantic computation. The intuition behind the post-suppositional analysis of DistNums was also assumed by Kuhn (2019), whose formal implementation is however different.[4] While dynamic semantics and post-suppositions may indeed be needed for discourse-coherence phenomena, e.g. donkey anaphora, one may question extending such tools to DistNums, which are subject to strict locality (see Section 4.2).[5] Note also that the plurality condition (be it a presupposition or a post-supposition) has been questioned by Cabredo-Hofherr & Etxebarria (2017) in their analysis of the Basque *na*-marker.[6]

For some authors, DistNums contribute distributivity (Balusu 2006; Cable 2014; Kuhn 2017; 2019; Cabredo-Hofherr & Etxeberria 2017). Of these, let us first focus on Cable's analysis of distributive numerals in Tlingit, which are formed by means of the suffix *-gaa* attached to the numeral – cf. example (16).

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[4] According to Kuhn (2019: 5–7), DistNums are 'plurality filters on the output' that restrict a set only to its plural objects. For instance, plurality filters restrict the set {a, b, c, a⊕b, a⊕c, b⊕c, a⊕b⊕c} only to its plural objects {a⊕b, a⊕c, b⊕c, a⊕b⊕c}. Kuhn's 'plurality filters' are meant as an alternative to Henderson's (2014) assumption that DistNums are encoded with a post-supposition (a test which applies after value assignment has taken place) requiring that the output set of assignments map the index of the numeral to more than one thing. The Kaqchikel sentence (i) – where the DistNum *ju-jun* co-occurs with the pluractional affix *ala'* – is true in a scenario where the speaker looked for different books. Thus *ju-jun* introduces the *test* $^{\text{`xi>n'}}$, which requires the variable introduced by *ju-jun* to be mapped to multiple entities (in case n > 1 the output contains multiple *plural* entities). This entails that there must be more than one book that was looked for.

(i) Xinkan**ala'** **ju-jun** wuj.
1sg.searched.PA DIST-one book

[5] Kuhn (2017, 2019) is aware of the locality constraint on DistNums and captures it by assuming that those DPs that are marked by DistNums need to QR to a position where they have access to the plurality that supplies the distributive key. Since QR is local, DistNums should be local to the key (plural DP or distributive quantifier). The QR hypothesis also allows Kuhn to account for the lack of 'double distributivity'; see the discussion of examples (22) in the main text.

[6] Two pieces of evidence are brought up by these authors: (i) in Basque, *na*-marking is compatible with non-additive functions such as temperature, e.g. *Ontziak 36na gradutan egon behar dute laborategi honetan* "The recipients have to be at 36 degrees each in this laboratory", and (ii) *na*-marked numerals can be adequately used in contexts where the (group) entity referred to does not vary from one assignment to the other provided that the speaker ignores the non-variation. Note that the fact reported in (i) for Basque has been argued not to be reproduced in Romanian, where the use of non-additive functions yields degraded acceptability for the use of the DistNum *câte* (see Panaitescu 2019). On the other hand, the fact in (ii) can be captured in the pragmatics: the semantic interpretation would yield a 'plural' output, which can be overridden in the pragmatics, by assigning the same referential index to the entities in that plurality.

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(16) (a) Ax kaa yátx'i nás'k xáat has aawashaat.
my male children three fish they.caught
'My sons caught three fish.'

(b) Ax kaa yátx'i nás'gigáa xáat has aawashaat.
my male children three-DIST fish they.caught
(i) 'My sons caught three fish each.'
(ii) 'My sons caught three fish each time.'

According to Cable, sentence (16a) has the same range of interpretations as its English gloss. For instance, (16a) is true not only in a distributive scenario (in which each of the sons caught three fish) but also in a scenario where the speaker's sons together caught three fish. On the other hand (16b), which contains the distributive numeral *nás'gigáa*, cannot receive a collective reading but is compatible with two distinct distributive readings, given in (16b-i) and (16b-ii). The former says that each of the sons caught three fish. The interpretation in (16b-ii) is true in a scenario where Alex and Bob went fishing every day during the last week and caught three fish each day. Cable uses the term 'participant-distributive reading' to refer to the interpretation in (16b-i) and 'event-distributive reading' for the interpretation in (16b-ii). In order to capture the two interpretations of (16b), Cable assumes the following denotation for the distributive suffix *-gaa:*

(17) Semantics for adnominal distributive numerals (Cable 2014: ex. (59))
$[[\text{-gáa}]] = \lambda n_n: [\lambda Q_{<et>}: [\lambda P_{<e,\ \varepsilon t>}: \lambda e_\varepsilon : \exists x.Q(x) \ \&\ P(x)(e) \ \&\ <e,x> = \sigma_{<e',y>}.$
$y<x \ \&\ |y| = n \ \&\ e'<e \ \&\ \text{Participant}(e',y)] \ \dots \ ]$

According to (17), the distributive suffix *-gáa* takes as its first argument an integer of type *n.* Cable assumes an integer semantics for numerals, e.g. [[two]] = 2. The second argument of *-gáa* is a predicate Q of type <et>, which is supplied by the modified N *xáat* 'fish' in example (16b). Next, *-gáa* takes as an argument a relation 'P' between entities and events (notated as $\lambda P_{<e,\ \varepsilon t>}$) and returns a predicate of events, λe_ε, which holds of an event 'e' iff (i) there is an 'x' such that Q(x) holds, and the relation P holds between x and e, and (ii) the pair <e,x> is the sum of those pairs <e',y> such that (i) y is a proper part of x, and (ii) y is a plurality of cardinality of n, (iii) e' is a proper part of e, and (iv) y is a participant in e'.

Let us now apply (17) to the sentence in (16b). For Cable, (16b) has the logical form (LF) structure in (18a) and the truth conditions in (18b):

(18) (a) LF structure:
$[_S\ \exists e\ [_{vP}$ ax káa yátx'i $[_{vP}$ v $[_{VP}$ [**nás'gigáa** xáat] has aawasháat]]]]

(b) Predicted truth conditions
$\exists e.\ \exists x.$ *fish(x) & *caught(e) & *Agent(e) = $\sigma_{y.}$ *my.son(y) & *Theme(e) = x & <e, x> = $\sigma_{<e',z>}$. z < x & |z| = 3 & e' < e. & Participant (e', z)

As Cable (2014: 586) shows, (18b) is read informally as follows: "there is a (plural) event e of catching, whose agent is my sons and whose theme is a bunch of fish x,

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and the pair consisting of e and x is the sum of those pairs <e', z> such that z is a triplet of fish, e' is a part of e, and z participates in e'."

Note that the truth conditions in (18b) hold in both participant-distributive and event-distributive scenarios. Cable (2014: 587 ex. (61)) illustrates the participant-distributive scenario as in example (19):

(19) Participant-distributive scenario: My sons Tom and Ben went fishing. Tom caught three fish; Ben did too.

CATCHINGS	AGENT	THEME
e_1	Tom	$fish_1$+$fish_2$+$fish_3$
e_2	Ben	$fish_4$+$fish_5$+$fish_6$

The event-distributive scenario is illustrated in example (20), corresponding to Cable (2014: 587 ex. (62)).

(20) Event-distributive scenario: Every day last week, my sons went out fishing. Every day, they together caught a total of three fish.

CATCHINGS	AGENT	THEME
e_1	Tom+Ben	$fish_1$+$fish_2$+$fish_3$
…	…	…
e_7	Tom+Ben	$fish_{19}$+$fish_{20}$+$fish_{21}$

According to Cable's proposal, the compatibility with the scenarios illustrated in (19) and (20) is not a matter of ambiguity (no difference in the semantic analysis) but instead due to the relatively weak truth conditions imposed by DistNums.

In (18b), Cable uses the asterisk '*' to indicate that the predicates '*caught', '*Agent', and '*Theme' are cumulative. For instance, in the participant-distributive scenario, the predicate *caught(e) indicates that there is a (plural) event e_1+e_2 of my sons cumulatively catching a bunch of fish, which can be broken into triplets of fish. Each triplet of fish is mapped to an individual Agent of the catching event. Since the events e_1 and e_2 are each mapped to an atomic agent, we obtain the participant-distributive scenario. A similar account holds for the event-distributive scenario in (20), the difference being that each triplet of fish is mapped to time-individuated events, each of which has a plural agent (Tom+Ben).

In sum, in Cable's system, distributive numerals convey that their argument can be divided into proper parts and distributed among several subevents. As Cable notes, a sentence that contains the distributive suffix *n-gaa NP* can be true if and only if every subevent contains an entity of cardinality n that satisfies the NP predicate.

Cable notes that his analysis cannot account for those configurations in which DistNums are licensed by a universal quantifier such as EACH. See in particular Albanian examples of the type in (21), already introduced in Section 1:

(21) Secili prej djemëve kapi nga tre peshq.
each of sons-DEF catch-PST.3SG nga three fish
'Each of my sons caught three fish.'

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There is no salient difference between (21) – with both *secili* 'each' and *nga* – and a parallel sentence with *secili* alone and a narrow-scope interpretation of the cardinal NP (each of the sons in the discourse context caught three fish). This meaning of (21) cannot be generated by Cable's system because the distributive numeral is supposed to break a plurality of fish into triplets of fish and map each triplet to an atomic catching subevent. Given the presence of *secili* 'each', the sentence should mean that each son was an agent of several catching subevents each of which involving three fish, the result being that each son caught more than three fish. In other words, given Cable's semantics of distributive numerals (21) should have a 'double distributive' meaning, i.e. it should mean 'each son caught fish three by three'. But this is clearly not the correct interpretation of (21).

Sentences such as (21) pose similar problems for other accounts that may differ from Cable's in some of the technical details but resemble Cable insofar as it is the DistNum itself that contributes distributivity. In the implementation proposed by Kuhn & Aristodemo (2017) and Kuhn (2019), the problem is solved by the assumption that DistNums are evaluated *above* the distributivity operator. Specifically, Kuhn (2019, 2021) proposes that quantifier raising (QR) raises the DistNum higher than the distributive operator, as shown in the LF in (22):

(22) (a) Fëmijë-t lanë secili nga dy këlyshë të bardhë.
children-DEF wash-PST.3PL each nga two puppies AGR white
(b) [nga [children [each [washed two puppies]]]]

The effect is one of INNOCENT REDUNDANCY, which means that, even though (according to Kuhn) DistNums contribute distributivity, they do not yield double distributivity when co-occurring with another distributive quantifier.

According to some other authors, DistNums do not themselves contribute distributivity but only induce obligatory co-variation when occurring at LF in the scope of a distributive operator (Oh 2001, 2006; Brasoveanu & Farkas 2011; Henderson 2012, 2014; Guha 2018; Panaitescu 2018). Among these various proposals, we concentrate on Oh (2006), which is close to the view that we ourselves defend in the present paper. Oh's core proposal is that *ssik*-marked numerals in Korean are to be analyzed as 'Distributive Polarity Items'. More precisely, Oh argues that Korean *-ssik*-marked numerals are subject to syntactic licensing in the scope (or C-command domain) of a distributive operator. This assumption directly captures examples such as (23), in which the *-ssik*-marked numeral is licensed by the floated universal quantifier, which qualifies as a distributive operator:

(23) Namcatul-i twu-myeng-i kakkak sangca han-kay-ssik-lul wunpanhayssta.
men-NOM two-CLF.NOM each box one-CLF.SSIK.ACC carry-PST
'Two men each carried one box each.'

Note now that *-ssik*-marked numerals can also appear in sentences without a universal quantifier:

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(24) Namcatul-i twu-myeng-i sangca sey-kay-ssik-ul wunpanhayssta.
men-NOM two-CLF.NOM box three-CLF.SSIK.ACC carry-PST
'Two men carried three boxes each.'

According to Oh, (24) is ambiguous between the participant-key reading (each man is mapped to three boxes) and the event-key reading (two men together carried three boxes on each occasion). Corresponding to these two readings, Oh proposes two distinct LF structures, both of which involve a covert distributive operator notated D but differ regarding which element counts as the restrictor of the D operator. In (25a), the restrictor is the subject DP (*two men*), which gives rise to the participant-key reading according to which the distribution of suitcases is three per individual. In (25b), it is the event argument that restricts the D operator, yielding the event-key reading. In Oh's system, the (Davidsonian) event argument is projected as an event pronoun (e_2) in the syntax and bound by a syntactically projected existential quantifier.

(25) (a) LF Structure for Participant-Key Reading
[two men [D [1 [∃2 [e_2 [three suitcases [3 [t_1 carried t_3] …]
(b) LF Structure for Event-Key Reading
[∃2 [e_2 [D [two men [1 [three suitcases [3 [t_1 carried t_3] …]

As pointed out by Cable (2014: 566), Oh's analysis faces some problems. Thus, the licensing of distributive numerals in Korean is subject to locality constraints, in contrast to the licensing of NPIs (see the discussion in Section 4.1). Another problem for Oh's claimed parallelism between DistNums and NPIs is the fact that *-ssik* is licensed in the scope of a covert D operator – see example (24) – whereas NPIs cannot be licensed by covert negative operators (cf. Zeijlstra 2004).

4. Proposal: distributive marking involves upward Agree

Our analysis goes against those proposals that assume that DistNums contribute distributivity (Champollion 2016; Kuhn 2017, 2019, 2021) and sides with those that assume that DistNums signal a dependency relation with respect to a distributivity operator that is external to the DistNums themselves (Oh 2001, 2006; Zimmermann 2002; Brasoveanu & Farkas 2011; Henderson 2012, 2014; Guha 2018; Panaitescu 2018). However, we also crucially depart from most of the latter proposals and follow Oh (2006) in assuming that the dependency relation is not semantic, but rather syntactic in nature.[7] We implement this hypothesis by extending Zeijlstra's (2004) analysis of NC. According to this theory, Neg-words do not contribute semantic negation but instead need to enter a purely syntactic relation,

[7] We would like to thank a reviewer for pointing to an analysis in terms of [iDIST] and [uDIST] features in Kimmelman (2015) regarding distributive quantification in Russian sign language. It seems impossible to find it in any form other than a conference abstract: https://drive.google.com/file/d/0B24EkVft6n6oV29XNTdROEI5cGs/edit?resourcekey=0-Im8u48X4Cxsa7XAwWjUl5w.

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UPWARD AGREE, with a negative operator. Similarly, we argue that DistNums do not contribute semantic distributivity but instead need to enter UPWARD AGREE with a (overt or covert) Dist operator.

We first briefly present Zeijlstra's analysis of NC, and show that the main ingredients can be imported into the analysis of distributive numerals (Section 4.1). We then show that the relation between distributive numerals and distributive operators obeys strict locality constraints (Section 4.2.).

4.1. *From negative concord items to distributive concord items*

The core hypothesis of our analysis is that the dependency relation between distributive numerals and distributive operators is a syntactic rather than semantic relation, which we implement in terms of Zeijlstra's (2012) UPWARD AGREE. Correlatively, our proposal differs from all previous analyses of DistNums (with the exception of Oh 2006 and Kimmelman 2015) in assuming that the defining property of DistNums is not a semantic feature (be it 'covariation requirement' or 'distributivity') but rather a syntactic uninterpretable feature, the uninterpretable Distributivity [uDist] feature, that needs to be checked against an interpretable Distributivity [iDist] feature.

The initial motivation for our analysis of distributive numerals is the fact that a distributive numeral co-occurring with a distributive quantifier yields an interpretation compatible with only one distributive relation. This non-multiplication of distributivity echoes the non-multiplication of negation in NC. The second important advantage of treating DistNums on the model of negative concord items (NCIs) is an explanation of the locality constraints to which they are subject (Section 4.2).

NC arises when multiple negative elements yield only one single semantic negation (cf. Laka 1990; Zeijlstra 2004, 2012, among many others as well as most recently Giannakidou & Zeijlstra 2017; Giannakidou 2020). The following example illustrates NC in Albanian:

(26) Sot askush *(nuk) thirri.
today nobody neg call-PST.3SG
'Today nobody called.'

When used in isolation, *nuk* is enough to render a sentence negative. However, when *nuk* co-occurs with *askush* as in (26), the latter does not contribute negation (if it did, the negation introduced by *nuk* would be cancelled, yielding a positive interpretation of the overall sentence).

Zeijlstra (2012) analyzes NC as involving *UPWARD AGREE* UPWARD AGREE, a unidirectional Agree that applies in an upward fashion between a Neg-marked indefinite DP or adverb and a C-commanding NEG marker on the (inflected) verb. In this system, an item carrying an uninterpretable feature [uF] enters a feature-checking mechanism with a C-commanding item that carries an interpretable feature [iF].

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(27) UPWARD AGREE: α agrees with β iff
  (a) α carries at least one uninterpretable feature [UF] and β carries a matching interpretable feature [IF];
  (b) β C-commands α;
  (c) β is the closest Goal of α

Turning now to distributive numerals the example in (28) shows that the distributive quantifier *secili* 'each' and the *nga*-marked NP *nga dy libra* '*nga* two books' together yield only one distributive relation (no multiplication of distributivity).

(28) Secili fëmijë la-u nga dy këlysh të bardhë.
each child wash-PST.3PL nga two puppies AGR white
'Each child washed two white puppies.'

The observed non-multiplication of distributivity can be captured by applying Zeijlstra's mechanism of UPWARD AGREE to distributive numerals:

(29) Distributive numerals are licensed via UPWARD AGREE[8]
  (a) A distributive numeral carries a [UDIST] feature and OP_{dist} carries a matching [IDIST] feature;
  (b) OP_{dist} C-commands the distributive numeral;
  (c) OP_{dist} is local to the distributive numeral

Note that Zeijlstra's (2012) condition (c) given in (27) is stated in terms of 'closest Goal'. The reason of replacing 'closest Goal of α' with 'local to α' in (29) is that intervention effects (suggested by possible violations of 'closest goal') seem irrelevant for our purposes, whereas locality (meaning essentially clause-boundedness) is crucial.

According to the DistConc analysis proposed here, *nga* carries unvalued or [uDist] features that induce an obligatory UPWARD AGREE relation with a distributive operator. *Modulo* the difference in the CONTENT of the features themselves (negative vs. distributive) the non-multiplication of distributivity is captured in the same way as the non-multiplication of negation in NC.

Insofar as our proposal brings out parallelisms between the distributive dependency created by DistNums and negative dependencies, it is similar to Oh's (2006) analysis briefly reviewed in the previous section. Given our present-day knowledge, Oh's proposal seems self-contradictory because on the one hand she explicitly claims that DistNums enter a syntactic (rather than semantic) dependency with a distributivity operator, but on the other hand she assumes that DistNums behave on a par with NPIs, which in the meantime have been demonstrated Zeijlstra (2012) to

[8] We use 'OP_{dist}' to mean an overt distributive operator such as *secili* 'each' as well as a covert distributive operator notated as D.

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be semantically rather than syntactically licensed, in contrast to NCIs. Note however that Oh (2006) is aware of the existence of various types of NPIs and the parallelism she proposes between *ssik* and NPIs concerns only those NPIs that need to be syntactically licensed, as made explicit in the following quote signaled to us by a reviewer: "Negative indefinites (or so-called n-words) in German, including 'kein', are special NPIs that have to be licensed by an abstract negation and do not have negative force by themselves."

Oh's proposal can thus be viewed, despite *prima facie* evidence, as a predecessor of our own analysis. Benefitting from the progress made in the meanwhile, we improve on Oh both theoretically, by making a fully implemented proposal in terms of UPWARD AGREE, and empirically, by bringing up evidence showing that DistNums behave on a par with NCIs and contrast with NPIs[9]. It should be clear that the resemblance between DistNums and NCIs is the very abstract notion of UPWARD AGREE relation to which both of them are subject.

4.2. *Clause-boundedness*

An important advantage of the syntactic account proposed here is that it captures the clause-boundedness constraint to which DistNums are subject. Indeed, UPWARD AGREE is constrained by locality (see (29)), which explains important contrasts between NCIs (which rely on UPWARD AGREE) and NPIs, which are semantically licensed. In this section, we argue that similar locality contrasts exist between DistNums and dependent unmarked indefinites.

It has been shown (cf. Zanuttini 1991; Progovac 1994; Przepiórkowski & Kupść; 1997: 10–13; Giannakidou & Quer 1997; Giannakidou 1997, 1998, 2000; Zeijlstra 2012, among many others) that an NC relation is constrained by clause-boundedness, i.e. NC can only be established if the participating elements belong to the same clause. The Albanian examples in (30)[10] show the difference between NPIs[11] (built with *ndo-* as in *ndonjë* 'any') and NCIs (built with the negative prefix *as-* as in *asgjë* 'nothing') with respect to clause-boundedness:

(30) Ariana nuk tha se kishte parë *ASGJË / ndonjë gjë.
Ariana NEG say-PST.3SG that had seen nothing / any thing
'Ariana didn't say that she had seen anything.'

[9] Note, however, that the distinction between NPIs and NCIs is even today not as clear-cut as one might think, and their respective definitions vary from one author to the other. Importantly, neither NCIs nor NPIs can be unambiguously identified in the Lexicon. Only N(eg)-words are identifiable by being lexically marked as negative (*nobody*, *nothing*, *no*, etc.). But being a Neg-word does not say anything about its syntactic or semantic properties. Depending on whether a language (or even a particular configuration) requires or bans Neg-concord, a Neg-word is analyzed as an NCI, an NPI, or a Neg quantifier.

[10] This is the Albanian counterpart of a Greek example by Giannakidou (2020: 471 ex. (38)).

[11] See Xherija (2014) for some discussion of strong and weak NPIs in Albanian.

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These examples, built with the complementizer *se* "that" (introducing indicative clauses),[12] show that NPIs can be licensed by a negation that is outside the clause that contains the NPI itself. In such a configuration NCIs are unacceptable.

According to Zeijlstra's (2012) analysis, the contrast between NCIs and NPIs is due to the fact that the former but not the latter entertain a syntactic dependency relation, UPWARD AGREE, with the sentential NEG operator. The dependency that characterizes NPIs, on the other hand, is semantic in nature and is not subject to locality: the NPI must occur in the scope of a downward entailing operator, which need not be local to the NPI.

The example in (31) shows that long-distance licensing of *nga*-marked numerals in the complement of *tha* 'said' is impossible:

(31) *Secili professor tha se fituan nga dy studentë.
each-NOM professor say-PST.3SG that win-3PL nga two students

Granting that DistConc is a purely syntactic relation (implemented here in terms of UPWARD AGREE), the unacceptability of (31) is expected given the unacceptability of the NCI in (30).

Turning now to the so-called NEG-RAISING phenomenon, it can be observed in Albanian with verbs such as *dua* 'want' or *dëshiroj* 'desire':[13]

(32) Poli nuk do të shohë ASKËND.
Paul NEG want-3SG SUBJ see-3SG nobody
'Paul does not want to see anybody.'

Interestingly, in this case the parallelism between NC and DistConc breaks down. Indeed, DistNums cannot be licensed long distance with *dua* 'want':

(33) *Secili profesor donte të fitonin nga
each professor want-IMPF.3SG SUBJ win-IMPF.3PL nga
dy studentë
two students

In sum, distributive numerals differ from NCIs in that they cannot be long-distance bound with NEG-raising verbs. This difference is not surprising given the syntactic analysis of NEG-raising (see Collins & Postal 2014),[14] according to which NEG is base-generated inside the embedded clause (at which stage locality is satisfied) and subsequently raised to its overt position. Under this syntactic view, NEG-raising examples such as (32) do not constitute counter evidence to the locality of NC. On the other hand, there is no reason to assume that in NEG-raising contexts EACH itself

[12] For Albanian complementizers see the discussion in Joseph (2016) and references cited therein.

[13] NEG-raising with BELIEVE is disallowed with Albanian (on a par with Serbo-Croatian) but allowed in Greek and Italian. We do not have an explanation for this crosslinguistic difference but this issue does not directly bear on the puzzle of DistNums that we address in the paper.

[14] This syntactic account has been questioned by theoreticians who provide evidence in favor of semantic implicature-based accounts (Zeijlstra 2017; Mirrazi & Zeijlstra 2021).

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would be raised from the embedded clause, where it would be first merged. It is only NEG rather than a random licensor (item marked with interpretable features) that can be generated in an embedded clause and moved past a main verb in the mapping to overt syntax. Sentential negation and distributivity operators are alike in that both can function as licensors of UPWARD AGREE, which is strictly local. They differ in that NEG, but not EACH, can raise above NEG-raising verbs.

It is interesting to observe that unmarked cardinal numerals can be interpreted as dependent on the distributive quantifier *secili* 'each', even if the latter does not belong to the same clause. The two examples below differ between each other only in that the main verb does not allow vs. allows NEG-raising. In both cases, an unmarked indefinite can be licensed by *secili*, which occurs in the main clause:

(34) (a) Secili profesor tha se fituan dy studentë.
each professor say-PST.3SG that win-PST.3PL two students
'Each professor said that two students graduated (each>two; two>each).'

(b) Secili profesor donte të fitonin dy studentë.
each professor want-IMPF.3SG SUBJ win-IMPF.3PL two students
'Each professor wanted two students to graduate (each>two; two>each).'

In the so-called WIDE SCOPE SCENARIO, there are two students in the discourse context such that each professor said of those two students that they won. In the NARROW SCOPE SCENARIO, students co-vary with professors. Each professor in the discourse context said of different groups of two students that they won.

The sharp contrast between the ungrammaticality of the examples in (31)–(33) and the perfect acceptability of the examples in (34) clearly shows that *nga*-marked DPs are NOT to be analyzed on a par with dependently interpreted unmarked indefinites (*contra* Brasoveanu & Farkas 2011).[15] Our explanation of the contrast is that DistNums must enter a syntactic relation (UPWARD AGREE) with their licensor, whereas unmarked indefinites must enter a semantic dependency.[16] The contrast between DistNums and unmarked indefinites is thus parallel to the contrast between NCIs and NPIs.

The data are replicated in Romanian. In each of the (a) sentences below, the cardinal can either scope below or above the distributive quantifier in subject position. In the (b) sentences on the other hand, the distributive markers (*câte* in

[15] Henderson (2014) provides an important independent argument against Farkas's (1997a) and Brasoveanu & Farkas's (2011) attempts to subsume distributive numerals under the analysis of unmarked dependent indefinites: in Kaqchikel unmarked numerals cannot scope below a pluractional operator whereas distributive numerals can.

[16] This does not mean, however, that the semantic dependencies characteristic of dependent unmarked indefinites and NPIs is the same: whereas dependent indefinites are not to be analyzed in scopal terms but rather in terms of dependent indices (Farkas 1997a) or Skolem functions (Steedman 2012), the constraint on NPIs is currently formulated in terms of scope (NPIs have to occur in the scope of downward entailing licensors).

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Romanian) are ungrammatical due to a violation of the clause-boundedness constraint. Examples (35) and (36) show that distributive numerals are blocked in the complement clauses of *a spus* '(has) said' and *voia* 'wanted', respectively.

(35) (a) Fiecare profesor a spus ca au absolvit doi studenți.
each professor has said that have graduated two students
'Each professor said that two students have graduated (each>two; two>each).'

(b) *Fiecare profesor a spus ca au absolvit
each professor has said that have graduated
câte doi studenți.
câte two students
"Each professor said that two students have graduated."

(36) (a) Fiecare profesor voia sa obțină diploma doi studenți.
each professor wanted that obtain diploma two students
'Each professor wanted two students to graduate (each>two; two>each).'

(b) *Fiecare profesor voia sa obțină diploma câte doi studenți.
each professor wanted that obtain diploma câte two students

Further evidence in favor of the locality constraint on DistNums is given by Kuhn (2017, 2019) for Hungarian. The following examples show that an *if*-clause blocks the licensing of a distributive numeral, although it does not disturb unmarked indefinites (which show scope ambiguities):

(37) Hungarian (Kuhn 2019)

(a) Minden professzor két-két diakrol mondta, hogy
every professor two-two students of said, that
meglepné ha diplomat szereznének.
surprised if diploma received
'Every professor said of two students that he would be surprised if they graduated (every>two; two>every).'

(b) *Minden professzor azt mondta, hogy meglepné, ha két-két
every professor DEM said that surprised, if two-two
diak diplomat szerezne.
student diploma received

The same constraint can be observed for *nga*-marked numerals in Albanian. In (38a) the indefinite *dy studentë* 'two students' can co-vary in the scope of *secili profesor* 'each professor' or outscope it. But (38b) is ungrammatical because the licensing of *nga* is impossible across syntactic islands.

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(38) Albanian

(a) Secili profesor tha se do të befasohej po të
each professor said that would SUBJ surprised if SUBJ
diplomonin dy studentë.
graduated two students
'Every professor said of two students that he would be surprised if they graduated (every>two; two>every).'

(b) *Secili profesor tha se do të befasohej po të
each professor said that would SUBJ surprised if SUBJ
diplomonin nga dy studentë.
graduated nga two students

Romanian and Greek data confirm the same constraint:

(39) Romanian

(a) Fiecare profesor a spus ca ar fi surprins daca
each professor has said that would be surprised if
ar absolvi doi studenți.
would graduate two students
'Every professor said of two students that he would be surprised if they graduated (every>two; two>every).'

(b) *Fiecare profesor a spus ca ar fi surprins daca
each professor has said that would be surprised if
ar absolvi câte doi studenţi.
would graduate câte two students

(40) Greek

(a) Kathe kathijitis ipe oti tha ksafniazotan an apofitusan
each professors said that would be.surprised if graduated
dhio fitites.
two students
'Every professor said of two students that he would be surprised if they graduated (every>two; two>every).'

(b) *Kathe kathijitis ipe oti tha ksafniazotan an apofitusan apo
each professor said that would be.surprised if graduated apo
dhio fitites.
two students

In sum, DistNums are subject to a strict locality constraint, in clear contrast with unmarked indefinites. This difference shows that the crucial property of DistNums is not a semantic feature that signals obligatory narrow focus or dependency with respect to a distributivity operator. If this were so, we would expect DistNums to be able to be dependent on a Distributivity operator that lies outside their local domain, on par with unmarked cardinals; see examples (35)–(37) and (38)–(40). This expectation is not fulfilled.

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Throughout the paper we have indicated that unmarked cardinal indefinites allow for both a 'narrow' scope (or rather dependent reading) and a 'wide' scope reading, in contrast to DistNums, for which only the former is possible.

Although it is somewhat orthogonal to our main concerns, it is worthwhile recalling that the extra-wide[17] scope (i.e scope above the clausal domain) of unmarked indefinites is strong evidence against a quantificational analysis of indefinites and in favor of a choice-functional analysis (Reinhart 1997). This analysis explains why those indefinites that seem to scope outside islands (or outside the clause in which they sit at S-structure) can take 'existential' scope but not distributive scope over another indefinite:

(41) (a) Trei profesori au spus ca au absolvit doi studenţi.
three professors have said that have graduated two students
'Three professors said that two students graduated.'

(b) Trei profesori vroiau sa obţină diploma doi studenţi.
three professors wanted that obtain diploma two students
'Three professors wanted two students to obtain the diploma.'

The reading we have so far indicated by 'cardinal>each' (see in particular examples (37a) and (38a)) can also be observed in (41a, b). Indeed, in addition to the dependent reading of the lower indefinite (on which we are talking about 6 students) we also have a 'wide' scope reading, on which we are talking about only two students. But crucially, this second reading cannot be paraphrased as "for each of the two students there are three (different) professors who said that each student graduated/who wanted that each student obtains the diploma." This would be true in a scenario involving two students and six professors. This illustrates the well-known fact that the 'extra-wide scope' of unmarked indefinites is not a genuine scope phenomenon: the unmarked indefinite should not be analyzed as a quantifier that raises outside its local domain. Talking in terms of scope is a short-hand description of the relevant interpretation. The most plausible analysis, which allows the indefinite to be analyzed in its S-structure position, involves choice functions (Reinhart 1997) or some refinement thereof.

Rounding up, unmarked indefinites can be interpreted either as 'scopeless' or as dependent elements. In both cases they are insensitive to locality, which is captured by (Skolemized) choice-functional analyses. DistNums are, on the other hand, subject to a strict locality constraint, which indicates that a choice functional analysis is inappropriate. In this paper we have concentrated on the syntactic analysis, according to which DistNums must enter a purely syntactic relation implemented in terms of UPWARD AGREE. The semantic composition that would be read off the proposed LFs would arguably involve existential quantifiers taking

[17] See Szabolcsi (2010) for the distinction between existential and distributive scope.

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obligatory narrow scope with respect to a distributive operator. We leave the implementation of this view for future work.

An alternative account of the clause-boundedness of DistNums was proposed by Kuhn (2019), according to whom these elements must be QR-ed above the distributive key. Since QR is necessarily local, DistNums and the distributive key are necessarily local to each other. It seems to us that this proposal, which is specifically designed for DistNums,[18] is not supported by independent evidence and its theoretical advantages remain to be evaluated.[19]

5. When the distributivity operator is silent

An important challenge for the distributive concord analysis proposed here comes from those examples in which *nga*-marked DPs are not licensed by a distributive operator, such as *secili* 'each' or *çdo* 'every', but rather by a plural DP (or a plurality of time intervals or spatial areas, left aside here). For such cases, the simplest hypothesis would seem to be that *nga* is itself a distributive operator, the plural DP providing only the restriction of that operator. We would thus end up assuming that *nga* is ambiguous between a distributivity concord marker (when it is licensed by an overt distributive operator, *secili* 'each' or *çdo* 'every') and a distributivity operator (when it is licensed by a plural DP). In what follows, we show that this undesirable move is not necessary and that the distributive concord analysis proposed in the previous section can be extended provided that we assume that a silent distributivity operator is present in the LF representation of examples built with plural DP keys. In Section 5.1, we argue that this assumption is not a mere stipulation but is in fact supported by our current knowledge regarding plural predication. The remaining subsections are devoted to other configurations that require postulating a silent distributivity operator: fragment answers on the one hand and multiple *nga*'s on the other hand (see Sections 5.2 and 5.3, respectively).

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[18] Kuhn (2017) suggests that his analysis of DistNums extends to the internal reading of *same* and *different* but does not demonstrate that this proposal is superior to a parasitic scope analysis à la Barker (2007).

[19] Kuhn (2017) discusses a counter-example to his QR-based account of the locality constraint on DistNums, also investigated by Law (2022).

(i) Minden rendezö benevezte két-két filmjét.
every director entered two-two film-POSS.3SG.ACC
'Every^{x} director entered two films of his$_{x}$ (in the competition).'

In this example, the noun phrase that restricts the distributive numeral contains a pronoun, which is bound by the universal quantifier that licenses the distributive numeral. The distributive numeral cannot be assumed to raise above the universal quantifier, since in that case the pronoun would remain unbound. Kuhn suggests a scope-splitting mechanism, which Law (2022) implements in Charlow's (2022) framework.

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5.1. *When the key is a plural DP*

Let us consider examples, such as (42b), where *nga* is not licensed by a distributive quantifier but rather by a plural DP:

(42) (a) Fëmijë-t lanë dy këlysh të bardhë.
children-DEF wash-PST.3PL two puppies AGR white
'The children washed two white puppies.'

(b) Fëmijë-t lanë nga dy këlysh të bardhë.
children-DEF wash-PST.3PL nga two puppies AGR white
'The children washed two white puppies each.'

Sentence (42a) is ambiguous between a collective and a distributive reading. This ambiguity can be explained by assuming that the two interpretations are structurally different, involving distinct LF representations, depending on whether Link's (1983, 1987) silent pluralization or distributivity[20] operator (D-operator henceforth) is projected or not at LF:

(43) (a) λx.wash two puppies (x) ([[the children]])
(b) (D(λx.wash two puppies (x))) ([[the children]])

Assuming that the cardinal indefinite *two puppies* denotes an existential quantifier, the formula in (43a) can be rewritten as follows:

(44) ∃x.puppies(x) ∧ |x| = 2 ∧ wash(x, [[the children]])

According to this formula, the example in (42a) has a collective reading, i.e. it is true in a situation in which there is a plurality x made up of two puppies such that the children washed x.

Turning now to the formula in (43b), Link (1987) viewed the D-operator as a silent version of the adverbial or floated use of *each* in English:

(45) The children each washed two puppies.

In this example, *each* applies to a predicate over atomic individuals *(λx. wash two puppies(x))* and returns a predicate *each(λx. wash two puppies(x))* that is true of any sum individual whose atomic parts each satisfy *λx. wash two puppies (x)*.

[20] As defined by Link (1983), the pluralization or star operator could only apply to inherently distributive predicates such as *laugh*, whereas Link's (1987) D-operator can apply to any predicate, in particular to complex predicates such as those denoted by VPs that contain internal arguments. Note, however, that some authors use the star notation for a pluralization or distributive operator that resembles the D-operator in not being restricted to inherently distributive predicates. See Champollion (2019) for a clarification of the differences in empirical coverage between the star-operator and the D-operator. This choice is not directly relevant for our present concerns. For convenience our analysis is implemented in terms of the D-operator.

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The D-operator can be viewed as having the denotation just described for the floated *each* (see in particular Champollion 2019: 6):

(46) $[[D]] = \lambda P \lambda x \forall y.y \leq x \wedge atom(y) \rightarrow P(y)$

Given this denotation of D, we obtain (47) as the denotation of the predicate in (42b). By applying (46) to [[the children]] and by translating *two puppies* as an existential, we get the formula in (48):

(47) $[[D(\lambda x.$wash two puppies $(x))]] = \lambda x \forall y.y \leq x \wedge atom(y) \rightarrow$ wash two puppies (y)

(48) $\forall x.x \leq [[$the children$]] \wedge atom(x)\ \exists y.$puppies$(y) \wedge |y| = 2 \wedge$ wash(x, y)

This formula says that 'For each atomic member x of the maximal plurality of children, there are two puppies y such that x washed y'. Since the existential – which quantifies over plural entities of two puppies – is in the scope of the distributivity operator, the groups may vary from one child to the other.[21]

To recap, the formulae in (43a) and (43b), which differ by the presence and absence of the D-operator, respectively correspond to the collective and distributive readings of sentences built with unmarked numeral indefinites.

Turning now to DistNums, it is natural to assume that they trigger the OBLIGATORY projection of the D-operator due to the fact that they carry a [uDist] feature that needs to be checked by the [iDist] feature on the D-operator. This feature-checking analysis is illustrated in (49), which corresponds to example (42b):

(49) $[_{TP}[_{DP}$Fëmijët$]\ [_{vP}D_{[iDIST]}[_{VP}$ lanë $[_{NP}[$nga$_{[\text{\sout{uDIST}}]}$ dy këlysh të bardhë$]]]]$
children-DEF washed nga two puppies AGR white
'The children washed two white puppies each.'

The data we have discussed in the present section show that *nga*-marked numerals can enter an UPWARD AGREE relation with a covert D-operator. Since the covert D-operator is independently needed for the analysis of the distributive readings of unmarked cardinals,[22] our analysis is 'non stipulative', i.e. it relies on already existing assumptions. The only role of *nga*-marking is to force the projection of the

[21] Note, however, that they do not need to vary: indeed, the same group of two puppies can be washed several times, each time by a different child. But this reading needs to be contextually induced by information indicating absence of co-variation. See also footnote 5.

[22] A reviewer has raised the question as to whether the D operator that licenses distributive numerals in Albanian is the same as the D operator that is responsible for the distributive readings of unmarked indefinites. For Korean, Oh (2006) argued that it is not the same. Oh's motivation was that in Korean the event-key reading is possible only with distributive numerals. For the reviewer, the Korean data suggests the need to posit two different D operators, for the participant-key and for the event-key readings, respectively. We agree with this suggestion. But because, in the limits of this article, we have left event-key readings aside, we leave for further research the issues related to such readings: (i) the constraints on the insertion of a silent event-key D and (ii) the constraints on the dependency relation itself: why is it that only DistNums (in contrast to unmarked cardinal indefinites) can depend on the event-key D?

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D-operator: the non-projection of the D-operator would yield ill-formedness because the uninterpretable features of *nga* would remain unchecked.

5.2. *Fragment answers*

Fragment answers provide an interesting context in which a covert D operator is needed. On the other hand, fragment answers constitute another context in which DistNums differ from NPIs.

The example below shows that the NPI *ndonjë* 'any(one)' is banned in fragment answers as opposed to the NCI *asnjë* 'no one'.

(50) Q: Sa studentë ke takuar sot?
how-many students have-2SG meet-PTCP today
'How many students have you met today?'
A: ASNJË / *Ndonjë
no one / any(one)
'No one /*Anyone'

Fragment answers are elliptical constituents that receive a sentential interpretation. Thus, the Neg-word *asnjë* occurring on its own in (51) is interpreted as meaning '*I have met no students*'. According to Giannakidou (2000, 2006), fragment answers involve unpronounced material (notated with striking out) that contains the sentential negation operator (*nuk* in Albanian), which licenses the fragment Neg-word:

(51) ASNJË ~~nuk~~ ~~kam~~ ~~takuar~~.
no-one not have-1SG meet-PTCP
'~~I have met~~ no-one.'

As pointed out by Watanabe (2004), Giannakidou's analysis is problematic in that the elided negative operator is not subject to the identity condition, which is known to constrain ellipsis. Moreover, the elided negation should be able to license not only Neg-words but also NPIs. However, fragment NPIs are unacceptable.

These problems are taken care of in Zeijlstra's (2008) analysis, according to which the elided material does not contain a sentential negation operator and the licensing of fragment Neg-words is ensured by a silent negation operator notated Op¬. Thus, in Zeijlstra's framework the example in (51) is to be represented as:

(52) Op¬$_{[iNEG]}$ ASNJË$_{[uNEG]}$ ~~kam~~ ~~takuar~~.
OP¬ none have-1SG meet-PTCP
'~~I have met~~ no-one.'

In addition to assuming a silent Op¬, this representation is obtained by raising the fragment Neg-word to a Focus-related position and then deleting the remaining material. This configuration allows UPWARD AGREE because the licensor (Op¬) C-commands the element to be licensed (Neg-word). Crucially for our present

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purposes, fragment NPIs are correctly ruled out: since NPIs do not carry any uninterpretable NEG feature, they cannot be licensed via UPWARD AGREE.

However, Zeijlstra's analysis of fragment Neg-words is not compelling since it needs to postulate a covert Op¬ that occurs nowhere else in strict NC languages.[23] Moreover, the postulated covert Op¬ does not seem to be subject to any identity constraint. It seems fair to say that fragment Neg-words remain a problem for an UPWARD AGREE account and more generally for all those analyses that take Neg-words to be indefinite-like existentials that do not carry negative semantics. One may therefore assume (following Zanuttini 1991; Haegeman & Zanuttini 1991, 1996; Watanabe 2004) that fragment answers constitute a context (maybe the only one) in which Neg-words in strict NC languages are Neg quantifiers, which means that they are not licensed by a covert Op¬, but instead they themselves contribute Negation.

As we see below, the problems raised by fragment Neg-words do not concern fragment DistNums, for which an UPWARD AGREE analysis is unproblematic. The examples in (53) show the use of *nga*-marked numerals in fragment answers:

(53) Q: Sa libra lexuan fëmijë-t ?
how-many books read-PST.3PL children-DEF
'How many books did the children read?'
A: Nga dy
nga two
'Two each.'

Romanian displays the same behavior:

(54) Q: Câte carti au citit copiii?
how-many books have read children
'How many books have the children read?'
A: Câte doua
câte two
'Two each.'

Given the analysis of DistNums proposed in this paper, example (53) can be analyzed as in (55):

(55) [[~~fëmijët~~^{D}[$_{VP}$~~lexuan~~ nga dy ~~libra~~]]

This analysis of fragment DistNums differs from Zeijlstra's analysis of fragment Neg-words and is more in line with Giannakidou's analysis in that the covert D-operator does not sit in a high position but instead is part of the elided material.

[23] In order to block massive overgeneration, the insertion of a covert Op¬ should be viewed as a last resort mechanism, which has however not yet been made precise. Concretely, we do not understand why in strict NC languages the covert Op¬ can be inserted in fragments and only in fragments.

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Interestingly, the problems raised by Neg-words turn into supporting evidence for DistNums. The first favorable observation is that silent D-operators are not manufactured on purpose for fragment DistNums but have been independently motivated for full sentences built with plural DPs in subject positions and unmarked cardinal indefinites in object positions (see example (3) in Section 2).

Moreover, the silent D-operator in fragment DistNums can be shown to be subject to the Identity constraint on ellipsis. Indeed, fragment DistNums are unacceptable if the subject of the question is a singular DP:

(56) Q: Sa libra lexoi fëmi-u ?
how-many books read-PST.3SG child-DEF
'How many books did the child read?'
A: (a) *Nga dy.
nga two
'Two each.'
(b) Dy.
two
'Two'

This unacceptability is due to the fact that the D-operator cannot be inserted in a sentence in which the external argument is singular (Kratzer 2007 on verb plurality). The question in (56) is well-formed, but it cannot be answered with a fragment DistNum because the insertion of a D-operator is impossible.

Given the identity condition on ellipsis, the LFs of the fragment answers in (56) do not contain a silent D-operator (because there is no D-operator in the question that could license under Identity the D-operator in the fragment answer). Example (57a) is ruled out (as indicated by #), because the licensing of DistNums depends on the presence of a D-operator. Since unmarked numerals do not need to be licensed by a D-operator, the LF in (57b) is well-formed, but of course the distributive interpretation is blocked (because the D-operator is absent).

(57) (a) #[[~~fëmiu [lexoi~~ nga dy libra]]
(b) [[~~fëmiu [lexoi~~ dy libra]]

In sum, the contrast between the fragment answers in (53) and (56a) on the one hand and (56a) vs. (56b) on the other hand constitute important evidence in favor of our proposal, according to which distributive force cannot be contributed by the DistNum itself. Such elements are marked with purely syntactic features that require them to enter a licensing relation (UPWARD AGREE) with an overt or covert D-operator.

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5.3. *Conjunction*

According to the analysis proposed here, DistNums can be licensed by a covert distributive operator. Kuhn (2015, 2017) argues that examples of the type in (58)[24] constitute evidence against this hypothesis:

(58) Studentë-t porositën dy meze dhe nga një shishe birrë.
students-DEF order-PST.3PL two appetizers and nga one bottle beer
'The students ordered two appetizers and one bottle of beer each.'

Let us imagine that (58) describes a context where six students are having dinner. In this scenario, the first conjunct, in which the object is a plain indefinite *két eloételt* 'two appetizers' receives a collective reading. This means that only two appetizers were ordered by the six students together. The second conjunct, on the other hand, obligatorily receives a distributive reading, due to the presence of *nga*. This means that the number of main dishes is the same as the number of students: six. According to our proposal, this reading can be obtained only if a covert D-operator is projected (in order to check the [UDIST] feature of *nga një*). Kuhn argues that the presence of a covert distributive operator would force co-variation of the plain indefinite in the first conjunct, contrary to fact. Kuhn's argument presupposes that the D-operator must take scope over the highest VP:

(59) Studentët ^{D}[porositën dy meze dhe nga një shishe birrë].

The problem can be solved by assuming that the example in (58) involves the coordination of two VPs (with deletion of the verb in the second conjunct), the D-operator being projected on the second conjunct alone:

(60) Studentët [$_{VP}$ porositën dy meze] dhe ^{D}[$_{VP}$ ~~porositën~~ nga një shishe birrë].

The hypothesis that a covert D operator need not apply to the overall VP but can also apply to only one of the conjuncts is well-known for the analysis of Dowty's (1986) famous example given in (61):

(61) John and Mary met in the bar and ^{D}[had a beer].

The only difference between the example in (60) and that in (61) is that the former also involves the ellipsis under identity of the main verb in the second conjunct.

[24] Kuhn gives an example from Hungarian, where DistNum's are marked by reduplication of the numeral:

(i) A diakok két eloételt és egy-egy foételt rendeltek.
the students two appetizers and one-one main-dish ordered
'The students ordered two appetizers and one main dish each.'

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5.4. Multiple *nga*'s

This section examines data where two *nga*-marked cardinal indefinites co-occur with one distributive quantifier. Such sentences can have two interpretations: (a) each *nga* is licensed by its own distributive operator and (b) the two *nga's* are licensed by a single distributive operator. Example (62) illustrates this:

(62) Në çdo ligjëratë, nga dy studentë prezantojnë nga tre artikuj.
in every lecture, nga two students present-3PL nga three articles
'In every lecture, two students present three articles.'
'For every lecture x, there are two students such that each of them presents their own three articles in x.'

The example in (62) can be true in the scenario (63):

(63) Scenario with two embedded distributive relations: in every lecture two students each present three articles.
Lecture 1 John & Bill → John presents 3 articles and Bill does too.
Lecture 2 Mary & Jane → Mary presents 3 articles and Jane does too.

This interpretation can be analyzed as involving two distributive operators, corresponding to each of the two *nga*'s. This means that in addition to the overt quantificational DP *çdo ligjëratë* 'every lecture', we need to assume a silent distributivity operator ranging over students and licensing *nga tre artikuj* 'nga three articles'. Evidence in favor of this assumption comes from the observation that by inserting a floated *secili* 'each' we obtain the interpretation of (62) corresponding to the scenario described in (63):

(64) Në çdo ligjëratë, nga dy studentë prezantojnë secili nga tre artikuj.
in every lecture, two students present-3PL secili nga three articles
'For every lecture x there are two students and three articles such that they presented them.'

(62) is also compatible with the scenario in (65),[25] which yields either a collective reading (which talks about joint presentations) or a cumulative reading (on which at each lecture three articles in all were presented by two students in all):

[25] The interpretation illustrated in the scenario (65) can also be observed with German data involving *jeweils*-marked numerals. In the example in (i) both books and girls co-vary with boys, which indicates that both instances of *jeweils* are licensed by the QDP *jeder junge* 'every boy':

(i) Jeder junge hat jeweils drei Mädchen jeweils drei Bücher gegeben.
every boy has jeweils three girls jeweils three books given
"For every boy x there are three girls and three books such that he gave them to them."

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(65) Scenario where pairs of students present three articles in every lecture.
Lecture 1 John and Bill present three articles.
Lecture 2 Mary and Jane present three articles.

Corresponding to this scenario there is only one distributive operator that enters two AGREE relations, with each one of the *nga*-marked numerals.

We use the term MULTIPLE AGREE to refer to the configuration just described, where two DistNums check their [UDIST] features against a single [IDIST] feature of a single distributive operator. The other interpretation, corresponding to the scenario in (63), where each DistNum checks its [UDIST] feature against the [IDIST] feature of a separate distributive operator is referred to as MULTIPLE LAYERS OF AGREE. Examples (66) and (67) provide the syntactic configurations of the two interpretations under discussion.

(66) Multiple Agree
[$_{TP}$ [$_{PP}$ Në çdo$_{[IDIST]}$ ligjëratë, [$_{DP}$ nga$_{[\text{\sout{UDIST}}]}$ dy studentë [$_{vP}$ [$_{V}$ prezantojnë [$_{DP}$ nga$_{[\text{\sout{UDIST}}]}$ tre artikuj]]]]]].

(67) Multiple Layers of Agree
[$_{TP}$ [$_{PP}$ Në çdo$_{[IDIST]}$ ligjëratë, [$_{DP}$ nga$_{[\text{\sout{UDIST}}]}$ dy studentë [$_{vP}$D$_{[IDIST]}$ [$_{V}$ prezantojnë [$_{DP}$ nga$_{[\text{\sout{UDIST}}]}$ tre artikuj]]]]]].

6. CONCLUSIONS

We have proposed a syntactic analysis of DistNums: they are marked with an uninterpretable feature that forces them to enter UPWARD AGREE with a (covert or overt) distributive operator. This unique assumption explains the core crosslinguistic empirical generalizations that have been observed for DistNums: (i) because they are semantically empty (rather than inherently distributive), they do not add another layer of distributivity; (ii) because UPWARD AGREE is constrained by locality, DistNums must be local to the distributive operator that licenses them; and (iii) because UPWARD AGREE is subject to C-command, DistNums take obligatory narrow scope with respect to the distributive operator.

While semantic analyses exist to explain the facts (Kuhn 2017; Law 2022), the present work is the first paper to build an explicit syntactic analysis of distributive concord. Compared to these semantic analyses, the present analysis moreover has the advantage of making use of a syntactic assumption that has been independently motivated for NC.

REFERENCES

Bade Bajrami & Vjosa Hamiti & Teutë Blakqori. (2020). An Empirical Contribution to the Study of Distributivity Markers: Evidence From Kosovo Albanian. *TURUK International Language, Literature and Folklore Researches Journal*, 24–43.

Balusu, R. (2006). Distributive reduplication in Telugu. *Proceedings NELS*, 36, p. 39.

https://doi.org/10.1017/S0022226723000300 Published online by Cambridge University Press

Barker, C. (2007). Parasitic scope. *Linguistics & Philosophy*, 30(4).
Brasoveanu, A. (2007). *Structured nominal and modal reference*. Ph.D. dissertation, New Brunswick, NJ: Rutgers University.
Brasoveanu, A. (2008). Donkey pluralities: plural information states versus non-atomic individuals. *Linguistics and philosophy*, 31, 129–209.
Brasoveanu, A., & Henderson, R. (2009). Varieties of distributivity: 'one by one'vs' each'. *Semantics and Linguistic Theory*, 19.
Brasoveanu, Adrian, & Farkas, Donka F. (2011). How indefinites choose their scope. *Linguistics and philosophy* 34, 1–55.
Cable, S. (2014). Distributive numerals and distance distributivity in Tlingit (and beyond). *Language*, 562–606.
Cabredo-Hofherr, P. & Etxeberria, U. (2017). Distributive numerals in Basque. *Proceedings of 21st Amsterdam Colloquium*, (pp. 185–194).
Champollion, L. (2016). Overt distributivity in algebraic semantics. *Semantics and Pragmatics*, 9, 16–1.
Champollion, L. (2019). Distributivity in formal semantics. *Annual Review of Linguistics*, 5, 289–308.
Charlow, S. (2022). Post-suppositions and semantic theory. *Journal of Semantics.*
Choe, J.-W. (1987). *Anti-quantifiers and a theory of distributivity.* Ph.D. dissertation, University of Massachusetts Amherst.
Collins, Collins & Postal, Paul. (2014). *Classical NEG raising: An essay on the syntax of negation* (Vol. 67). MIT press.
Dotlačil, J. (2015). Why is distributivity so hard? New evidence from distributive markers and licensors in Czech. *Proceedings of FDSL, 10.*
Dowty, D. (1986). A Note on collective predicates, distributive predicates and All. *In Proceedings of the Third Eastern States Conference on Linguistics (ESCOL 86)* (pp. 97–115). Ohio State University.
Farkas, D. (1997a). Dependent indefinites. *Empirical issues in formal syntax and semantics.*
Farkas, D. (1997b). Evaluation indices and scope. In A. Szabolcsi, *Ways of scope taking* (pp. 183–215.). Dordrecht: Kluwer Academic Publishers.
Farkas, D. (2001). Dependent indefinites and direct scope. *Logical perspectives on language and information*, (pp. 41–72.).
Farkas, D. (2002). Varieties of Indefinites. *Semantics and Linguistic Theory*, 12, pp. 59–83.
Farkas, D. (2015). Dependent indefinites revisited. *Workshop on co-distributivity.* Paris.
Giannakidou, A. & Quer, Josep. (1997). Long-distance licensing of negative indefinites. In P. H. Edited by Danielle Forget, *Negation and Polarity: Syntax and semantics. Selected papers from the colloquium Negation: Syntax and Semantics. Ottawa, 11–13 May 1995* (pp. 95–114).
Giannakidou, A. (1997). *The landscape of polarity items.* Ph.D. dissertation, University of Groningen.
Giannakidou, A. (1998). *Polarity sensitivity as (non) veridical dependency.* Linguistik Aktuell/Linguistics Today, 23 - John Benjamins Publishing Company.
Giannakidou, A. (2000). Negative… concord? *Natural Language & Linguistic Theory*, 18(3), 457–523.
Giannakidou, A. (2006). N-words and negative concord. In *The Blackwell Companion to Syntax 3* (pp. 327–391).
Giannakidou, A. (2020). Negative concord and the nature of negative concord items. In M. T. Viviane Déprez (ed.), *The Oxford Handbook of Negation* (pp. 458–478). Oxford Handbooks Online.
Giannakidou, A., & Zeijlstra, H. (2017). The landscape of negative dependencies: negative concord and n-words. In *The Wiley Blackwell companion to syntax* (pp. 1–38).
Gil, D. (1982). Quantifier scope, linguistic variation and natural language semantics. *Linguistics and Philosophy*, 421–472.
Gryllia, S. (2007). A distance distributing prepositional numeral. *Selected papers on theoretical and applied linguistics*, 17(1), pp. 117–126.
Guha, I. (2018). *Distributivity across domains: a study of the distributive numerals in Bangla.* Ph.D. dissertation, Massachusetts Institute of Technology.
Haegeman, Liliane & Raffaella, Zanuttini. (1996). Negative concord in West Flemish. In A. B. Rizzi, *Parameters and Functional Heads: Essays in Comparative Syntax* (pp. 117–80). Oxford: Oxford University Press.
Haegman, Liliane & Raffaella, Zanuttini. (1991). Negative heads and the Neg criterion. *The Linguistic Review*, 233–51.
Henderson, R. (2012). *Ways of pluralizing events.* Ph.D. dissertation, UC Santa Cruz.
Henderson, R. (2014). Dependent indefinites and their post-suppositions. *Semantics and Pragmatics* 7, 6–1.

Joseph, B. D. (2016). The semantics and syntax of complementation markers as an areal phenomenon in the Balkans, with special attention to Albanian. In E. b. Kehayov, *Complementizer semantics in European languages, 57* (p. 265).
Kimmelman, V. (2015). Distributive quantification in Russian sign language. *Presentation at Formal and Experimental Advances in Sign Language Theory.* Barcelona, Spain.
Kratzer, A. (2007). On the plurality of verbs. In T. H.-Z. Edited by: Johannes Dölling, *Event structures in linguistic form and interpretation* (pp. 269–300).
Kuhn, J. (2015). *Cross-categorial singular and plural reference in sign language.* Ph.D. dissertation, New York University.
Kuhn, J. (2017). Dependent indefinites: the view from sign language. *Journal of Semantics*, 34(3), 407–446.
Kuhn, J. (2019). Pluractionality and distributive numerals. *Language and Linguistics Compass*, 13(2).
Kuhn, J. (2021). The dynamics of negative concord. *Linguistics and Philosophy*, 45(1), 153–198.
Kuhn, Jeremy & Aristodemo, Valentina. (2017). Pluractionality, iconicity, and scope in French Sign Language. *Semantics and Pragmatics*, 10(6), 1–49.
Laka Mugarza, M. I. (1990). *Negation in syntax-on the nature of functional categories and projections.* Ph.D. dissertation, Massachusetts Institute of Technology.
Law, J. H. (2022). The mereological structure of distributivity: A case study of binominal each. *Journal of Semantics*, 39(1), 159–211.
Link, G. (1983). The logical analysis of plurals and mass terms: A lattice-theoretical approach. In *Formal semantics: The essential readings* (pp. 127–147). Wiley-Blackwell.
Link, G. (1987). Generalized quantifiers and plurals. In I. P. (ed.), *Generalized quantifiers* (pp. 151–180). Berlin, Germany: Springer.
Mirrazi, Zahra & Zeijlstra, Hedde. (2021). Neg-raising without lexical excluded middle inferences: Resolving Horn Clauses and other problems. *In Proceedings of the 23rd Seoul International Conference on Generative Grammar (SICOGG 23): A Comparative Approach to the Syntax-Semantics Interface, 299*, p. 299.
Oh, S.-R. (2001). Distributivity in an event semantics. *Semantics and linguistic theory*, (pp. 326–345).
Oh, S.-R. (2006). *Plurality markers across languages.* Ph.D. dissertation, University of Connecticut.
Panaitescu, M. (2018). Romanian dependent numerals as ratios. *Romance languages and linguistic theory* 13 (p. 245). Nijmegen, 13: Selected papers from 'Going Romance' 29.
Panaitescu, M. (2019). Distributivity and Additivity: the case of the Romanian distributive marker câte. Universitätsbibliothek Tübingen.
Progovac, L. (1994). *Negative and positive polarity: A binding approach* (Vol. 68). Cambridge University Press.
Przepiórkowski, Adam, & Kupść, Anna. (1997). Negative concord in Polish. *Tech. Rep. 828 Institute of Computer Science, Polish Academy of Sciences.*
Reinhart, T. (1997). Quantifier scope. How labor is divided between QR and choice functions. *Linguistics and Philosophy* 20, 335–397.
Rushiti, B. (2019). *Share-marking in Albanian: the distributive marker nga.* Ph.D. dissertation, Université de Paris.
Steedman, M. (2003). *Scope alternation and the syntax/semantics interface*. CSSP. Paris.
Steedman, M. (2006). Surface-compositional scope-alternation without existential quantifiers. Ms available on http://hompages.inf.ed.ac.uk/steedman./papers.html.
Steedman, M. (2012). *Taking scope: The natural semantics of quantifiers*. MIT Press.
Szabolcsi, A. (2010). *Quantification*. Cambridge University Press.
Watanabe, A. (2004). The genesis of negative concord: Syntax and morphology of negative doubling. *Linguistic Inquiry* 35(4), 559–612.
Xherija, O. (2014). Weak and strong NPIs: nobody and anybody in Albanian and Modern Greek. *In* C. Brown, Q. Gu, C. Loos, J. Mielens and G. Neveu *(eds.) Proceedings of the 15th Meeting of the Texas Linguistic Society*. Austin, TX*:* Texas Linguistics Society, (pp. 184–201).
Zanuttini, R. (1991). *Syntactic Properties of Sentential Negation: A Comparative Study of Romance Languages*. University of Pennsylvania dissertation.
Zeijlstra, H. (2004). *Sentential negation and negative concord.* Ph.D. dissertation, Netherlands Graduate School of Linguistics.
Zeijlstra, H. (2008). On the syntactic flexibility of formal features. In T. Biberauer, *The limits of syntactic variation, 132,* (pp. 143–173).
Zeijlstra, H. (2012). There is only one way to agree. *The linguistic review*, 29(3), 491–539.

Zeijlstra, H. (2017). Does neg-raising involve neg-raising? *Topoi*, 37(3), 417–433.
Zimmerman, M. (2002). *Boys buying two sausages each: On the syntax and semantics of distance-distributivity.*. Ph.D. dissertation, Netherlands Graduate School of Linguistics.

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