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Clitic left dislocation and inverse scope: Plain indefinites versus numerals[1]

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The syntax of Clitic Left Dislocation (CLLD) has been widely debated due to its mixed properties, which in some cases indicate movement (e.g. island sensitivity, certain connectivity effects) and in other cases base generation of the CLLD-ed phrase (wide scope, lack of weak crossover). In this paper we discuss scope facts with CLLD in Greek, revealing a contrast depending on the type of quantifier. We present experimental evidence that whereas CLLD-ed plain indefinites take wide scope, CLLD-ed numerals can get a low scope interpretation. We argue that the inverse scope interpretation with CLLD-ed numerals is only apparent, presenting, in fact, an instance of split scope between the degree quantifier and the existential operator. This analysis presents evidence in favor of a movement analysis for CLLD, thus patterning with the observation that binding reconstruction is possible. At the same time, the non-availability of scope reconstruction with CLLD is attributed to stricter locality constraints which have been discussed for quantifier raising as opposed to other types of movement and dependencies.

KEYWORDS: clitic left dislocation, degree quantifiers, Greek, indefinites, numerals, quantifier scope, split scope

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1. Clitic left dislocation and inverse scope: The puzzle

The phenomenon of Clitic Left Dislocation (CLLD), in which a phrase is left dislocated and a clitic precedes the verb, as illustrated for Greek in (1), has received much attention in Romance and Greek linguistics.[2]

(1) Ton Niko **ton** ide i Ira. Ton Petro ohi.
the-Nick.ACC CL.HIM saw the Ira.NOM the Petro.ACC not
'Nick, Ira saw him. Peter, she didn't.'

The status of CLLD has been widely debated due to its mixed properties (Cinque 1977, 1990; Anagnostopoulou 1994, 1997; Iatridou 1995; Alexiadou 1999, 2006, and others). While CLLD patterns with a movement analysis with respect to a variety of dependency phenomena, such as binding reconstruction, idiomatic interpretations, and island sensitivity (Kayne 1975; Cinque 1977; Agouraki 1992; Cecchetto 2000; Kupula 2014; López 2014; Angelopoulos & Sportiche 2021), there is also evidence against movement. Most famously, the absence of Weak Crossover effects (WCO) and the obligatory wide scope for CLLD-ed QPs have been taken as arguments in favor of a base generation analysis (Cinque 1990; Anagnostopoulou 1994; Iatridou 1995; Alexiadou & Anagnostopoulou 1998; Alexopoulou & Kolliakou 2002; De Cat 2007). An additional complication arises from the fact that CLLD does not exhibit the same properties across languages and across different types of CLLD. For example, whereas in Greek CLLD has been invariably associated with wide scope in all environments, in Italian a contrast between CLLD-ed DPs and PPs has been reported (Cecchetto & Chierchia 1999; Cecchetto 2001). As discussed, among others, in Cecchetto & Chierchia (1999), Cecchetto (2001), and Alexopoulou & Folli (2019), in Italian a CLLD-ed argument DP can get inverse scope in contrast with a CLLD-ed PP.

In this paper, we focus on the interpretation of CLLD-ed quantifying expressions in Greek, bringing forth a contrast which, to our knowledge, has not been discussed before. Although, as it has long been noticed, *plain indefinites* (e.g. *kapjos* 'some' as in (2a)) have a specific wide scope interpretation, numerical expressions as in (2b) can get a non-specific interpretation and appear in the scope of the universal quantifier.[3]

[2] In all studies, CLLD is distinguished from what is called Hanging Topic Left Dislocation (HTLD). HTLD semantically indicates an aboutness topic and exhibits different properties from CLLD (e.g. no connectivity effects, no island sensitivity, invariably wide scope, etc.). For a detailed discussion about their differences, see e.g. Anagnostopoulou (1997), Alexiadou (2006), and Angelopoulos & Sportiche (2021). In this paper, we restrict the discussion to contrastive topics which have been argued to be CLLD-ed topics and not hanging topics (Alexiadou 2006; Angelopoulos & Sportiche 2021).

[3] There is a particular case which has been noticed in the literature in which an indefinite with *ena* 'a/one' receives a free choice interpretation in the presence of a modal operator like *tha* 'would', e.g. *Ena poto tha to pina.* 'A drink I would drink.' These have been analyzed as free choice indefinites (Angelopoulos & Sportiche 2021). Given the special semantics and licensing

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(2) (a) Kapjo vivlio to diavase kathe mathitis.
some book.ACC it.ACC read.PAST.3SG every student.NOM
'Some book, every student read it.'
✓ *There is a particular book that every student read.* (wide scope only)
✗ *For every student there is a possibly different book that he read.*

(b) Dio vivlia ta diavase kathe mathitis.
two books.ACC them.ACC read.PAST every student.NOM
'Two books, every student read them.'
✓ *There are two specific books that every student read.* (wide scope)
✓ *Every student read at least two (possibly different) books.* (narrow scope)

We take the availability of inverse scope with numerical expressions to constitute evidence for movement. However, we show that inverse scope is not the result of complete reconstruction of the numerical expression to a position c-commanded by the universal quantifier. Rather, we argue that because of their internal structure numerical quantifiers and other degree expressions can get split scope by interpreting the degree quantifier (numeral) on its surface position and the existential quantifier on a lower intermediate position. A special property of this construction in which a CLLD-ed numeral takes narrow scope is that it obligatorily has a low-bound interpretation, i.e. an *at-least* reading. We argue that this property stems from the semantics of contrastive topic which foregrounds an 'incompleteness' inference.

Under the SPLIT SCOPE hypothesis, it is expected that CLLD-ed plain quantifiers, lacking a degree quantifier, can only be interpreted in their surface position. Thus, the contrast in (2) can be attributed to the different properties of plain indefinites and numerals without stipulating a variable behavior in terms of inverse scope availability for CLLD. Our explanation is consistent with the widely held observation regarding scope facts in Greek, which can be formulated as in (3):

(3) *Wide Scope Constraint in Greek CLLD*
Once a QP is CLLD-ed it can only get wide scope.

The availability of apparent inverse scope with numerals as in (2b) is due to the properties of the numerals which allow for a SPLIT SCOPE interpretation. Only the degree quantifier is CLLD-ed with the existential component remaining in a lower position. Crucially, however, this analysis presupposes that CLLD is the result of movement from a lower position, below the universal subject, thus constituting evidence against a base generation analysis. At the same time, the

conditions of free choice indefinites, we will not discuss them further in this paper. Notice, that this type of interpretation is available only with a modal operator. The case of CLLD-ed numerals that we discuss here are not associated with any modal operator. For further discussion on these cases see Anagnostopoulou (1994), Gryllia (2009), and Angelopoulos & Sportiche (2021). We are grateful to a reviewer for raising the question of CLLD-ed indefinites in non-episodic contexts.

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availability of inverse scope with CLLD-ed numerals presents challenges for alternative explanations of the WIDE SCOPE CONSTRAINT as in Arregi (2003) and Alexopoulou & Folli (2019). This, in turn, raises the question as to why scope reconstruction (as opposed to binding reconstruction) is not available for CLLD-ed QPs. Although, we do not provide a definitive answer for this puzzle, we conjecture that the absence of scope reconstruction in CLLD is due to the stricter locality restrictions that have been observed for quantifier scope reconstruction as opposed to other types of movement (see the discussion in Wurmbrand 2018). As we will see, this hypothesis has certain implications for the syntax of focus movement, which, based on our experimental study, appears to invariably allow inverse scope contrary to CLLD.

The paper develops as follows. Section 2 presents three experiments. First, we discuss the behavior of the plain indefinite in constructions involving focus fronting (FOCUS EXPERIMENT) and CLLD (CLLD EXPERIMENT). The comparison of the two constructions is important because although the word order and the pictures are exactly the same, the results concerning inverse scope availability are very different. Second, we present the experiment with the CLLD-ed numeral (NUM EXPERIMENT), which deviates from the behavior of CLLD-ed plain indefinites, verifying the observation in (2). In Section 3, we develop an account for the apparent availability of inverse scope with CLLD-ed numerals arguing that it is an instance of split scope rather than inverse scope. In Section 4, we discuss the consequences of our analysis for the broader debate concerning the status of CLLD. As we discuss, evidence converges toward a movement analysis. The restrictions on inverse scope are not due to base generation, but due to special locality constraints that have been observed for quantifier scope phenomena. This, in turn, suggests, that the landing site of CLLD-ed phrases, at least in Greek, is higher than the landing site of other A-bar dependencies such as focus movement, for which inverse scope is clearly available. Section 5 concludes and points toward further questions.

2. TESTING INVERSE SCOPE WITH FOCUS, CLLD, AND CLLD-ED NUMERALS: DESIGN, PREDICTIONS, AND RESULTS

In this section, we present experimental evidence for the contrast between CLLD-ed plain indefinites and CLLD-ed numerals illustrated in (2). The experiment with the plain indefinite is part of a larger experimental study in which we tested the availability of inverse scope in Greek for different configurations (Oikonomou, Golcher & Alexiadou 2020). Crucially, in this study we found that inverse scope is available both with the default SVO and VSO word orders as well as with the focused SVO and OVS word orders in which the subject and the object was focused respectively. On the contrary, the only configuration in which inverse scope was not available was the CLLD-ed plain indefinite. Below we summarize the results from the study with the default SVO and VSO word order and then we present the contrast between focused and CLLD-ed QPs before moving on to the study of CLLD-ed numerals.

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2.1 *Background: Availability of inverse scope in Greek*

As we discuss in Oikonomou et al. (2020), inverse scope appears to be available with the default SVO and VSO word orders.[4] Similar to what has been observed for English, doubly quantified sentences with broad focus intonation like (4) are ambiguous between a surface and an inverse scope reading.[5]

(4) Kapjos ipurgos sinantise kathe epihirimatia.
Some minister.NOM met every entrepreneur.
'Some minister met every entrepreneur.'
✓ *There is a specific minister that every entrepreneur met.* (surface)
✓ *For every entrepreneur there is a possibly different minister that met him.* (inverse)

Based on a truth-value judgment task with pictures, in three different experiments, we found that the mean proportion of acceptance for the surface scope is around 90% whereas for inverse scope it is around 60%, patterning with what has been shown for English in similar experimental studies (Scontras et al. 2014, 2017). The fact that inverse scope is available with the default word order is important because otherwise the lack of inverse scope with CLLD-ed plain indefinites would be derivative on the general lack of inverse scope. As we show in this study inverse scope is clearly available in Greek (see also Baltazani 2002).[6]

2.2 *Focus, CLLD, and inverse scope*

In this section, we present two experiments, one that involves focus fronting and one with CLLD. Focus fronting, being analyzed unanimously as involving movement (Tsimpli 1990, 1995; Anagnostopoulou 1994; Alexiadou 1999; Baltazani 2002; Gryllia 2009), presents a clear control case for the behavior of CLLD for

[4] By 'default' we mean the word orders which can be uttered without previous context, as an answer to a *what-happened* question. Whereas in the case of intransitives the VS word order is considered to be the neutral one, in transitive sentences both SVO and VSO, uttered with a broad focus intonation, are considered neutral and SVO has been found to be more frequent (Lascaratou 1998; Keller & Alexopoulou 2001).

[5] A reviewer points out that inverse scope is not acceptable for them. This variability is entirely expected based on the experimental results in Oikonomou et al. (2020). In particular, we found that, especially for the SVO word order, there is a bimodal distribution with some speakers almost never accepting inverse scope. In English, there are also speakers who consistently disprefer the inverse scope interpretation (Scontras et al. 2017). Interestingly, the same reviewer points out a difficulty to derive an inverse scope with *only/even* and an indefinite QP in (34)–(36) suggesting that speakers can be consistent in their scope preferences as we discuss in Oikonomou et al. (2020).

[6] Notice that the availability of inverse scope with the default SVO word and the fact that this comes in sharp contrast with the low acceptability of inverse scope observed with CLLD-ed subjects suggests that DEFAULT SVO cannot be equated with CLLD against the proposal in Alexiadou & Anagnostopoulou (1998). For a comparative discussion between the two structures see Oikonomou et al. (2020).

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Focus Exp	CLLD Exp	Surface	Inverse
$_{\exists}\mathbf{S}^{F}\mathbf{VO}_{\forall}$	$_{\exists}\mathbf{S}^{CT}\mathbf{VO}_{\forall}$	Con1	Con2
$_{\exists}\mathbf{O}^{F}\mathbf{VS}_{\forall}$	$_{\exists}\mathbf{O}^{CT}$ CL$\mathbf{VS}_{\forall}$	Con3	Con4

Table 1
Conditions in experiments 7 and 8.

which there is a debate regarding its derivation. As we see, the only difference between the two experiments is the intonation and the presence of a clitic and yet the acceptability of inverse scope varies greatly in the two cases.

2.2.1 *Design and materials*

All experiments involved a truth value judgment task (TVJ) with diagrams. We used a 2×2 design, with the position of the quantifiers (indefinite in the subject or object position) and the scope scenario (surface vs. inverse) as the two factors, providing four different conditions in total. Table 1 summarizes the conditions for the FOCUS and the CLLD experiment.[7]

In all conditions the existential precedes the universal since it is the existential QP that is left dislocated whether it is the subject (conditions 1 and 2) or the object (conditions 3 and 4). The two experiments differ with respect to the type of the dislocation; the FOCUS experiment involves focus intonation (NPA on the restrictor of the existential, followed by deaccenting) and focus fronting whereas the CLLD experiment involves contrastive topic intonation (CT on the restrictor and focus on *kathe*) and CLLD. The pictures and the content of the sentences are identical in the two experiments.

In conditions 1 and 2, the indefinite subject is focused (5a) or CLLD-ed (5b). As one can notice the only factor differentiating between focus and CLLD for the subject is intonation because in Greek there is no clitic for subjects.[8] Surface scope (Con1) corresponds to a scenario in which a single agent acts on different themes (Figure 1) whereas inverse scope involves different agents acting upon different themes (Figure 2).

[7] The superscript ^{F} should be read as focus on the existential QP for the subject ($_{\exists}\mathrm{S}^{F}$) and object ($_{\exists}\mathrm{O}^{F}$) accordingly. Similarly, ^{CT} stands for contrastive topic marking. In the examples, focus accent is presented with small caps whereas CT-accent with italics.

[8] As a reviewer points out the fact that there is no overt clitic raises a question regarding the nature of movement as CLLD. However, there seems to be unanimous agreement that subjects and objects contrastive topics behave alike, therefore suggesting a common structure. Alexopoulou & Kolliakou (2002) also mention the possibility of plain topicalization (i.e. without the clitic) for both objects and subjects. However, they show that plain topicalization is very restricted. In view of these facts, we take a subject contrastive topic to be analyzed on a par with the CLLD-ed objects. In other languages there is a clitic for subjects, making it easier to distinguish topicalization from CLLD. For Greek, it has been argued that the covert *pro* functions as a clitic in CLLD (see e.g. Alexiadou & Anagnostopoulou 1998; Spyropoulos 1999; Angelopoulos & Sportiche 2021).

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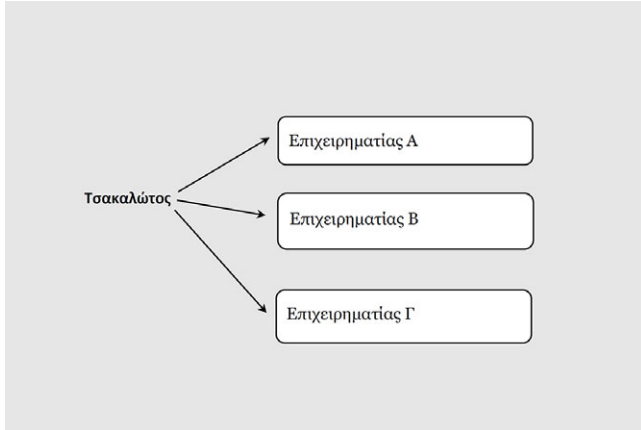


Figure 1
Surface (Con1)

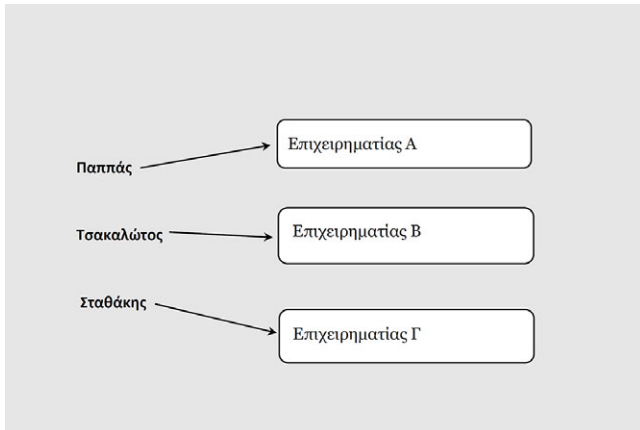


Figure 2
Inverse (Con2)

(5) *Condition 1 and 2*

(a)	Kapjos	IPURGOS$_F$	sinandise	kathe	epihirimatia.	**Focus**
	Some	minister.NOM	met	every	entrepreneur.	
(b)	Kapjos	*ipurgos*$_{CT}$	sinandise	KATHE	epihirimatia.	**CLLD**
	some.NOM	minister.NOM	met	every	entrepreneur.	

In conditions 3 and 4, the indefinite object is focused (6a) or CLLD-ed (6b). In this case, aside from intonation, the presence of the clitic in (6b) marks the contrast

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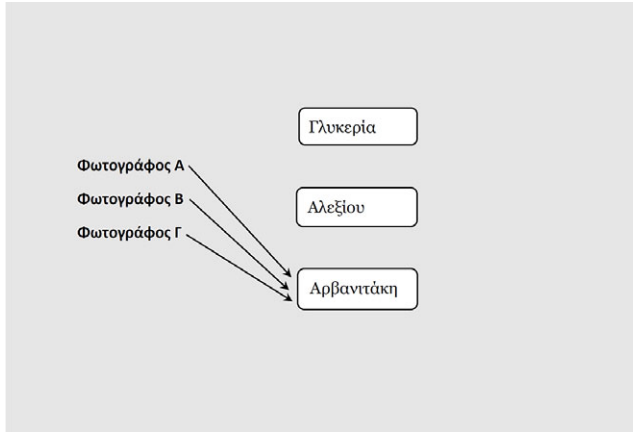


Figure 3
Surface (Con3)

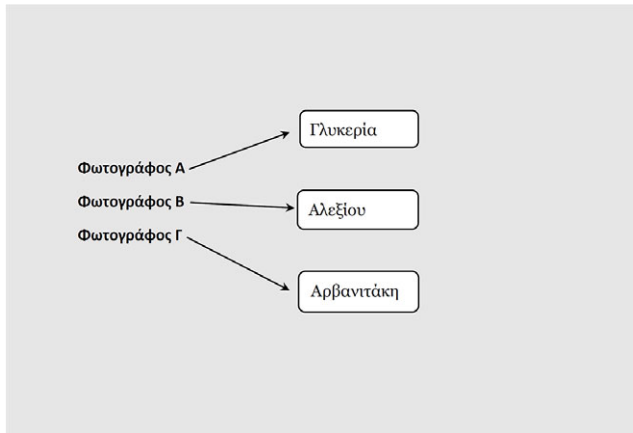


Figure 4
Inverse (Con4)

between the two configurations. Surface scope (Con1) corresponds to a scenario in which there is a single theme that different agents act on (Figure 3) whereas inverse scope involves different agents acting on different themes (Figure 4).

(6) *Conditions 3 and 4*

(a) Kapja some TRAGUDISTRIA$_F$ singer.ACC fotografise photographed kathe every fotografos. photographer **Focus**

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(b) Kapja *tragudistria*$_{CT}$ ti fotografise KATHE
some singer.ACC her.CL photo/phed every
fotografos. **CLLD**
photo/pher
'Some singer was photographed by every photographer.'

In each experiment, there were 20 sentence–picture pairs (i.e. 5 items per condition, see the Appendix for the full list of items per experiment). A participant would never hear the same sentence across two different conditions. This means that we had a between-design, i.e. for a given target, half of the participants would see the inverse scope scenario and half the surface scope scenario. Crucially, the sentences were recorded to ensure the intended intonation. In the FOCUS experiment, there was focus on the restrictor of the existential quantifier, realized with low NPA followed by deaccenting. In the CLLD experiment, the QP (e.g. *kapjos ipurgos*) has a contrastive topic intonation with a NPA on the restrictor followed by a phrase accent (Baltazani & Jun 1999; Baltazani 2002) and then narrow focus on the universal quantifier *kathe* 'every'. The sentences were annotated using Praat software (Boersma & Weenink 2016) based on the Greek ToBI developed by Amalia Arvaniti and Mary Baltazani in a series of works (Arvaniti & Baltazani 2000, 2005; Baltazani 2002).

The experiment was designed using the second version of E-Prime professional software (Schneider, Eschman & Zuccolotto 2002). Participants would first hear a sentence and directly afterwards one picture appeared on the screen. They had 10 seconds to decide if the sentence they heard could describe the picture they saw. A YES-answer was recorded by pressing a green key on the right and a NO-answer a red key on the left. A total of 36 monolingual speakers participated in the FOCUS experiment and 27 speakers in the CLLD experiment.

2.2.2 *Focus and CLLD experiments: Predictions*

As we said, since inverse scope appears to be available in broad focus (DEFAULT) sentences, we expect that it will also be available when one of the QPs is F-marked. Focus fronting has been shown to be derived by movement and therefore scope reconstruction should be possible. On the contrary, given the debated status of CLLD our predictions are not as clear. Based on reported judgments and own intuitions we do not expect inverse scope with CLLD-ed plain indefinites to be available.

2.2.3 *Focus experiment: Results*

For all experiments, we fitted the Generalized Linear Mixed-Effects Models as implemented in the function glmer in the R package lme4 (Bates et al. 2015). The only fixed factor was the condition. As random variables we modeled the subject

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and the audio file the subjects listened to. The full random structure with random slopes and the variance matrix for condition usually did not converge. We cut it down to a reasonable size. Random slopes for items (audio file) were disregarded. Random parameters for items are usually at least one order of magnitude below that for subjects, so intercepts should suffice here. For the subjects we removed the correlation parameters. Including those that produced unrealistically high correlation parameters which usually are spurious. We evaluated the planned contrasts which test our predictions with the emmeans package (Lenth 2020).

Figure 5 and Table 2 show the results for the Focus experiment. The transparent dots represent per person means of the binary answers given by the subjects. The size of the dots represents the number of subjects with a given mean in a given condition. The error bars are bootstrapped confidence intervals.

The mean proportion of acceptance in Con1 is 75% and in Con2 70%. The difference between conditions 1 and 2 is not significant with a confidence interval from -0.235 to 1.15. The confidence interval for the difference between conditions 3 and 4 (p<.01) has a confidence interval from -3.07 to -0.624.

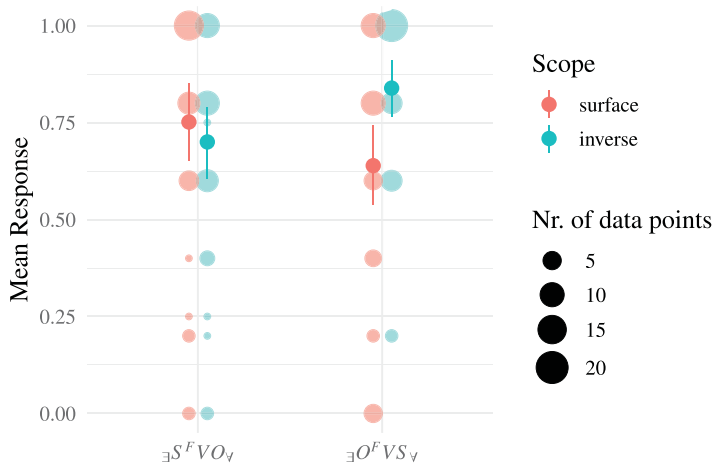


Figure 5
(Colour online) Focus Exp. The mean response of the participants is shown on the *y* axis. Larger semitransparent blobs correspond to a higher number of participants having this particular mean response. The error bars are bootstrapped confidence intervals as computed with the `Hmisc R` package (Harrell & Dupont 2019).

Focus Exp	Surface	Inverse
$\mathbf{S_{\exists}VO_{\forall}}$	75%	70%
$\mathbf{O_{\exists}VS_{\forall}}$	64%	83%

Table 2
Mean proportion of acceptance in Focus Exp.

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As we had anticipated, we find that inverse scope is available in both conditions (2 and 4). Moreover, contrary to what we found for inverse scope acceptability with the default SVO and VSO the difference between surface and inverse scope acceptability is not significant. This means that focus marking not only allows but also facilitates inverse scope interpretation. For a discussion on the factors facilitating inverse scope we refer to Oikonomou et al. (2020). For the purposes of this paper, the important component is that inverse scope with the word orders derived by focus fronting is clearly available. This provides us with a clear control case for the same word orders with CLLD-ed indefinites.

2.2.4 *CLLD experiment: Results*

Figure 6 and Table 3 summarize the results for the CLLD experiment. Both contrasts are (obviously) significant. The difference between conditions 1 and 2 (p<0.001) has a confidence interval from 4.33 to 9.28. The difference between conditions 3 and 4 (p<0.01) shows a confidence interval from 4.5 to 14.5.

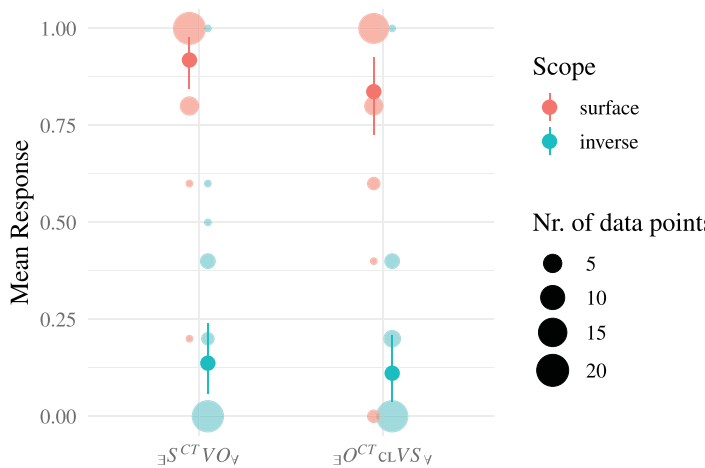


Figure 6
(Colour online) CLLD Exp. The mean response of the participants is shown on the *y* axis. Larger semitransparent blobs correspond to a higher number of participants having this particular mean response. The error bars are bootstrapped confidence intervals as computed with the `Hmisc` R package (Harrell & Dupont 2019).

CLLD Exp	Surface	Inverse
S$_{\exists}$VO$_{\forall}$	92%	13%
O$_{\exists}$CLVS$_{\forall}$	84%	11%

Table 3
Mean proportion of acceptance in CLLD Exp.

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Contrary to what we saw with focus fronting, here we see a sharp contrast between surface and inverse scope acceptability. Both in the case of a CLLD-ed subject (marked exclusively by intonation) and in the case of a CLLD-ed object (marked by intonation and the presence of the clitic) surface scope remains high (with mean acceptance 92% and 84% accordingly) whereas inverse scope interpretation is very low (13% and 11% accordingly). While there is some variability, we observe that the majority of participants do not accept, or accept to a very small extent, inverse scope of CLLD-ed indefinite phrases. As shown in Figure 6, there is only one participant who consistently accepts inverse scope with CLLD more than half of the times. Based on this, we cannot conclude that there are speakers for which the wide scope constraint (WSC) does not hold. However, if, as we will see in Section 5, the WSC is part of a general locality restriction on QR related with processing restrictions (Wurmbrand 2018), it is possible that under certain circumstances WSC is violable, as the 10% acceptability suggests.

2.2.5 *Focus and CLLD: Interim summary*

The results from the two experiments confirm the empirical generalizations that are so far reported in the literature. Inverse scope is available with focus fronting, as it is predicted by its analysis as involving movement, whereas in CLLD, as it has long been observed, a CLLD-ed indefinite takes a wide scope. This has been taken as an argument for a base-generation analysis of CLLD-ed constituents. In what follows, we present experimental evidence for the observation that CLLD-ed numerals can be interpreted in the scope of a universal quantifier. Our findings confirm the contrast in (2) and provide evidence for a movement analysis of CLLD.

2.3 *CLLD-ed numerals*

2.3.1 *Design and materials*

The design is exactly the same as in the previous experiments (i.e. TVJ task, 2×2 design) but crucially in this case we use the numeral *dio* 'two' instead of a plain indefinite. The prosodic pattern is the same as with plain indefinites, i.e. contrastive topic intonation in the CLLD-ed NumP with the NPA in the restrictor of the numeral and focus on the universal quantifier *kathe* 'every'. The items are in the same spirit but in many cases they are slightly different, as exemplified below (for the full list of items see the Appendix).

In (7), which exemplifies conditions 1 and 2, the numerical subject is CLLD-ed. Again, the only witness for CLLD is contrastive topic intonation since there is no overt clitic for subjects. Surface scope (Con1) corresponds to a scenario in which a specific pair of agents act on different themes (Figure 7), whereas in the inverse scope for every theme there is a different pair of agents that act on them (Figure 8).

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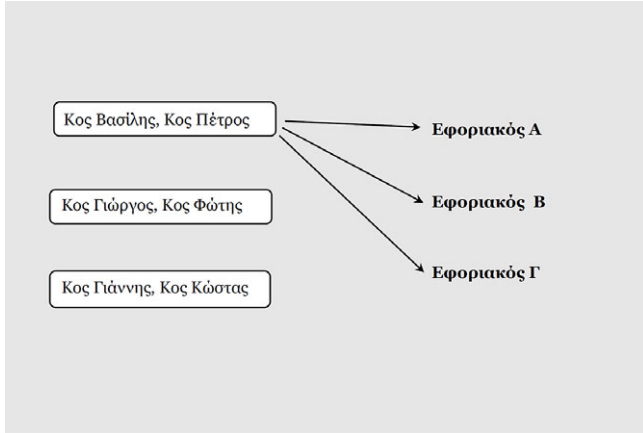


Figure 7
Surface (Con1)

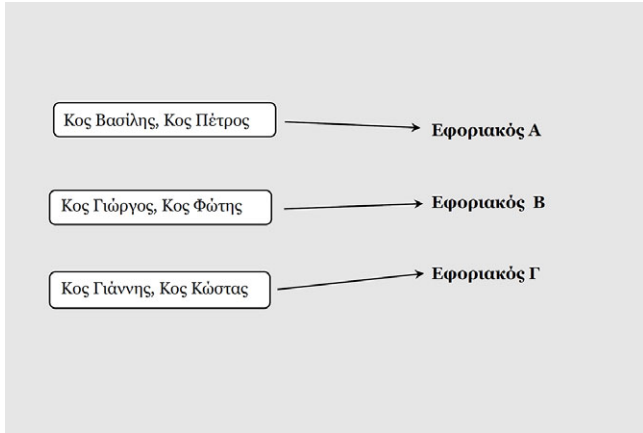


Figure 8
Inverse (Con2)

(7) *Condition 1 and 2*
Dio epihirimaties$_{CT}$ ladosan KATHE$_{F}$ eforiako.
two entrepreneurs.NOM bribed every tax-officer.
'Two entrepreneurs bribed every tax officer.'

In (8), which exemplifies conditions 3 and 4, the numerical object is CLLD-ed. In this case, the presence of the accusative clitic witnesses CLLD in addition to the

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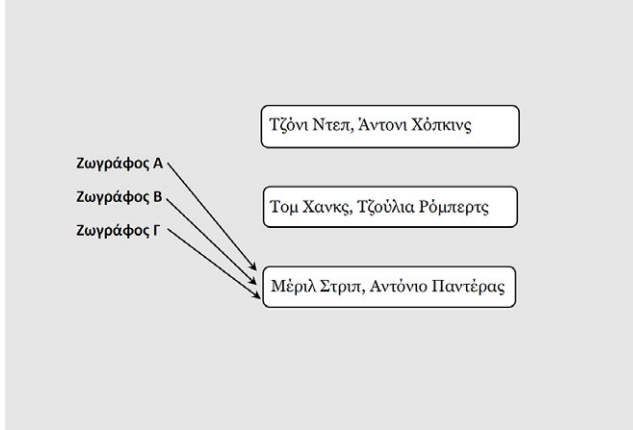


Figure 9
Surface (Con3)

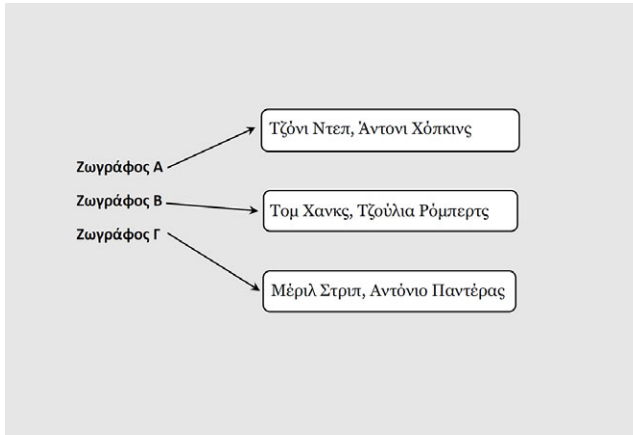


Figure 10
Inverse (Con4)

contrastive topic intonation. Surface scope (Con3) corresponds to a scenario in which a specific pair of themes is targeted by all agents (Figure 9), whereas in the inverse scope for every agent there is a different pair of themes (Figure 10).

(8) *Condition 3 and 4*
Dio *ithopius*$_{CT}$ tus zografise KATHE zografos.
two actors.ACC CL painted every painter.
'Two actors were painted by every painter.'

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Twenty-three monolingual participants were recruited in the National and Kapodistrian University of Athens and The Panteion University of Social and Political Sciences located in Athens.

2.3.2 *CLLD-ed numerals: Results*

The results confirmed our theory since we found that inverse scope acceptability with CLLD-ed numerals is significantly higher than with CLLD-ed plain indefinites. Figure 11 and Table 4 summarize the results for this experiment (Num Exp). Again, both contrasts are significant. The difference between conditions 1 and 2 (p<0.001) has a confidence interval from 3.12 to 5.52. The difference between conditions 3 and 4 (p<0.001) shows a confidence interval from 1.17 to 3.33.

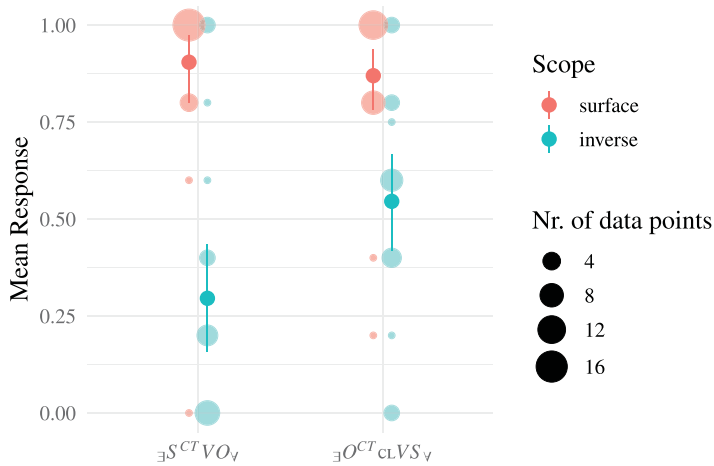


Figure 11
(Colour online) Num Exp. The mean response of the participants is shown on the *y* axis. Larger semitransparent blobs correspond to a higher number of participants having this particular mean response. The error bars are bootstrapped confidence intervals as computed with the `Hmisc R` package Harrell & Dupont (2019).

Num Exp	Surface	Inverse
S$_{\exists}$VO$_{\forall}$	90%	30%
O$_{\exists}$VS$_{\forall}$	87%	54%

Table 4
Mean proportion of acceptance in Num Exp.

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In order to see the role of the indefinite type (NUMERAL VS. PLAIN INDEFINITE) in inverse scope acceptability, we compared NUM EXP with CLLD EXP. We combined the data for the two experiments and added an interaction for the variable indicating the experiment, or, equivalently, the type of the indefinite. The difference between the experiments is significant with a p-value of 0.0028 for the interaction. We then compared the results of the experiments within conditions. Crucially, we found no significant difference in Con1 and Con3 (surface scope) but we found significant results in inverse scope conditions 2 (p=0.029) and 4 (p<0.0001).

2.4 *Interim summary: Plain indefinites versus numerals in CLLD*

Our experimental evidence converges with our original observation that the availability of inverse scope in CLLD depends on the type of the indefinite, namely that a CLLD-ed numerical quantifier can be in the scope of a universal. The next section provides an explanation for this contrast based on the different properties of numerals and plain indefinites.

3. INVERSE SCOPE WITH CLLD-ED NUMERALS VERSUS PLAIN INDEFINITES

Before considering the contrast between plain indefinites and numerals, let us consider the possible LFs for an inverse scope interpretation in the case of CLLD. Following the arguments in Fox (1995, 1998), Heim & Kratzer (1998), Hackl (2000), Johnson (2000), and Miyagawa (2012) we assume that scope ambiguities are derived by covert movement (May 1977 and subsequent work). Furthermore, all quantifiers should raise obligatorily above the VoiceP, in a position where the event argument has been saturated, in order to resolve a type mismatch (generalized quantifiers are of type $<<et>,t>$ whereas the vP is of type $<e,st>$) (Landman 1996; Lechner 2018).[9] Under this view, a question arises as to the ordering of operations. Assuming standard bottom-up derivations, we assume that lower nodes move first (cyclicity condition as in Chomsky 1993; Cecchetto 2004; Lechner 2018; Wurmbrand 2018). As we discuss in detail in Oikonomou et al. (2020), adopting the cyclicity condition for covert movement is necessary in order to account for the fact that inverse scope in VSO sentences in Greek is less acceptable compared to surface scope.

For CLLD-ed constructions, the possible LFs depend on the theory one has for CLLD (i.e. base generation vs. movement). The surface scope interpretation is straightforward under either analysis. The CLLD-ed indefinite is interpreted in its

[9] Alternatively, type mismatches and scope ambiguities can be derived via semantic type shifting (see e.g. Condoravdi & Beaver 2007; Champollion 2017). Crucially, both operations are taken to induce a processing cost and therefore are consistent with the hypothesis that, in a neutral context, an inverse scope reading will be less accessible than a surface scope reading (Anderson 2004; Mayr & Spector 2010). In this respect, our experiments do not favor one over the other approach.

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base position and the universal quantifier remains in its scope. For the inverse scope interpretation, two possibilities arise: If CLLD involves base generation the only way to derive an inverse scope interpretation would be to raise the universal quantifier covertly above the CLLD-ed indefinite. If, however, as we argue, CLLD involves movement of the CLLD-ed phrase from a lower position to TopP, there is the additional way to derive inverse scope by reconstructing the CLLD-ed indefinite to an intermediate interpretable position in the scope of the universal quantifier.

For the sentence in (9) with a CLLD-ed indefinite object, we provide the surface scope derivation in (12). The pronounced positions are given with bold-faced characters and the positions where the quantifier is interpreted are underlined. First, the indefinite object moves to an interpretable position at the level of Asp_1P, which is also the edge of a phase in Greek, so that it remains visible for further operations.[10] The second step involves covert movement of the universal subject to an interpretable position at Asp_2P. The third step of the derivation, involves movement of the indefinite to spec,TopP driven by a contrastive topic (CT) δ-feature.

Under this view, an inverse scope reading, with the indefinite interpreted in the scope of the universal as in (11), can be achieved via reconstruction to the intermediate position at Asp_1P, as shown in (11b).

(9) Kapjon klefti ton sinelave kathe astinomos.
some thief.ACC CL.HIM arrested every policeman.NOM
'Some thief was arrested by every policeman.'

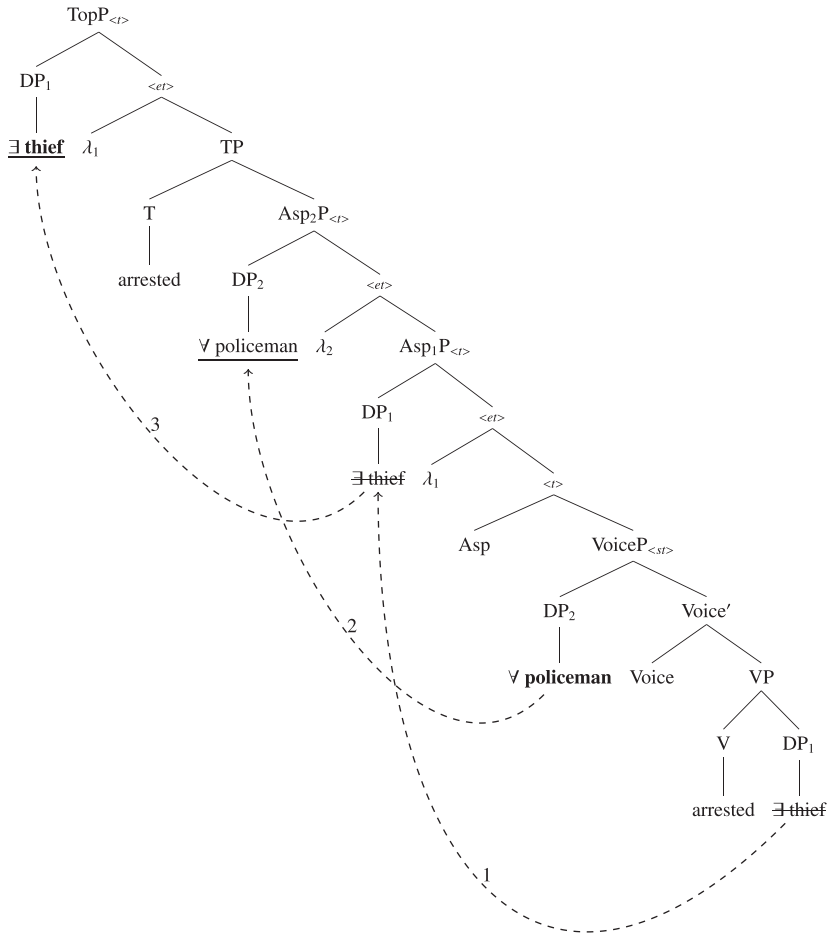
(10) *Surface scope*
(a) $\exists x.\ \text{thief}(x) \wedge \forall y.\ \text{policeman}(y) \rightarrow y \text{ arrested } x$
(b) $[_{TopP}$ **some thief**$_1$ λ_1 $[_{TP}$ T $[_{Asp_2P}$ <u>every policeman$_2$</u> λ_2 $[_{Asp_1P}$ DP_1 λ_1 $[_{VoiceP}$ DP_2 Voice $[_{VP}$ arrested DP_1]]]]]]

(11) *Inverse scope via reconstruction*
(a) $\forall y.\ [\text{policeman}(y) \rightarrow \exists x\ [\text{thief}(x) \wedge y \text{ arrested } x]]$
(b) $[_{TopP}$ **some thief$_1$** λ_1 $[_{Asp_2P}$ <u>every policeman$_2$</u> λ_2 $[_{Asp_1P}$ <u>some thief$_1$</u> λ_1 $[_{VoiceP}$ DP_2 Voice $[_{VP}$ arrested DP_1]]]]]

[10] For evidence that in Greek the phase extends up to AspP/TP see Mavrogiorgos (2010), Spyropoulos & Stamatogiannis (2011), Christopoulos & Petrosino (2017), Revithiadou, Markopoulos & Spyropoulos (2019).

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(12) *Derivation for the surface scope configuration in (9)*



For a CLLD-ed subject, reconstruction is possible only if the subject also moves to an intermediate position before moving to its surface position. Under this hypothesis, it is possible that the universal object raises above this intermediate position and outscopes the reconstructed indefinite. Crucially, as one can see by comparing (15b) with (11), the derivation in (15b) involves one more step, since the universal quantifier raises twice, and, therefore, under the hypothesis that scope-shifting operations induce a processing scope (see e.g. Anderson 2004), we expect that inverse scope with CLLD-ed subjects under this configuration will be less accessible. Alternatively, if we allow the object-QP to raise via a second-step movement above the CLLD-ed subject we can derive inverse scope as in (15c):

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(13) Kapjos astinomos sinelave kathe klefti.
some policeman.NOM arrested every thief.ACC
'Some policeman arrested every thief.'

(14) *Surface scope*
(a) ∃x. policeman(x) ∧ ∀y. thief(y) → x arrested y
(b) [$_{...P}$ some policeman$_2$ λ_2 [$_{TP}$ [$_{...P}$ every thief$_1$ λ_1 [$_{VoiceP}$ t_2 Voice [$_{VP}$ arrested t_1]]]]]

(15) *Inverse scope*
(a) ∀y. [thief(y) → ∃x [policeman(x) ∧ x arrested y]]
(b) [$_{...P}$ Some policeman [$_{...P}$ every thief$_1$ λ_1 [$_{...P}$ **some policeman$_2$** λ_2 [$_{TP}$ [$_{...P}$ t_1 λ_1 [$_{...P}$ [$_{VoiceP}$ t_2 Voice [$_{VP}$ arrested t_1]]]]]]] (via reconstruction)
(c) [$_{...P}$ every thief$_1$ λ_1 [$_{...P}$ some policeman$_2$ λ_2 [$_{TP}$ [$_{...P}$ t_1 λ_1 [$_{...P}$ [$_{VoiceP}$ t_2 Voice [$_{VP}$ arrested t_1]]]]]] (via raising above CLLD-ed XP)

Turning back to the contrast between plain indefinites and numerals, under a base-generation approach the only way to derive the difference between the two types of indefinites would be to argue that a universal quantifier can raise above a numerical quantifier but not above a pure existential one. Such a restriction on raising would seem paradoxical. On the contrary, under a movement analysis of CLLD we can derive the contrast in inverse scope availability based on already established differences between the two types of indefinites. In particular, we lay out an account that is based on the possibility for numerals to have a split scope interpretation (Heim 2000; Kennedy 2015; Blok, Bylinina & Nouwen 2017; Bylinina 2019; Bylinina & Nouwen 2020).

3.1 *Split scope with numerals: CLLD of the* DEGREE*-quantifier*

In order to describe the fact that CLLD-ed plain indefinites take obligatorily wide scope in Greek, we introduced the WIDE SCOPE CONSTRAINT (WSC), repeated in (16). Let us assume that the WSC applies across the board irrespective of the indefinite type.

(16) *Wide scope constraint in CLLD*
Once a QP is CLLD-ed it can only get wide scope.

Whereas it is straightforward that plain indefinites obey the WSC, the apparent inverse scope with numerals poses a challenge. We argue that the different behavior of numerals is due to their different structure and semantics from plain existential quantifiers. In particular, adopting a DEGREE-QUANTIFIER analysis for numerals (following Kennedy 2015; Blok et al. 2017; Bylinina & Nouwen 2020) we show that the numeral can have a split scope interpretation under which only the numerical quantifier is CLLD-ed and thus it is interpreted above the universal quantifier while the existentially quantified individual remains lower in the scope of the universal.[11]

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Below we outline our basic assumptions for the syntax and semantics of numerals following the DEGREE-QUANTIFIER analysis.

It has long been observed that numerals behave differently than plain quantifiers in many respects, leading to different analyses of numerals (see Bylinina & Nouwen 2020 for a comprehensive review). Here we follow the DEGREE-QUANTIFIER view (Hackl 2000; Nouwen 2010; Kennedy 2015; Blok et al. 2017). Under this view, numerals are degree quantifiers of type <*dt,t*> combining with a silent MANY which associates its complement NP with the cardinality *n* (see Hackl 2000, and later work in numerals adopting this decompositional analysis, e.g. Nouwen 2010; Kennedy 2015; Blok et al. 2017; Blok 2019; Bylinina & Nouwen 2020). Following the implementation in Blok et al. (2017) (see also Bylinina 2019; Bylinina & Nouwen 2020), we take a numeral to be a singular term as in (17a), which is type-shifted to denote a generalized degree quantifier of type <dt,t> as shown in (17b):

(17) (a) $[\![\text{two}]\!]_1 = 2$
(b) $[\![\text{two}]\!]_2 = \lambda P_{\langle d,t\rangle}.\text{P}(2)$

The silent MANY has the meaning in (18) under which it first takes an argument of type *d* and then it combines *P* and *Q* of type <*et*> (Blok et al. 2017; Blok 2019, after Hackl 2000).

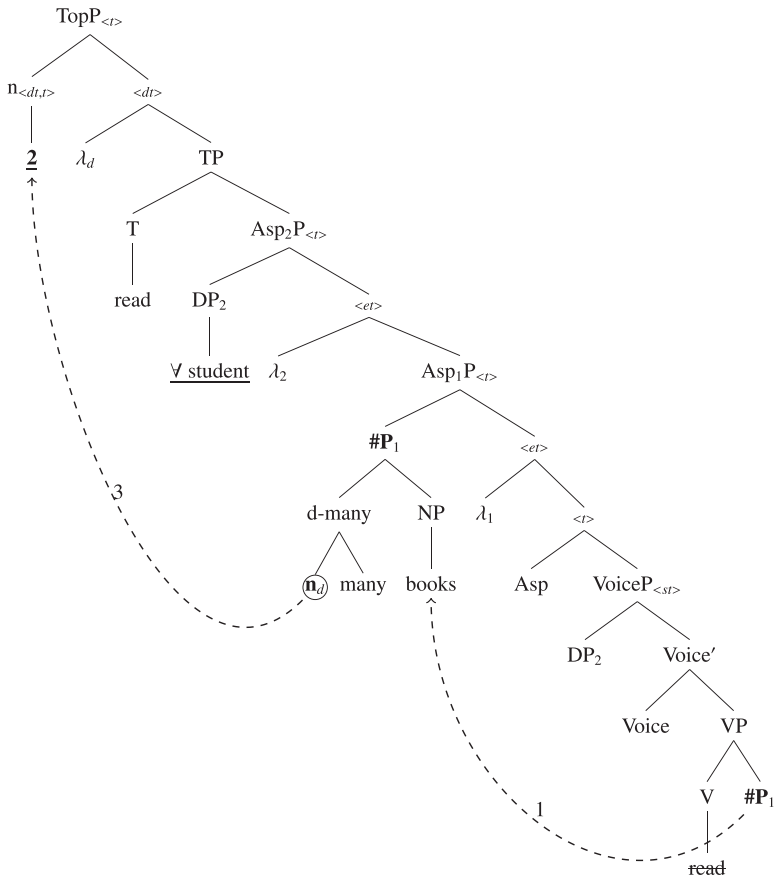
(18) $[\![\text{MANY}]\!] = \lambda n_d.\lambda P_{<et>}.\lambda Q_{<et>}.\exists x[\#{=}n \wedge P(x) \wedge Q(x)]$

Given the analysis of the numeral as a degree quantifier, we can show that when it moves to Spec,TopP driven by a CT-feature, it can resolve its type mismatch and, at the same time, ensure a wide scope interpretation of the numeral only, with the existential being interpreted in the scope of the universal. This is shown in the derivation in (19). We represent the numerical/cardinality phrase as #P (as in, e.g. Borer 2005). As of type <*dt,t*>, the type-shifted numeral moves leaving a trace *d* which is the internal argument of the silent MANY. Thus at the level of Asp_1P, we get the interpretation in (20b) that there is an amount of books read by DP_2. At the level of Asp_2P, the universal quantifier is interpreted having in its scope the existential operator, deriving the interpretation that *for every student y some books were read by y*, as in (20c). Finally, the raised numeral of type <*dt,t*> takes as its argument its complement of type <*dt*> and saturates the degree argument deriving the propositional meaning that *the cardinality of books such that every student read this amount of books is 2*, as in (20d).

[11] One reviewer asks why only the numerical quantifier carries the CT-feature and whether there is something that blocks an alternative derivation where the entire numerical phrase carries this feature. It is possible that the entire numerical phrase carries a CT-feature. In this case, we would get a contrastive interpretation between two particular entities, i.e. a wide scope specific interpretation. As our experimental study shows this reading with CLLD-ed numerals is also available for native speakers.

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(19) *Split scope with CLLD-ed numeral*



(20) *Derivations*

(a) $[[\text{VoiceP}]] = \text{read}(\#P_1)(DP_2)$

(b) $[[\text{Asp}_1\text{P}]] = \exists x.\ \text{books}(x) \wedge t_1\ \text{read}\ x \wedge \#(x)=n$

(c) $[[\text{Asp}_2\text{P}]] = \forall y.\ \text{student}(y) \rightarrow \exists x.\ \text{books}(x) \wedge y\ \text{read}\ x \wedge \#(x)=n$

(d) $[[\text{TopP}]] = \forall y.\ \text{student}(y) \rightarrow \exists x.\ \text{books}(x) \wedge y\ \text{read}\ x \wedge \#(x)=2$

Under this view, what is CLLD-ed is the degree quantifier and not the entire numerical phrase ($\#P_1$). As we noticed, the CLLD-ed numeral is a contrastive topic. Critically, the idea that only the degree quantifier is contrastively topicalized is consistent with our intuition that what is contrasted is the cardinality of books that each student read rather than the things that have been read. Thus, only the degree quantifier moves leaving the rest of the DP behind. The fact that the entire DP is pronounced at the CLLD-ed position is due to the obligatory pied-

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piping. As it has been argued for *wh*-movement, although the entire *wh*-phrase is pronounced in the moved position, only the *wh*-word is moving while the NP remains lower, exhibiting the phenomenon of pied-piping (Cable 2010). Similarly, focus movement has been noticed to involve pied-piping, in which only a particular lexical item is F-marked, but the entire DP is pied-piped to the focus position (Horvath 2007).

The present analysis captures the difference between plain indefinites and numerals since plain indefinites do not involve a degree quantifier and therefore what is CLLD-ed is always the entire QP. The same analysis can apply to CLLD-ed subjects as in (7). However, in this case, given that the universal DP has moved first to Spec,Asp_1P and the indefinite follows at Spec, Asp_2P, the universal DP needs to covert QR in a second-step movement above the Asp_2P in order to take scope above the intermediate position of the indefinite. This might explain why inverse scope acceptability with CLLD-ed numerical subjects is significantly lower than with CLLD-ed numerical objects. However, in the absence of any evidence from online processing experiments this remains only a hypothesis.

What is definitely predicted by this analysis is that all numerals and, as we see below, other degree expressions allow a split scope in CLLD-ed constructions. Crucially, the indefinite numeral *ena* 'one', which in Greek functions both as an indefinite, i.e. *a*, and as a numeral, *one*, patterns with the rest of the numerals allowing split scope. This uniformity suggests that the item *ena* should also be analyzed as a numeral in line with what has been argued in Stavrou & Terzi (2008), Alexiadou (2014), and Alexopoulou & Folli (2019).

There are two remaining issues to be discussed with respect to the configuration in (19). The first one concerns the split scope in view of what is often called the Heim–Kennedy generalization for degree operators (Kennedy 1999; Heim 2000). The observation is that degree operators can raise to take scope over a modal quantifier but not over a nominal quantifier. The same generalization holds for modified and plain numerals as discussed in Kennedy (2015), Blok et al. (2017), and Bylinina & Nouwen (2020). The following two examples with the modified numerals illustrate this contrast. Example (21) is ambiguous between a surface reading that Juliet is not allowed to read more than two books in (21a) and an inverse scope reading under which Juliet is required to read two books (but if she wants she can read more) in (21b). On the other hand, the sentence in (22) does not have an inverse scope (22b), suggesting that *at most two* cannot QR above the universal DP (see e.g. the discussion in Blok et al. 2017).

(21) Juliet is required to read at most two books.
  (a) It is required that the maximum number of books that Juliet reads is two.
  (b) The maximum number of books such that Juliet is required to read is two.

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(22) Every student has at most two books.
  (a) ✓ For every student y the maximum number of books such that y has is two.
  (b) ✗ The maximum number of books such that every student has is two.
  ⇝ *Some students may have more than two books.*

Our data seem to contradict this generalization since the degree quantifier raises above the universal DP-quantifier. However, there are two critical differences between the CLLD-ed numerals as in (2b) and examples like (22); First, the movement in (19) is overt and, second, as we noticed above, movement is triggered due to CT-feature on the degree quantifier. That is, the movement of the numeral above the universal quantifier is overt and is motivated independently due to CT-marking on the numeral. The hypothesis that the Kennedy–Heim generalization applies only for covert and not for overt movement is explicitly argued for in Stateva (2004). The second difference is related with the idea that Kennedy–Heim generalization can receive a unified account with intervention effects in *wh*-questions (Beck 2006, 2012). Under this view, what differentiates the configuration in (19) might be the distinctive CT-feature. We leave this issue for future research as it touches on different phenomena and requires an in-depth investigation into different types of movement.

The second question concerns the choice of the particular analysis of numerals as degree quantifiers, as advocated by Blok et al. (2017) and Bylinina & Nouwen (2020). Split scope interpretation of the numeral can also be derived under Kennedy's (2015) analysis. However, Kennedy (2015) argues that a numeral, e.g. *two*, is true of a property of degrees if the maximum number that satisfies the property is *2* as in (23):

(23) $[[\text{two}]] = \lambda D_{\langle d,t\rangle}.\, max\,\{n \| D(n)\} = 2$

Under this view, we would expect an upper-bound interpretation for CLLD-ed numerals. However, as we discuss in detail in the following section, we find the opposite, i.e. a low-bound interpretation. As we show in Section 3.2, the analysis pursued by Blok et al. (2017), Bylinina (2019), and Bylinina & Nouwen (2020) of plain numerals as degree quantifiers without a maximizing element can better explain the interpretation of these propositions.[12]

3.2 *Accounting for the low-boundedness restriction of CLLD-ed numerals*

As we mentioned in the introduction, the narrow scope reading with the CLLD-ed numerals is obligatorily accompanied by a low-bound inference. In particular, our

[12] We are extremely grateful to Stephanie Solt for pointing out this issue and for bringing to our attention Bylinina's work. We are also grateful to Lisa Bylinina for her feedback on this matter. Also, we are grateful to two reviewers who suggested to elaborate more on this part and make the link with the next section more obvious.

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original example, under an inverse scope reading, can only get an *at-least* interpretation. As we explained in the previous section the intuition for a low-bound interpretation is that led us to a non-maximal analysis by Blok et al. (2017), Bylinina (2019), and Bylinina & Nouwen (2020) as opposed to Kennedy's (2015) approach under which numerals are degree quantifiers with a two-sided (upper-bound) interpretation.

(24) *Dio* *vivlia*$_{CT}$ ta diavase KATHE$_F$ mathitis.
two books.ACC them.ACC read every student.NOM
'Two books, every student read.' (*Maybe some read more than two.*)
(a) There are two books which were read by every student.
(b) ✓ For every student there are at least two books such that he read them.
(c) ✗ For every student there are at most two books such that he read them.

This requirement for a low-bound interpretation when we have a CLLD-ed numeral becomes clear once we use modified numerals (see Arregi 2003). *At-least*-numerals can undergo CLLD with an inverse scope interpretation (25a) whereas *at-most* numerals cannot. The sentence in (25b) with *at-most* sounds odd, since modified numerals resist a specific interpretation (Arregi 2003).[13]

(25) (a) *To ligotero/tulahiston dio* *vivlia*$_{CT}$ ta diavase KATHE$_F$ mathitis.
at least two books CL read every student.
'[At least two books]$_{CT}$ were read by every$_F$ student.'
(b) #*To poli dio vivlia*$_{CT}$ ta diavase KATHE$_F$ mathitis.
at most two books THEM.CL read every student.
#'[At most two books]$_{CT}$ were read by every$_F$ student.'

In addition we notice that degree quantity expressions allow inverse scope as long as they denote a relatively small amount in (26a) and not a large amount, in (26b–c). In this case as well, if the QP *liga vivlia* 'few books' in (26a) was a hanging topic only a specific, wide scope interpretation would be licensed.[14]

---

[13] As one of the reviewers points out, (25b) sounds better if the CLLD-ed phrase is a hanging topic. Crucially, in this case only a specific interpretation is permitted, deriving the reading that mostly two particular books, i.e. David Copperfield and Robinson Crusoe, are read by every student. This is nicely predicted by the fact that hanging topics are uniformly analyzed as being base-generated high and thus a split scope interpretation would not have been possible (see Note 1 for related references).

[14] In general, the intonation in (26a) is critical in deriving the inverse scope interpretation. It is obligatory to have a CT-intonation on the QP *liga vivlia* and then focus, realized with a L* NPA, on *kathe*. If there is focus on *liga* (1) we get the interpretation that there are few books which were read by every student (Giannakidou 1998: 72).

(1) LIGA vivlia ta diavase kathe mathitis.
a-few books.ACC them.ACC read every student.NOM

As we expect, the corresponding sentence with focus on *liga* but with focus fronting instead of CLLD (2) inverse scope is possible.

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(26) (a) *Liga* *vivlia*$_{CT}$ ta diavase
a-few books.ACC them.ACC read
KATHE$_F$ mathitis.
every student.NOM
'A few books, every student read.' (*Maybe some read many*)
✓ There are few specific books that all students read. (wide scope)
✓ For every student there are few (possibly different) books that he read. (narrow scope)

(b) *Pola* *vivlia*$_{CT}$ ta diavase
many books.ACC them.CL read
KATHE$_F$ mathitis.
every student.NOM
'Many books, every student read them.'
✓ There are many specific books that all students read. (wide scope only)
✗ For every student there are many (possibly different) books that he read.

(c) *Arketa/kabosa* *vivlia*$_{CT}$ ta diavase
enough books.ACC them.CL read
KATHE$_F$ mathitis.
every student.NOM
'Enough books, every student read them.'
✓ There are enough specific books that all students read. (wide scope only)
✗ For every student there are enough (possibly different) books that he read.

The low-boundedness requirement under inverse scope needs to be explained. Critically, the semantic derivation in (20) allows for a low-bound reading but does

(2) LIGA vivlia diavase kathe mathitis.
few books.ACC read every student.NOM

Although, across languages and different constructions it is common to find a correlation between the prosodic pattern and the scope interpretation, the particular contrast presents an interesting case because it also associates with an ambiguity of the quantifier *liga* 'few' in Greek between an 'a few' and a 'few' reading as first noticed by Giannakidou (1998). Applying all tests in Solt (2006) we see that a focused *liga* corresponds to 'few' in English whereas a CT *liga* is interpreted as 'a few'. The focused *liga* which in addition has undergone CLLD in (1) is interpreted as a wide scope 'few'. Giannakidou (1998) considers this as a lexical ambiguity between an emphatic and a non-emphatic *liga.* We think that there is a lot to be explained here regarding the role of focus and CT in quantifier interpretation but this goes beyond the scope of this paper. What remains critical for our purposes is that (26a) is a CLLD-ed QP which can get narrow scope below the universal quantifier.

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not enforce it. In order to account for the low-bound interpretation, we argue, following the discussion in Tomioka (2010), that LOW-BOUNDEDNESS is due to the semantics of contrastive topic. The general consensus about contrastive topic is that it requires that there are live alternatives in the context, i.e. alternatives which the interlocutors consider as live possibilities (Büring 2003; Hara 2003; Tomioka 2010; Wagner 2012; Constant 2014).[15] For example, the answer in (27a) leaves a doubt as to what happened with the others while (27b) in which the *Peter* is focused derives the inference that the speaker only saw Peter out of his friends.

(27) Did you see your friends?
(a) Ton *Petro*$_{CT}$ ton ida…
the Peter.ACC him.CL saw.1SG
'I saw Peter…' ⇝ *It remains open what happened with the others…*
(b) Ton PETRO$_{F}$ ida.
the Peter.ACC saw.1SG
'I saw PETER.' ⇝ *I didn't see the others.*

The CT requirement that we consider open alternatives enforces an *at-least*-interpretation over an *exact*- or an *at-most*-reading.[16] To illustrate, following Büring's (2003) mechanism for the computation of CT alternatives, a sentence like (8), repeated in (28), can generate the alternatives in (29) by substituting different values for the F-marked and CT constituents:

(28) Dio *ithopius*$_{CT}$ tus zografise KATHE zografos.
two actors.ACC them.CL painted every painter.NOM.

(29) $\left\{ \begin{array}{l} \{\textit{three}\ \text{actors were painted by EVERY/MOST/SOME painter}\} \\ \{\textit{four}\ \text{actors were painted by EVERY/MOST/SOME painter}\} \\ \{\textit{five}\ \text{actors were painted by EVERY/MOST/SOME painter}\} \end{array} \right\}$

An upper-bound interpretation, in combination with the focused universal provides a complete answer (e.g. *At most two actors were painted by every painter*), yielding CT infelicitous. In this way, we can explain why we always get a low-bound and not an upper-bound interpretation.

[15] This is, of course, a rather coarse generalization which is expressed and explained in different ways in the various cited works. However, what really matters for our purposes is this requirement for some open alternatives to a question under discussion (see Büring 2003; Tomioka 2010; Wagner 2012; Constant 2014 for further discussion).

[16] Tomioka (2010) presents this requirement as a consequence of focus and CT constituting alternatives for a scalar implicature computation. Under this view, focus is stronger than CT and therefore when the speaker uses CT, an *at-least*-inference arises with a measurement phrase (see Tomioka 2010: sect. 4).

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3.3 *Interim summary*

In this section, we addressed the contrast between CLLD-ed plain indefinites, arguing that numerals can get split scope, therefore exhibiting apparent inverse scope. We have also made two basic assumptions; the first one is the WSC for CLLD-ed QPs and the second is that CLLD involves movement and not base generation. In what follows, we discuss these assumptions and their significance for our overall understanding of CLLD.

4. Inverse scope with CLLD: Consequences for CLLD

As we noticed in the introduction, the syntactic derivation of CLLD presents a puzzle because of conflicting evidence. On the one hand, island sensitivity,[17] binding reconstruction, and idioms provide evidence in favor of movement, since these are taken to be diagnostics for movement. On the other hand, the absence of weak crossover effects (WCO), the intolerance of parasitic gaps (Cinque 1990; Iatridou 1995; Anagnostopoulou 1997) and, in addition, the wide scope of CLLD-ed QPs have been taken as arguments in favor of base generation.

The behavior of CLLD-ed numerals provides evidence in favor of the movement analysis as opposed to a base-generation analysis. Under a movement analysis, we need to explain why CLLD does not trigger WCO and does not license parasitic gaps in addition to the wide scope restriction for CLLD-ed QPs. The first two issues, WCO and parasitic gaps, are discussed by Angelopoulos & Sportiche (2021), showing that the facts can be explained within a certain movement analysis in which the CLLD-ed phrase first undergoes movement to a K-position and then A′-movement to its surface position. For the latter, as we discuss in Section 5, the lack of inverse scope does not constitute a good argument neither for a base generation nor for a movement analysis. Therefore, following several works in this tradition (Kayne 1975; Cinque 1977; Agouraki 1992; Cecchetto 2000; Kupula 2014; López 2014; Angelopoulos & Sportiche 2021), we take CLLD to be a special instance of movement. Our work does not provide any further insights regarding the details of the derivation but we refer the reader to Angelopoulos & Sportiche (2021) for an analysis consistent with our findings.[18]

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[17] Anagnostopoulou (1997) suggests that CLLD is insensitive to wh-islands as in (1):

(1) To forema den ksero pu na to valo.
The dress not know.1SG here to cl put.1SG
The dress, I don't know where to put it.

Although, indeed these examples are grammatical, the same insensitivity seems to be true for focus fronting which is unanimously analyzed as involving A′-movement. Therefore we take it that in Greek, focus movement and CLLD exhibit the same island sensitivity.

[18] Our data are also consistent with a mixed analysis, under which the CLLD-ed XP originates in an intermediate position and then moves to its surface position. Crucially, however, this position will have to be in the scope of the universal quantifier in order to derive the split scope reading.

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In what follows we discuss two different approaches to CLLD which attribute the non-availability of inverse scope with indefinites to independent factors not related with the base-generation approach.

The first one is developed by Alexopoulou & Folli (2019) and suggests that the clitic in Greek (but not in Italian) is referential, therefore deriving the crosslinguistic contrast in the availability of inverse scope. Whereas this account has advantages in distinguishing CLLD from contrastive topicalization in Greek, which lacks a clitic and permits an inverse scope interpretation, it posits certain issues, some of which have been pointed out in the literature.

First, there are many environments in which the clitic is not referential such as expletive clitics in idiomatic expressions, generic clitics, and clitics which double anaphors (see Angelopoulos & Sportiche 2021 and the references therein). In addition to this, it seems that some of the environments discussed by Alexopoulou & Folli (2019) as disallowing referential clitics are in fact compatible with clitics. One of the environments they present, as incompatible with clitics, is indefinite bare antecedents. As illustrated in (30), the clitic *ton* 'him' cannot be used in this environment to refer back to the bare antecedent *idravliko* 'plumber':

(30) O Yanis psahni idravliko ala den (*ton) vriski puthena.
the Yanis look-for.3SG plumber but not (him) find.3SG anywhere
'Yanis is looking for a plumber cannot find one anywhere.'
(Alexopoulou & Folli 2019: ex. (10b))

However, as we see in (31a), once we use a different predicate than *find* it is possible to use a clitic with a bare non-referential antecedent. As pointed out by a reviewer even with the predicate *vrisko* 'find' in (31b), the sentence is fine. Additionally, in (31c) the clitic is obligatory although it does not refer to a particular plumber. Finally, in (31d), it is clear that the clitic does not refer to a particular doctor. Whatever the strategy for the interpretation of the clitic is in (31), it presents a challenge to the clitic-referential account.[19]

(31) (a) Psahno limoksiologo na ton rotiso an prepi na pao
look-for.1SG infectiologist SUBJ him ask.1SG if must SUBJ go.1SG
diakopes.
holidays
'I look for an inflectiologist to ask him if I should go on holidays.'

(b) Psahno limoksiologo ke tha ton vro.
look-for.1SG infectiologist and FUT him find.1SG
'I look for an inflectiologist and I will find him.'

[19] We are grateful to a reviewer for suggesting example (31b) and adding an example which conjoins two similar constructions in terms of tense and mood in order to better illustrate the non-referential character of the clitic.

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(c) Tha psakso (gia) idravliko ke tha ton parakaleso
FUT look-for.1SG (for) plumber and FUT him ask.1SG
na kitaksi ti vrisi.
SUBJ look-at.3SG the faucet.
'I will look for a plumber and I will ask him to look at the faucet.'

(d) Hriazomun giatro ala den eiha lefta na ton
need.PAST.1SG doctor but not have.PAST.1SG money SUBJ him
pliroso.
pay.1SG
'I needed doctor but I didn't have money to pay him.'

Second, the contrast between numerals and plain indefinites is also observable in other contexts which involve modal operators. Alexopoulou & Folli (2019) provide the following example as an argument that a CLLD-ed numeral always takes a specific wide scope interpretation. In particular, the fact that the continuation in (32b) which forces a non-specific interpretation of the numeral is infelicitous after (32a) is explained in their account as a consequence of the referential properties of the clitic.

(32) (a) Mia kokini fusta tin psahno edo ke meres
a red skirt CL.FEM.SG look-for.1SG here and days
'I've been looking for a red skirt for a few days…'

(b) #ke de boro na vro kamia pu na m'aresi
and not can.1SG SUBJ find.1SG none that SUBJ me-please.3SG
'…and I cannot find any that I like.'

(c) ke de boro na thimitho pu tin eho
and not can.1SG SUBJ remember.1SG where CL.FEM.SG have.1SG
vali
put.PRTC
'…and I cannot remember where I put it.'

(Alexopoulou & Folli 2019: ex. (1))

However, we can minimally modify (32) as in (33), and the CLLD-ed indefinite can take narrow scope, i.e. the indefinite is interpreted below the modal operator. Crucially, the same sentence with the plain indefinite *kapjos* 'some' is not felicitous with a narrow scope reading. The crucial difference between (32) and (33) is that in the latter by using the modal *need* we foreground a low-bound interpretation thus licensing a CLLD-ed numeral with a split scope interpretation.

(33) (a) ✓ Mia/#kapja kokini fusta tin hriazome
a/some red skirt CL.FEM.SG need.1SG
'I've been looking for a red skirt for a few days…'

(b) ala de boro na vro kamia pu na m'aresi
but not can.1SG SUBJ find.1SG none that SUBJ me-please.3SG
'…and I cannot find any that I like.'

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Finally, the wide scope restriction also holds in cases in which the wide scope requirement is clearly not related to the referentiality of the clitic.

In (35) and (37) the *only*-DP and the *even*-DP are CLLD-ed and, consequently, they obligatorily get wide scope over the indefinite whereas their non-CLLD-ed version in (34) and (36) has both readings. In both cases, the properties of the clitic are not relevant for the wide scope of the operators.

(34) Kapja ithopios filise mono ton Petro.
some actress kissed only the Peter.ACC
'Some actress kissed only Peter.'
✓ *only* > ∃: Nobody except for Peter was singer-kissed.
✓ ∃ > *only*: A specific actress kissed nobody except for Peter.

(35) Mono ton Petro ton filise kapja ithopios.
only the Peter.ACC CL kissed some actress.
'Only Peter is such that he was kissed by an actress.'
✓ *only* > ∃: Nobody except for Peter was actress-kissed.
∃ > *only*: A specific actress kissed nobody except Peter.

(36) Kapja ithopios filise akomi ke ton Petro.
some actress kissed even ADD the Peter.ACC
'Some actress kissed even Peter.'
✓ *even* > ∃: Even Peter, the least likely to be kissed, was actress-kissed.
✓ ∃ > *even*: There is an actress who kissed (among others) even Peter.

(37) Akomi ke ton Petro ton filise kapja ithopios.
even ADD the Peter.ACC CL kissed some actress.
'Even Peter is such that he was kissed by an actress.'
✓ *even* > ∃: Even Peter, the least likely to be kissed, was actress-kissed.
∃ > *even*: There is an actress who kissed (among others) even Peter.

These cases suggest that the WSC cannot be due to the referential character of CLLD or the clitics.

A similar explanation, presented from a different angle, is put forth by Arregi (2003). He argues that the observed wide scope of indefinites in CLLD, is enforced by the semantics of CLLD which associates with a contrastive topic. This is relevant for our analysis because we also referred to the semantics of contrastive topic to account for the low-boundedness of CLLD-ed numerals. Arregi (2003) argues that only referential type <e> expressions can be CLLD-ed. In a similar vein, Constant (2012, 2014) argues that in most cases quantifiers that are contrastive topics are interpreted as individuals of type <e>, probably via choice functions. He argues that this is due to the semantic requirement of contrastive topics which establish a contrast between subsets of a larger set that is salient in the discourse. Therefore, when indefinite QPs are contrastive topics, they tend to be interpreted as denoting plural individuals, pointing to a particular subset of individuals, rather than generalized quantifiers. That said, as Constant (2014) points out, when the context

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facilitates a reading where we contrast proportions, it is possible that we interpret indefinite QPs which are contrastive topics as true quantifiers. This is the case with CLLD-ed numerals in which as we saw we are able to establish a set of alternatives that involve different amounts (or portions as in Constant 2014).

Even for the case of plain indefinites, however, the semantic explanation (Arregi 2003; Constant 2014) that contrastive topics resist inverse scope because of the difficulty to establish a proportional contrast with other quantifying elements, can be excluded because, as we discussed above, contrastiveness can be on the restrictor alone (i.e. establishing property alternatives such as SINGERS, ACTORS, COMPOSERS, etc.). Crucially, contrastive topicalization, which differs from contrastive CLLD in that it does not involve a clitic allows inverse scope as discussed in Alexopoulou & Kolliakou (2002). In (38) an inverse scope interpretation is very natural, especially in a context where we discuss whether every photographer has photographed a singer or an actress, a top model, etc.

(38) Kapja *tragudistria*$_{CT}$ fotografise KATHE fotografos.
some singer.ACC photographed every photographer.NOM
'Some *singer*$_{CT}$, EVERY photographer photographed.'
✓ **Surface**: ∃x. singer(x) ∧ ∀y. photographer(y) → y photographed x
✓ **Inverse**: ∀y. photographer(y) → ∃x. singer(x) ∧ y photographed x

Both the intonation and the interpretation we get in (38) suggest that the left dislocated phrase is a contrastive topic, contrasting different properties. Yet, an inverse scope interpretation is possible suggesting that the lack of inverse scope with CLLD-ed contrastive topics is not due to the semantics of contrastive topic. This contrast is also one of the main arguments leading Alexopoulou & Folli (2019) to argue that the crucial factor is the properties of the clitic. Below we point to a different direction under which the clitic might simply indicate the boundary of a locality domain.

5. WIDE SCOPE CONSTRAINT IN CLLD: A LOCALITY RESTRICTION?

It is a well-known puzzle that scope-shifting operations in contrast with overt instances of movement are clause bound (Fox 1995, 2000; Johnson 2000; Cecchetto 2004; Wurmbrand 2018). The examples below illustrate the phenomenon as summarized by Wurmbrand (2018).

(39) (a) Fox (2000: 62; *∀ ≫ ∃)
#Someone said that every man is married to Sue.
(b) Fox (2000: 62; *∀ ≫ ∃)
#Someone said that Sue is married to every man.
(c) Johnson (2000: 188; *∀ ≫ ∃)
I told someone you would visit everyone.
(d) Cecchetto (2004: 350; *∀≫∃)
A technician said that John inspected every plane.
(Wurmbrand 2018: 1)

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Crucially, the same restrictions apply in Greek QR. For example, the corresponding of (39a), in (40), is infelicitous due to the fact that only the wide scope interpretation that *every man got married with Ana* survives instead of the natural inverse scope reading that *for every man x there is some individual y who said that x got married with Ana*:

(40) #Kapjos ipe oti kathe andras pandreftike tin Ana.
Someone said that every man married the Ana.
'Someone said that every man got married with Ana.'

We propose that irrespective of what makes QR to be more restricted than overt movement (see Wurmbrand 2018 for an overview and a summary of the ideas developed in e.g. Fox 1995, 2000; Cecchetto 2004) it is the same reason that is responsible for the WSC in CLLD. In other words, the idea is that CLLD involves the crossing of a domain which creates a barrier for scope-shifting operations (QR or reconstruction).

We can see two possibilities. The first one is that the landing site of the CLLD-ed is in a higher domain than the landing site of focus movement or contrastive topicalization. The second possibility is that this particular type of syntactic derivation creates a phase domain which is then no longer accessible for scope-shifting operations. Given the available evidence, we cannot distinguish between these two options. Yet, it is important to mention that there is some evidence that CLLD targets a higher position than focus fronting or contrastive topicalization. Most evidently, as it has long been observed (Tsimpli 1990, 1995; Iatridou 1995), CLLD-ed materials necessarily precede focused phrases or fronted subjects in the default SVO word order as illustrated by the contrast between (41a) and (41b).

(41) (a) Tin Ana o PETROS$_F$ ti heretise.
the Ana the Peter her.CL greeted.
'Ana, PETER greeted her.'
(b) *O PETROS$_F$ tin Ana ti heretise.
the Peter the Ana her.CL greeted.

Similarly, topicalization is also considered to involve a lower position than CLLD. Notice that a classic example of topicalization as in (42), from Alexopoulou & Kolliakou (2002), cannot be construed unless the topicalized phrase is adjacent to the verb. This patterns nicely with the observation that inverse scope seems to be available with topicalized plain indefinite QPs.

(42) (a) Tin parastasi skinothetise o Karolos Koun.
the performance.ACC directed the Karolos.NOM Koun
'The performance Karolos Koun directed.'
(b) #Tin parastasi o Karolos Koun skinothetise.
the performance.ACC Karolos.NOM Koun directed

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These facts lead to the conclusion that whatever the reasons are for the locality restrictions of QR, the same locality restrictions apply to CLLD, i.e. CLLD-ed XPs cross a boundary not crossed by other instances of fronting such as contrastive topicalization, focus fronting, and subject fronting deriving the default SVO word order. A possible way to formulate this dichotomy between CLLD in Greek and other instances of movement is within Miyagawa's (2017) agreement system, under which there is a variation on whether DISCOURSE δ and INFLECTION ϕ features are inherited from C to T, thus creating different possibilities for movement. It is possible that in Greek, certain topic features associated with CLLD remain at C, whereas the focus feature is inherited by T, thus triggering movement to a lower domain than CLLD. This idea patterns with the analysis of CLLD as being in the C-domain (e.g. Iatridou 1995; Angelopoulos & Sportiche 2021) and goes against an analysis of CLLD as being in the I-domain (e.g. Anagnostopoulou 1997). This line of analysis could also explain the availability of inverse scope with CLLD-ed DPs in Italian if CLLD in Italian can also target a lower position as argued by Rizzi (1997).[20] An alternative explanation, not necessarily presupposing different heights is that the type of the movement (i.e. adjunction to a certain position as in Iatridou 1995; Anagnostopoulou 1997) creates a separate domain. Within the scope of this paper it is not possible to decide among alternatives.

As a last piece of evidence in favor of the locality restriction hypothesis, we would like to come back to the results of our experiment with CLLD-ed plain indefinites. As we noticed in Section 2.2.4, the fact that there is a minor – but still considerable (around 10%) – acceptance rate for inverse scope with CLLD plain indefinites, indicates that the lack of inverse scope is not attributed to ungrammaticality but rather to a processing cost associated with a locality constraint in QR (see Wurmbrand 2018; Pasternak & Graf 2021 for a discussion).

Finally, it is worth-mentioning that even if we were assuming a base-generation analysis, in order to explain the lack of inverse scope we would again need to assume that there is a locality restriction because otherwise there is nothing that would prevent a quantifier to raise above a base-generated QP in order to take scope. In other words, the lack of inverse scope cannot constitute an argument in favor of base generation, rather, as we put it here, it only suggests that the surface position of the CLLD-ed phrase, whether the result of movement of base generation, lies in a domain not accessible for scope-shifting operations.[21]

[20] We are grateful to an anonymous reviewer who pointed out the possibility for two topic positions in Italian.

[21] Lechner (2018) suggests that there is also the possibility of semantic reconstruction in addition to the syntactic reconstruction. Crucially, we take any type of scope-shifting operation, semantic or syntactic, to be subject to locality constraints.

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6. Concluding remarks and further questions

In this work, we focused on a contrast between CLLD-ed plain indefinites and degree expressions, showing that the latter tolerate inverse scope interpretation whereas the former do not. Our experimental evidence suggests that the contrast is robust among speakers.

In order to explain this contrast, we resorted to the different properties of the two types of indefinites. In particular, we showed that under a degree-based approach to numerals and other degree expressions such as *liga* 'few' we can account for the data without stipulating different scope constraints for CLLD-ed QPs. Under this view, all CLLD-ed QPs obey the WSC. What gives rise to an inverse scope interpretation in numerals is, in fact, a split scope interpretation, under which only the numerical quantifier raises to the CLLD-ed position leaving the existential component below in the scope of the universal operator. At the same time, we accounted for the obligatory low-bound interpretation of numerals and the licensing of low-bound modified numerals by referring to the semantics of contrastive topics which require that there are live alternatives (Büring 2003; Tomioka 2010; Wagner 2012; Constant 2014).

These data, in turn, provide a new piece of evidence in favor of a movement approach to CLLD since in order to derive a split scope interpretation it is necessary that the entire QP originates somewhere lower in the structure.

Under this view, we suggested that the WSC can be better explained as a locality constraint which generally restricts scope-shifting operations. This path also points to a difference in the domains created by CLLD and other types of left dislocations. It remains to be seen whether this hypothesis can be confirmed by independent evidence.

As we said in the beginning, our analysis is restricted to Greek. Scope facts are different in other languages. For example, as Cecchetto (2001) and Alexopoulou & Kolliakou (2002) discuss, CLLD-ed QPs in Italian can get narrow scope. It is always possible that the crosslinguistic differences could be explained as an illustration of different domains for CLLD. Such a distinction would also be possible to maintain for different types of CLLD within the same language which appear to have different scope restrictions (i.e. argument vs. adjunct CLLD in Italian; Cecchetto & Chierchia 1999; Cecchetto 2001). However, any claim regarding the landing site or the creation of different domains in CLLD would require an in-depth crosslinguistic comparison that goes well beyond the goals of this paper.

A. Appendix: List of experimental items

In this appendix, we present the experimental items which were all recorded and annotated in Praat (Boersma & Weenink 2016). In the Focus Exp, an L* NPA is on the restrictor of the existential quantifier and the rest of the sentence is de-accented. In the CLLD and Num experiment, the contrastive topic is marked with a fall-rise (L*+H) accent on the restrictor of the indefinite/numeral followed by a phrase boundary and then a NPA on the universal quantifier *kathe* 'every'. All items have a low boundary tone, like default declaratives. For the prosodic annotation of the

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sentences we were based on the Greek ToBI developed by Amalia Arvaniti and Mary Baltazani (Arvaniti & Baltazani 2000, 2005) and relevant work by Baltazani & Jun (1999) and Baltazani (2002).

A.1. Focus experiment

Conditions 1 and 2

N	Sentence	Translation
1	Kapjos IPURGOS sinantise kathe epihirimatia.	Some minister met every entrepreneur.
2	Kapjos MEJISTANAS ipostirikse kathe zografo.	Some tycoon supported every painter.
3	Kapjos FILOLOGOS epenese kathe piiti.	Some philologist praised every poet.
4	Kapjos JATROS simvulepse kathe gonio.	Some doctor advised every parent.
5	Kapja PROISTAMENI katigorise kathe katharistria.	Some manager accused every cleaner.
6	Kapja KTINIATROS taise kathe gataki.	Some vet fed every cat.
7	Kapjos KOMIKOS satirise kathe politiko.	Some comedian satirized every politician.
8	Kapjos ERGOSTASIARHIS hrimatodotise kathe kanali.	Some manufacturer financed every TV channel.
9	Kapjos SKITSOGRAFOS shediase kathe arheo nao.	Some cartoonist draw every ancient temple.
10	Kapjos DIMOSIOGRAFOS kalese kathe olibioniki.	Some journalist invited every Olympic winner.

Conditions 3 and 4

N	Sentence	Translation
1	Kapjon arheologiko HORO episkeftike kathe arheologos.	Every archaeologist visited some archaeological place.
2	Kapja TRAGUDISTRIA fotografise kathe fotografos.	Every photographer photographed some singer.
3	Kapjon KARDIOPATHI eksetase kathe jatros.	Every doctor examined some patient.
4	Kapjo MONDELO htenise kathe komotria.	Every hairdresser combed some model.
5	Kapjon IPOPSIFIO aperipse kathe kritis.	Every judge rejected some candidate.
6	Kapjo MNIMIO fotografise kathe fotografos.	Every photographer photographed some monument.
7	Kapjo PEDAKI episkeftike kathe podosferistis.	Every football player visited some child.
8	Kapjon TRAGUDISTI heretise kathe sinthetis.	Every composer greeted some singer.
9	Kathe MATHITIS diavase kapjo vivlio.	Every student read some book.
10	Kathe MATHITIS antipathise kapjon kathigiti.	Every student disliked some professor.

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A.2. CLLD EXPERIMENT (PLAIN INDEFINITE)

Conditions 1 and 2: The items are identical as in conditions 1 and 2 of the Focus Exp modulo intonation. The subject is a contrastive topic and *kathe* is focused.

Conditions 3 and 4

N	Sentence	Translation
2	Kapjon arheologiko *horo* ton episkeftike KATHE arheologos.	Every archaeologist visited some archaeological place.
3	Kapja *tragudistria* tin fotografise KATHE fotografos.	Every photographer photographed some singer.
4	Kapjon *kardiopathi* ton eksetase KATHE jatros.	Every doctor examined some heart-patient.
5	Kapjo *mondelo* to htenise KATHE komotria.	Every hairdresser combed some model.
6	Kapjon *ipopsifio* ton aperipse KATHE kritis.	Every judge rejected some candidate.
7	Kapjo *mnimio* to fotografise KATHE fotografos.	Every photographer photographed some monument.
8	Kapjo *pedaki* to episkeftike KATHE podosferistis.	Every football player visited some child.
9	Kapjon *tragudisti* ton heretise KATHE sinthetis.	Every composer greeted some singer.
10	Kapjo *vivlio* to diavase KATHE mathitis.	Every student read some book.
11	Kapjon *kathigiti* ton antipathise KATHE mathitis.	Every student disliked some professor.

A.3. CLLD-ED NUMERAL (NUM EXP)

Conditions 1 and 2

N	Sentence	Translation
1	*Dio embori* ladosan KATHE eforiako.	Two traders bribed every registrar.
2	*Dio eteries* ipostiriksan KATHE athliti.	Two companies supported every athlete.
3	*Dio viomihani* ipostiriksan KATHE dimosiografoi.	Two manufacturers supported every journalist.
4	*Dio koritsakia* htipisan KATHE agoraki.	Two girls hit every boy.
5	*Dio pedia* haidepsan KATHE skilaki.	Two kids petted every dog.
6	*Dio singrafis* epenesan KATHE mithistorima.	Two writers praised every novel.
7	*Dio dimotiki simvuli* proskalesan KATHE aksiomatuho.	Two city counselors invited every officer.
8	*Dio mathites* periegrapsan KATHE poli.	Two students described every city.
9	*Dio anarhikes* omades stohopiisan KATHE efoplisti.	Two anarchist groups targeted every shipowner.
10	*Dio agroktimones* eplinan KATHE alogo.	Two farmers washed every horse.

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Conditions 3 and 4

N	Sentence	Translation
1	*Dio askisis* tis elise KATHE fititis.	Every student solved two exercises.
2	*Dio athlites* tus sinantise KATHE arhigos kratus.	Every head of state met two athletes.
3	*Dio giatrus* tus simvuleftike KATHE asthenis.	Every patient consulted two doctors.
4	*Dio ithopius* tus zografise KATHE zografos.	Every painter painted two actors.
5	*Dio politikus* tus sinantise KATHE mafiozos.	Every mafioso met two politicians.
6	*Dio kathigites* tus antipathise KATHE mathitis.	Every student disliked two professors.
7	*Dio musia* ta episkeftike KATHE turistas.	Every tourist visited two museums.
8	*Dio tenies* tis ide KATHE pedi.	Every child saw two movies.
9	*Dio trapezes* tis listepse KATHE simoria.	Every gangster robbed two banks.
10	*Dio mathites* tus eksetase KATHE daskalos.	Every teacher examined two students.

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