DOI: 10.1111/synt.12229

REMARK

Scope freezing and object shift in Ukrainian: Does Superiority matter?

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Abstract

This remark presents novel evidence on Ukrainian specificity-inducing object shift in its interaction with quantifier scope, evidence suggesting a generalization that whatever scope interpretations are established in the postverbal field will carry over into the preverbal field. We point out that the data present a serious challenge to the Superiority account of scope freezing, since that account predicts that object shift of a QP will always freeze scope with respect to another object QP, contrary to fact. Furthermore, while Ukrainian object shift does not obey Holmberg's Generalization, we argue that it is nevertheless fully comparable to Scandinavian object shift. We propose to account for the data with a modified version of *cyclic linearization*. Cyclic linearization accounts for the crosslinguistic differences with respect to object shift and also derives the peculiar object shift–QP scope interaction patterns we observe, which remain obscure on the Superiority account of scope freezing.

KEYWORDS

cyclic linearization, Holmberg's Generalization, object shift, scope freezing, shape-preservation effects, Superiority, Ukrainian

1 | INTRODUCTION: THE SUPERIORITY ACCOUNT OF SCOPE FREEZING

Bruening 2001 draws parallels between the covert movement operation quantifier raising (QR) and the object shift (OS) found in Germanic languages. Chomsky 2001 analyzes OS as being driven by a formal feature "P" that is optionally present on the light verb v that attracts a DP to vP. Bruening exploits the observation that both OS in Germanic languages and QR in English have interpretive effects and proposes that the P feature can be parameterized: in languages that allow OS, the P feature is employed to attract a *specific* DP (a DP bearing a feature [+specific]) to vP, while in English—and other languages that do not have OS—it is parameterized to attract a *quantificational* DP (any non-individual-denoting DP; henceforth *QP*) to vP at Logical Form (LF).

On Bruening's proposal, when the English light verb v carries the optional P feature, a QP will be attracted to v via QR; if v lacks the P feature, QR will not apply, causing the derivation to crash if the QP is uninterpretable in its base-generated position. If the two objects are in the domain of v, Superiority (Chomsky 1995, Richards 1997) will restrict the LF scopal order of the two objects. Shortest Attract requires the indirect object in (1a), whose structure (on Bruening's assumptions) is illustrated in (1b), to undergo P-feature checking before the direct object does and the direct object to "tuck in" under the indirect object. For this reason, P-feature checking cannot invert the scope of the two objects, which blocks the bound reading of *different* in (1a).[1]

(1) a. The teacher gave a (#different) student every book.
b. [$_{vP}$ the teacher [$_{vP1}$ a (different) student V1 [$_{vP2}$ gave$_{v2}$ every book]]]

The scope flexibility found in the prepositional counterpart to (1), shown in (2a), is a consequence of the particular structure shown in (2b). Bruening maintains that the theme is generated in this case in the specifier of PP, which also contains the goal. Since the two DPs originate in the same projection, they are equidistant from the P feature, and either may move first, putting the other in its scope at LF, thus resulting in scope ambiguity.

(2) a. The teacher gave a book to every student.
b. [$_{vP}$ the teacher [VP gave [PP a book to every student]]]

This analysis thus attributes scope freezing in the double-object construction in (1a) to the fact that the two objects are base generated in separate VPs and, crucially, to QR being conceived of as parameterized Superiority-obeying feature attraction.

Bruening 2001's account, which parameterizes the optional P feature of v to QR or OS, makes two immediate predictions: either (1) we will not find languages that allow both QR *and* OS, or (2) if we do, OS and QR will be constrained in similar ways. The first prediction is immediately falsified by the existence of languages that do in fact allow both QR and OS; the second one suggests that OS of internal-argument QPs will result in scope freezing in the way Bruening

[1]On Bruening's account this applies to object QPs but crucially not to QPs in subject position; subject QPs for Bruening do not have to raise to vP (on the assumption that a subject QP is semantically interpretable in its base position as sister to the verb), hence the account predicts no competition between the subject and object QPs with respect to Superiority, allowing an object to scope over the subject at LF. This analysis thus captures the fact that both objects may scope over the subject but are fixed in their relative order with respect to each other.

claims QR of object QPs does in the English double-object construction. In the next section we will provide data from Ukrainian that will allow us to test these predictions, Ukrainian being a language that shows parallel scope freezing with ditransitives (Antonyuk 2015, 2020) and also has OS (Mykhaylyk 2010, 2011) that exhibits many properties parallel to those of the OS found in Scandinavian languages (Anagnostopoulou 2003, 2005, Diesing 1996, Holmberg 1986, 1999, Vikner 2006, among others). In section 3 we discuss the observed patterns and argue that the data cannot be made compatible with Bruening 2001's account, concluding that Superiority is not the right mechanism for capturing the QP scope-freezing effects that the account sets out to capture (see also Larson et al. 2019 for the same conclusion based on other data). In section 4 we sketch an account of Ukrainian OS based on a slightly modified version of Fox & Pesetsky 2005, arguing that that framework not only captures all the data patterns we observe in Ukrainian but also provides a straightforward way to model the observed crosslinguistic differences with OS. Section 5 offers our conclusions.

2 | NOVEL DATA FROM UKRAINIAN

OS refers to movement of an object to a higher preverbal landing site (vP edge), a movement that is claimed to have certain interpretative correlates, namely the loss of nonspecific readings (Chomsky 2001, Diesing 1996, Diesing & Jelinek 1993, Holmberg 1999, Thráinsson 2001). Such a semantic effect of object movement to a preverbal position in Ukrainian is demonstrated in (3), where the adverb *dviči* 'twice' marks the edge of the vP. In a context like this, *mjačyk* 'ball' in (3b) can only be understood as referring to a specific ball that is salient for the participants of the conversation.

(3) a. Divčynka dviči kynula mjačyk.
girl.NOM twice threw ball.ACC
'The girl threw a (possibly different) ball twice.'

b. Divčynka mjačyk dviči kynula.
girl.NOM ball.ACC twice threw
'The girl threw the/a certain ball twice.'

Similar effects have been found with Ukrainian ditransitives (Mykhaylyk et al. 2013). Thus, in (4), the OSed goal argument must be interpreted as specific, confirmed by the fact that it takes wide scope with respect to the adverb *dviči* so that the same girl must be involved in each act of book giving.

(4) Petryk divčynci dviči dav knyhu.
Peter.NOM girl.DAT twice gave book.ACC
'Peter gave a certain girl some book or other on two occasions.'

In addition to allowing OS, Ukrainian shows scope ambiguity in transitive sentences as well as scope freezing in ditransitives and the 'spray'/'load' alternation that is parallel to the scope freezing found in these constructions in English (Antonyuk 2015), thus providing a testing ground for the aforementioned crosslinguistic predictions of the Superiority account of scope freezing.

2.1 | The Ukrainian 'spray'/'load' alternation

To demonstrate that the phenomenon of scope freezing in Ukrainian is the same as that known from the English double-object construction since Larson 1990, we will briefly discuss the 'spray'/'load' construction. Like the English double-object construction, the 'with' variant of the Ukrainian 'spray'/'load' construction exhibits scope freezing (as first noted for English in Schneider-Zioga 1988).

First, consider the following examples from English, provided by Kearns 2011: 218–219.

(5) a. Jones loaded [the hay] onto the truck ...
#... and put the leftover hay in the barn.
... and there was still room for the piano.

b. Jones loaded [the truck] with the hay ...
#... and there was still room for the piano.
... and put the leftover hay in the barn.

The characteristic property of the 'spray'/'load' alternation is that either of the internal arguments can be realized as the direct object: thus, *the hay* in (5a) versus *the truck* in (5b) (see Rappaport-Hovav & Levin 1988). These examples also demonstrate another well-known property of the 'spray'/'load' alternation, namely the "holism effect," meaning that the direct object is interpreted holistically, as totally "used up." Thus, in (5a), the hay is understood as being fully loaded onto the truck, with no leftover hay. In (5b), with the truck as the direct object, it is interpreted as being fully loaded with hay, so that there can be no space left to load other objects.

Kearns also discusses the sentences in (6), which demonstrate the key entailment relations that exist between the two alternants: the 'with' variant is known to entail the locative variant but not vice versa.

(6) a. *Jones loaded the truck with hay* entails *Jones loaded hay onto the truck*.
b. *Jones loaded the hay onto the truck* does not entail *Jones loaded the truck with hay*.

Rappaport-Hovav & Levin 1988 analyzes the 'with' variant as semantically more complex, containing the other variant—hence the entailment relation. Interestingly, the 'with' variant is the one that is also surface-scope frozen, as (7b) illustrates, similarly suggesting that such sentences are the more complex/derived cases in an otherwise scope-fluid language.[2]

(7) a. Jones loaded some hay on every truck.
$\exists > \forall, \forall > \exists$

b. Jones loaded some truck with every type of hay.
$\exists > \forall, *\forall > \exists$

[2]While this observation may seem trivial due to the fact that the majority of doubly or multiply quantified sentences in English are scopally ambiguous, with scope freezing only observed in the double-object construction and the 'with' variant of the 'spray'/'load' alternation, this is not the view taken in Bruening 2001, where scope freezing is the result of the Shortest Attract–obeying and Superiority-obeying feature-checking system, with scope ambiguity requiring a separate analysis in each case. See Larson et al. 2019 for a detailed discussion of this point.

Let us now take a look at the Ukrainian 'spray'/'load' construction. The 'spray'/'load' alternation at first glance appears to be not as productive in Ukrainian as it is in English, but it is still possible to identify a number of verbs that clearly belong to this group.[3] The holistic effect associated with the direct object holds of the Ukrainian examples as well. The direct objects *pal'ne* 'gas' in (8a) and *bak* 'tank' in (8b) are interpreted as being fully "used up" in the event described; similarly, the entailment relation whereby the 'with' variant entails the locative frame is observed for Ukrainian as well. Finally, the Ukrainian counterpart of the English 'with' variant is surface-scope frozen too, as (8d) shows, in contrast to (8c).

(8) a. Myhajlo zalyv pal'ne v bak. Does not entail (8b)
Michael poured gas.ACC into tank.GEN
'Michael poured gas into the tank.'

b. Myhajlo zalyv bak pal'nym. Entails (8a)
Michael filled tank.ACC gas.INS
'Michael filled the tank with gas.'

c. Myhajlo zalyv jakyjs' vyd pal'noho v kožen
Michael poured some type.ACC gas.GEN into every
bak.
tank.GEN
'Michael poured some type of gas into every tank.'
∃ > ∀, ∀ > ∃

d. Myhajlo zalyv jakyjs' bak kožnym vydom
Michael filled some tank.ACC every type.INS
pal'noho.
gas.GEN
'Michael filled some tank with every type of gas.'
∃ > ∀, *∀ > ∃

We assume that the parallelism in semantic and syntactic properties that is demonstrated above justifies direct comparisons and the relevance of our findings for theories of scope freezing formulated based predominantly on English data.

2.2 | Patterns of interaction between OS and quantification in Ukrainian

Since Ukrainian is a language that both allows OS and exhibits scope freezing in ditransitives, it is instructive to examine the properties of Ukrainian OS when both internal arguments are realized as QPs.

As shown in (9), subjecting the higher object of the scopally frozen 'with' variant, the direct object, to OS does not change available scope relations, with surface scope still being the only available interpretation (just as in (8d)). The direct object is now, however, necessarily interpreted

[3]The group of such alternations in Ukrainian is in fact quite large if one includes verbs where the two alternating frames are realized with different verbal-aspectual prefixal morphology.

as specific, which makes the lack of inverse scope in (9a) even more strikingly obvious. When both objects are subjected to OS, as in (9b), the sentence is still interpreted with frozen surface-scope relations, but it also means that for some specific tank, Michael poured every type of gas belonging to some salient or previously mentioned set into that tank; that is, *both* objects are now necessarily interpreted as specific.

(9) a. Myhajlo jakyjs' bak zalyv kožnym vydom pal'noho.
Michael some tank.ACC filled every type.INS gas.GEN
'Michael filled some specific tank with every type of gas.'
∃ > ∀, *∀ > ∃

b. Myhajlo jakyjs' bak kožnym vydom pal'noho zalyv.
Michael some tank.ACC every type.INS gas.GEN filled
'Michael filled some specific tank with every type of gas.'
∃ > ∀, *∀ > ∃

The semantics of the object(s) undergoing OS in Ukrainian can be made more precise by the use of the adverb *dviči* 'twice', which marks the edge of the vP. Thus, in both (10a) and (10b), OS entails wide scope of the shifted object with respect to the adverb, while the in-situ object in (10a) is ambiguous and can take either narrow or wide scope with respect to the adverb.

(10) a. Myhajlo jakyjs' bak dviči zalyv kožnym vydom pal'noho.
Michael some tank.ACC twice filled every type.INS gas.GEN
'Michael filled some specific tank on two occasions with every type of gas.'
∃ > twice > ∀: There is a tank *x* such that Michael filled *x* on two occasions with every type of gas (i.e., he mixed the different types of gas in *x*).
∃ > ∀ > twice: There is a tank *x* such that for every type of gas *y* Michael filled *x* with *y* on two separate occasions (he did not mix different types of gas).

b. Myhajlo jakyjs' bak kožnym vydom pal'noho dviči zalyv.
Michael some tank.ACC every type.INS gas.GEN twice filled
'Michael filled some specific tank with every type of gas twice.'
∃ > ∀ > twice: There is a tank *x* such that for every type of gas *y* Michael filled *x* with *y* on two separate occasions (he did not mix different types of gas).
***∃ > twice > ∀** (no reading that asserts that Michael mixed the different types of gas)

The crucial observations about the data in (9) and (10) are thus the following. While OS preserves the scope relations observed in the postverbal field (scope freezing in this case), scope judgments and specificity judgments diverge in some cases. Thus, a QP can be interpreted with fixed narrow scope (as the QP *kožnym vydom pal'noho* is in (9b) and (10b)) yet still be imparted with the specific interpretation as a result of having undergone OS. Another important observation (to be discussed in depth in section 4) is the lack of Holmberg's Generalization effects: raising of the object(s) in Ukrainian is clearly not dependent on verb movement in any way (cf. Holmberg 1986, 1999, among others).

The two objects can also undergo OS in the opposite order.[4] As (11a) illustrates, the object in instrumental case (the counterpart of the English *with* phrase) can be raised to the left of the verb to the exclusion of the direct object, which remains postverbal, resulting in the shifted object being interpreted as a contextually salient/specific type of gas while the nonshifted direct object remains ambiguous between the specific and nonspecific interpretations. The two objects can also *both* undergo raising in this order, as in (11b), with the result that both objects are now obligatorily interpreted as specific.

(11) a. Mykhailo jakymos' vydom pal'noho zalyv kožen IO V DO
Michael some type.INS gas.GEN filled every
bak.
tank.ACC
Lit. 'Michael with some type of gas filled every tank.'
∃ > ∀, ?∀ > ∃
= 'Michael poured some specific type of gas into every tank.'

b. Mykhailo jakymos' vydom pal'noho kožen bak IO DO V
Michael some type.INS gas.GEN every tank.ACC
zalyv.
filled
Lit. 'Michael with some type of gas every tank filled.'
∃ > ∀, ∀ > ∃
= 'Michael poured some specific type of gas into each of the tanks.'

As before, the sentences with the quantificational QP *dviči* 'twice' can be used as our controls, with shifted objects necessarily taking wide scope with respect to the adverb, which marks the left edge of the vP, while the nonshifted object can scope either above or below the adverb:[5]

[4]Assuming an asymmetric relation between the two objects of any ditransitive predicate (see, e.g., Bailyn 1995 and 2012 on Russian, with the discussion there carrying over to Ukrainian), the fact that *either* object can undergo raising via OS before the other seemingly suggests that OS in Ukrainian is not Superiority obeying. We show in sections 2.3 and 3 that this flouting of Superiority is merely apparent and that Ukrainian OS does in fact obey Superiority (we are grateful to the *Syntax* editors for urging us to explore this issue).

[5]Marcel den Dikken (personal communication) points out that using controls with quantificational adverbs such as *dviči* is important for ruling out analyses of OS that suggest that the two objects may be undergoing OS as a syntactic unit.

(12) a. Mykhailo jakymos' vydom pal'noho dviči zalyv IO V DO
Michael some type.INS gas.GEN twice filled
kožen bak.
every tank.ACC
= 'Michael filled every tank with some specific type of gas on two occasions.'

b. Mykhailo jakymos' vydom pal'noho kožen bak IO DO V
Michael some type.INS gas.GEN every tank.ACC
dviči zalyv.
twice filled
= 'Michael filled each of the tanks with some specific type of gas on two occasions.'

Interestingly, this order of arguments, which is scopally ambiguous before the application of OS to one or both argument phrases, remains ambiguous *after* OS. Thus, the sentences in (9)–(10) and (11)–(12) differ with respect to the actual scopes observed, but what remains constant across these cases are the following two observations. (i) The scope patterns observed in the postverbal field carry over to the preverbal field; that is, QP scope is preserved under OS.[6] And (ii) we observe divergence of scope and specificity judgments: for example, in (11a) the instrumental-case-marked object must be interpreted as specific, having undergone OS, yet it can take either wide or narrow scope with respect to the postverbal direct object. In (11b), both objects are obligatorily interpreted as specific, yet either one can scope below or above the other object.

Note that the Superiority account of scope freezing does not predict such data. Recall that on Bruening 2001's account the scope freezing observed with the double-object construction or the 'with' variant of the 'spray'/'load' alternation results from the particular assumptions about the verb-phrase structure (namely, the asymmetrical c-command relations between the two objects) coupled with the assumption that QR (as well as OS) obeys Superiority. Specifically, for Bruening scope freezing in such sentences results from the structurally higher QP being attracted by the optional P feature of little v to vP first, with the structurally lower one, if it is attracted by a P feature as well, being forced to "tuck in" below (per Richards 1997). On this view, the lower of the two QPs can never be attracted to vP unless the higher one has already undergone such feature-driven movement. Thus the Superiority account predicts scope freezing should track OS: it should obtain every time a QP undergoes OS. This, in turn, means that even sentences that are scope ambiguous in the postverbal field will exhibit scope freezing once OS applies. What we observe departs quite significantly from such predictions. The generalization afforded by the Ukrainian data is that (modulo the wide-scope bias in cases such as (11a) and (12a); see footnote 6) OS always preserves scope relations that exist in the postverbal field: that is, scope-ambiguous relations between the two objects to the right of the

[6]It should be noted that subjecting only one of the object QPs to OS creates a surface-scope bias for the shifted object in an otherwise scope-ambiguous sentence (indicated with a question mark in (11a)). Nevertheless, the observed preference for the wide-scope interpretation of the shifted object QP is merely that, a preference, arguably induced by the shifted QP's now-obligatory specific interpretation. This becomes especially clear when examining the corresponding scope-frozen sentences in interaction with OS: that is, a QP may be obligatorily specific when shifted, yet it must still be interpreted in the scope of the other QP, whether the latter has undergone OS as well or, especially strikingly, when the QP that must take wide scope remains postverbal.

verb remain scope ambiguous upon OS, while the frozen surface-scope relations observed in the postverbal field remain undisturbed by OS.

2.3 | Quantification in the postverbal field

The data so far, however, present an incomplete picture. The two objects in Ukrainian may invert in the postverbal field. The two orders in (13a) and (13b), both equally acceptable, are due to an overt permutation of arguments whereby the structurally lower of the two internal arguments raises overtly above the structurally higher one. We will refer to this movement as *argument inversion*.[7,8]

(13)	a.	Mykhailo	zalyv	jakymos'	vydom	pal'noho	jakyjs'	V IO DO
		Michael	filled	some	type.INS	gas.GEN	some	
		bak.						
		tank.ACC						
		Lit. 'Michael filled with some type of gas some tank.'						
	b.	Mykhailo	zalyv	jakyjs'	bak	jakymos'	vydom	V DO IO
		Michael	filled	some	tank.ACC	some	type.INS	
		pal'noho.						
		gas.GEN						
		Lit. 'Michael filled some tank with some type of gas.'						

In light of (13), (11)–(12) might not be a case of Superiority-violating movement at all but rather a case of Superiority-respecting, specificity-related feature checking derived from the already inverted order in (13a). If this is so, that is, if the quantifiers are inverted in the postverbal field, OS in Ukrainian could be analyzed as Superiority-respecting P-feature checking after all, in line with Bruening 2001.

What is irreconcilable with Bruening's account, however, is the scope relations observed in such contexts. If P-feature checking observes Superiority, then OS should presumably only exhibit the frozen-surface-scope interpretation since any movement of two QPs will have to lock in their scope: that is, OS should correlate with scope freezing. However, the Ukrainian facts do not exemplify this generalization. Rather, as stated earlier, the data exemplify the generalization that whatever scope interpretations are established in the postverbal field will carry over to the preverbal field.

[7]Argument inversion is available not only for the 'spray'/'load' verbs but for any ditransitive verb in Ukrainian. Ukrainian argument inversion is also arguably identical to its Russian counterpart, discussed in Antonyuk 2015, 2020, Bailyn 1995, 2012, among others. We follow these works in taking argument inversion to be a derivational phenomenon rather than representing two independently derived unrelated structures in each case. The fact that restrictions on scope (i.e., scope freezing) arise as a result of argument inversion, as discussed in the main text, is also strongly suggestive of its derivational nature.

[8]Antonyuk 2015 argues that the scope freezing found with Ukrainian ditransitives supports derivational accounts (Larson 1988, 1990; see Larson 2014 and Hallman 2015 for recent derivational accounts of English ditransitives, Hallman 2018 for Syrian Arabic, and Antonyuk 2015 and 2020 for Russian). Note that while we rely on the scope-freezing diagnostic introduced in Antonyuk 2015, contra that work we do *not* claim that 'spray'/'load' alternations in East Slavic should receive a derivational account.

Consider the following examples. In (14b), which according to Bruening is the base order, scope is frozen in the surface order, just as it is in the English counterpart; this is consistent with Bruening's analysis. In the inverted order in (14a) both scopal interpretations are possible.[9]

(14)	a.	Mykhailo	zalyv	jakymos'	vydom	pal'noho	kožen	V IO DO
		Michael	filled	some	type.INS	gas.GEN	every	
		bak.						
		tank.ACC						
		Lit. 'Michael filled with some type of gas every tank.'						
		∃ > ∀, ∀ > ∃						
	b.	Mykhailo	zalyv	jakyjs'	bak	kožnym	vydom	V DO IO
		Michael	filled	some	tank.ACC	every	type.INS	
		pal'noho.						
		gas.GEN						
		Lit. 'Michael filled some tank with every type of gas.'						
		∃ > ∀, *∀ > ∃						

Crucially, this pattern of scope interpretation persists under OS of one quantifier, as in (15), or both quantifiers, as in (16). That is, OS neither disrupts scope freezing in the scopally frozen sentences nor induces scope freezing in the scopally ambiguous ones.

(15)	a.	Mykhailo	jakymos'	vydom	pal'noho	zalyv	kožen	IO V DO
		Michael	some	type.INS	gas.GEN	filled	every	
		bak.						
		tank.ACC						
		Lit. 'Michael with some type of gas filled every tank.'						
		∃ > ∀, ?∀ > ∃						
	b.	Mykhailo	jakyjs'	bak	zalyv	kožnym	vydom	DO V IO
		Michael	some	tank.ACC	filled	every	type.INS	
		pal'noho.						
		gas.GEN						
		Lit. 'Michael some tank filled with every type of gas.'						
		∃ > ∀, *∀ > ∃						

[9]Note that what permutes in these pairs is the two internal arguments while the relative order of quantificational determiners (∃ > ∀) is kept the same, so that we can continue to evaluate the possibility of inverse scope (see Pietroski & Hornstein 2002 for a detailed discussion).

(16) a. Mykhailo jakymos' vydom pal'noho kožen bak IO DO V
Michael some type.INS gas.GEN every tank.ACC
zalyv.
filled
Lit. 'Michael with some type of gas every tank filled.'
∃ > ∀, ∀ > ∃

b. Mykhailo jakyjs' bak kožnym vydom pal'noho DO IO V
Michael some tank.ACC every type.INS gas.GEN
zalyv.
filled
Lit. 'Michael some tank with every type of gas filled.'
∃ > ∀, *∀ > ∃

The generalization that OS preserves scope relations established in the VP before the application of OS holds for the locative frame of the 'spray'/'load' alternation as well. The base structure in (17), which is scopally ambiguous, feeds OS of one or both arguments, as (18) shows.

(17) Myhajlo zalyv jakyjs' vyd pal'noho v kožen bak.
Michael poured some type.ACC gas.GEN into every tank.ACC
'Michael poured some type of gas into every tank.'
∃ > ∀, ∀ > ∃

(18) a. Myhajlo jakyjs' vyd pal'noho zalyv v kožen bak.
Michael some type.ACC gas.GEN poured into every tank.ACC
'Michael some type of gas poured into every tank.'
∃ > ∀, ?∀ > ∃

b. Myhajlo jakyjs' vyd pal'noho v kožen bak zalyv.
Michael some type.ACC gas.GEN into every tank.ACC poured
'Michael some type of gas into every tank poured.'
∃ > ∀, ∀ > ∃

The crucial cases for the evaluation of Bruening's analysis as applied to Ukrainian are thus the cases in which scope is flexible in the postverbal field and remains flexible in the preverbal field. Given the possibility of argument inversion in the postverbal field, the claim that OS is Superiority-respecting feature checking is indeed compatible with the observed word orders but predicts, in the OS contexts, scope freezing that we simply do not observe. While we have not yet established what kind of operation argument inversion is (see section 4.1 for discussion), it is clear that it derives the order of internal arguments that is the opposite of that available in the base structure, whatever one's assumptions about the base may be. Argument inversion thus ensures that either internal argument can be attracted by the P feature of little v first, by placing the structurally lower object in a position where it can be attracted by the P feature. However, if P is responsible for determining the scopal order of the two objects, as per Bruening 2001, we expect that as soon as an object undergoes OS, this will lock in scope relations, ensuring that whatever object is attracted by P second (or does not undergo OS at all) will necessarily scope below the one that was attracted by little v first due to "tucking

in."[10] The expectation of similarities in behavior for OS and QR as per Bruening 2001 is not met. What we observe instead is that OS and QR behave as independent, distinct mechanisms.

3 | DISCUSSION

The novel data presented in section 2 suggest that the original formulation of the Superiority account of scope freezing, the one given in Bruening 2001, cannot account for the interaction of QP scope and specificity-inducing OS in Ukrainian. One might wonder, however, whether the Superiority account can be made to work with some additional assumptions or whether the empirical data can be reanalyzed in a way that either is consistent with the Superiority account or puts them outside its purview.

One conspicuous way of explaining away the problem presented by the Ukrainian OS data is to assume that this movement is of the kind that undergoes syntactic reconstruction, thus accounting for the scope ambiguity of the examples that Bruening's account predicts to be scope frozen upon OS. This might seem like an attractive solution since the two QPs in their OSed positions have the same scopal interpretation as they do in their postverbal position, which is precisely what "reconstruction" is. However, this option is excluded for our data, given that specificity-inducing OS is the kind of movement that affects interpretation and we never see effects of its "undoing." That is, irrespective of whether the shifted QP object has wide or narrow scope, once OS has applied, interpretation is affected accordingly. If reconstruction were in principle possible, we would expect to find at least some cases where OS has applied yet its semantic correlate, the specific/partitive interpretation, is not found. Such cases are unattested, however, posing a significant challenge for the reconstruction-based solution.[11]

Another possibility, raised by an anonymous reviewer, is suggested by the fact that overt QR and OS are known to target distinct landing sites in Icelandic (Svenonius 2000). Thus, the reviewer wonders if amending Bruening's account so that QR and OS target distinct landing positions would ensure that the Superiority account could still capture our data. This modification would seem not only plausible but, indeed, necessary, in view of the fact that the landing sites of QR and OS are distinct in Ukrainian as well, with OS targeting a higher position to the left of vP (as indicated by the linear order of shifted objects with respect to a quantificational adverb, which shifted objects must precede). We argue, however, that this modification will nevertheless not be sufficient to salvage the Superiority account, for reasons laid out below. Having unpacked the predictions of this account thus far, we see that in fact *any* instance of OS followed by "tucking in" will necessarily lock in scope relations between the two QPs: Bruening's mechanism, quite simply, overgenerates scope freezing. Recall now that in Bruening 2001 scope freezing in English is inherently tied to an antisymmetric relation that is constrained by Superiority, with the structurally lower QP also undergoing movement and tucking in below it. However, we have also seen that this is where Ukrainian is different from English in that some structures may involve an additional step, argument inversion, and we have seen that scope freezing in Ukrainian appears

[10]We are grateful to Peter Hallman (personal communication) for pointing out this prediction to us.

[11]Bhatt & Anagnostopoulou 1996 discusses morphologically marked specificity-related OS in Hindi ditransitives, arguing that morphological marking of specificity is insufficient and that overt movement of the object outside the VP is still required (in line with Diesing 1992). Crucially, Bhatt & Anagnostopoulou show that this movement, called short scrambling, does not reconstruct (unlike scrambling to a sentence-initial position, which does). These findings thus align with our conclusions about the lack of reconstruction for OS in Ukrainian.

to be precisely the result of this operation. One might ask, then, whether incorporating argument inversion into the equation could derive the data distribution after all. Indeed, it appears that it can, but only partially. Thus, if we assume that argument inversion contributes to scope freezing, then each subsequent step of movement will continue to preserve this frozen scope relation (presumably because each instance of movement is constrained by Superiority and tucking in). This is just as we observe in the data, with OS indeed preserving previously established frozen scope relations. However, it is the scopally ambiguous base order (i.e., one that arguably does not include the argument-inversion step) that will continue to be a problem, since as soon as movement takes place, as long as it is constrained by Superiority and tucking in, it is predicted to result in scope freezing. This is not supported by our data. OS in Ukrainian *always* preserves scope relations, that is, the structure that is scope ambiguous at the base will remain ambiguous after OS.[12]

To conclude this section, one could argue that the Ukrainian OS data could indeed be characterized as Superiority-obeying feature-driven movement of an object QP followed by the tucking in of the second object QP, which is exactly the configuration that on Bruening's account should derive scope freezing. However, while it appears that OS may indeed be constrained by Superiority and preserve the scope freezing established within the VP, it is clear that OS itself does not cause scope freezing, and so we conclude that Superiority plus tucking in must not be the mechanism responsible for the phenomenon of scope freezing, contra Bruening 2001. Overt argument inversion, on the other hand, does have this effect. While the question of why or how argument inversion leads to scope freezing is outside the scope of this remark, in the next section we will sketch an account of what might constrain OS in Ukrainian. In particular, we will attempt to derive the order-preservation effects observed in our data and will situate our proposal in the context of crosslinguistic research into the properties of OS. We will argue that the Ukrainian data instantiate an order-preservation effect familiar from the literature on Scandinavian OS (Müller 2001, Sells 2001, Williams 2003, among others) and that the cyclic-linearization account of Fox & Pesetsky 2005 is particularly well suited to capture all the data patterns we observe. Crucially, on the analysis advanced here, Holmberg's Generalization effects, fully absent with Ukrainian OS, emerge not as the defining property of OS, as is widely assumed in the literature (Anagnostopoulou 2005, Roberts 1995, Vikner 2006, among others), but as merely a byproduct, an artifact of the linearization protocols enforced in Scandinavian languages, as was indeed suggested in Fox & Pesetsky's original proposal.

4 | THE PROPOSAL

Before we lay out the proposal, it is important to address the nature of the argument-inversion operation, since it appears to be responsible for the ability of the structurally lower internal argument to undergo OS prior to or to the exclusion of the structurally higher object. As will become

[12]Marcel den Dikken (personal communication) suggests that the generalization that OS preserves scope relations could also be derived by postulating variability in the placement of the verb in Ukrainian. This would mean that placement of the objects behind or in front of the verb has no effect on scope. It seems to us that this possibility is precluded for our data for several reasons. First, as Den Dikken himself points out, using a quantificational adverb such as *dviči* is crucial in controlling for this. Secondly, manipulating the placement of the verb would not account for the interpretational effects we observe with OS. Thus, not only does OS of either one or both objects correlate with the loss of the nonspecific reading, but additionally, in sentences that are scopally ambiguous before OS, shifting only one object creates a wide-scope bias for the shifted QP. Neither of these interpretational correlates of OS is derivable under the variable-verb-placement approach.

clear, argument inversion is also an operation that both establishes further similarity with the OS in Scandinavian languages and delineates the limits of such similarity.

4.1 | On the nature of the argument-inversion operation

While the discussion in section 3 explored OS mostly in terms of what it is not (e.g., as we showed in section 2, OS does not cause scope freezing, does not undergo syntactic reconstruction, and does not obey Holmberg's Generalization), we are still left with plenty of questions about what it is. Specifically, what kind of movement is Ukrainian OS, A or Ā, and what is the motivation behind argument inversion (which is implicated in the OS of the structurally lower internal argument of ditransitive verbs, allowing it to proceed in a Superiority-obeying fashion)?[13]

In an account such as Bruening's, which draws many parallels between OS and QR, it is natural to treat OS as Ā movement akin to QR and thus to expect similarities in behavior and perhaps also complex interactions between the two movement operations. We have seen, however, that OS in Ukrainian is crucially *not* like QR in that it does not give rise to scope freezing of its own and, unlike QR, never reconstructs, thus suggesting it is in fact an instance of A movement. Furthermore, it appears justified to conclude that OS in Ukrainian is a purely syntactic mechanism that gives rise to well-defined semantic effects: quantificational objects undergoing OS over a quantificational adverb must take wide scope with respect to the adverb, and, once shifted, an object must be interpreted as specific[14] (cf. Holmberg 1999; see Mykhaylyk 2011 on the semantics of shifted objects in Ukrainian).

Motivating argument inversion is a much more involved matter we can discuss only briefly here for space reasons. On the one hand, argument inversion has syntactic and semantic consequences of its own. For example, it leads to new binding relations:[15]

(19) a. Dol'a podaruvala nas odyn odnomu
destiny.NOM gifted us.ACC one another.DAT
'Destiny gifted us to each other.'

b. Dol'a podaruvala nam odyn odnoho
destiny.NOM gifted us.DAT one another.ACC
'Destiny gifted us with each other.'

[13]We are grateful to an anonymous reviewer for urging us to explore the nature of the argument-inversion step.

[14]Both of these points provide further support for the conclusion that there is no reconstruction with OS.

[15]The reciprocal-binding data in (19) are modeled on the parallel Russian examples cited in Bailyn 2012, credited to Asarina 2005. The ability of both the accusative-marked theme argument and the dative-marked goal argument to bind a reciprocal when in the immediately postverbal position is meant to demonstrate the A nature of the argument-inversion movement that results in this order. The analysis in Bailyn 2012 is that the goal argument is base generated in the complement,VP position below the c-commanding theme, generated in spec,VP. The ability of the goal to bind into the theme reciprocal after argument inversion demonstrates that argument inversion constitutes A movement. Similar binding data is used in Dyakonova 2009 to argue for the exact opposite view, namely that the theme is generated in complement,VP and acquires the ability to bind into the goal due to the A nature of this argument permutation. Based on available data, we consider argument inversion to be A movement rather than Ā movement.

Furthermore, when the two internal arguments are quantificational, argument inversion results in scope freezing, as demonstrated in section 2.3.[16] On the other hand, argument inversion also affects the information-structure-related properties of the sentence, affecting which argument is understood as part of old, accommodated information and which must be understood to represent new information/the focus of the sentence.[17] Consider the sentences in (20)–(22), where the internal arguments are realized as bare NPs. Produced with neutral intonation and without any embedding context, all six sentences are readily understood with the sentence-final NP being the focus and the rest of the sentence being interpreted as given, presupposed material.

(20) a. Marijka podaruvala knyhu divčyntsi.
Mary.NOM presented book.ACC girl.DAT
'Mary presented the book to a little girl.'

b. Marijka podaruvala divčyntsi knyhu.
Mary.NOM presented girl.DAT book.ACC
'Mary presented the girl with a book.'

(21) a. Marijka zasadyla ljubystkom pole.
Mary.NOM planted lovage.INS field.ACC
'Mary planted lovage in the field.'

b. Marijka zasadyla pole ljubystkom.
Mary.NOM planted field.ACC lovage.INS
'Mary planted the field with lovage.'

(22) a. Marijka zaprosyla koleh na večirku.[18]
Mary.NOM invited colleagues.ACC.PL on party.PREP
'Mary invited her colleagues to a party.'

b. Marijka zaprosyla na večirku koleh.
Mary.NOM invited on party.PREP colleagues.ACC.PL
'Mary invited colleagues to the party.'

As discussed extensively in Mykhaylyk 2011, in addition to the OS strategy, Ukrainian possesses a wide range of lexical elements that, if used to modify (either of) the postverbal NPs in (20)–(22), would similarly disambiguate the sentences in favor of the intended interpretation. In the absence of any such lexical cues, however, irrespective of whether the word order is base generated (i.e., for us, all the (a) examples in (20)–(22)) or derived (i.e., all the (b)

[16]As detailed in Antonyuk 2020, the situation is more complex in that there is one group of ditransitives where argument inversion does not result in scope freezing proper but instead leads to a strong surface-scope bias on the derived order.

[17]This issue is discussed at length in the literature on Russian (see esp. Bailyn 2012 and Dyakonova 2009 for two largely opposite views that nevertheless converge on this point).

[18] PREP = prepositional case.

examples), the immediately postverbal, non-sentence-final NP of a ditransitive is preferentially interpreted as discourse given and topical, and the final NP is obligatorily interpreted as focal. Thus, one way to interpret such data would be that, in a discourse-configurational language such as Ukrainian, the motivation for the argument-inversion step in the (b) examples in (20)–(22) is the need to express a particular information-structural partition of a sentence.[19]

Furthermore, the fact that this movement is free to take place without causing a locality violation could mean that it is in fact driven by feature-checking considerations in the sense of Rizzi 2004, with the structurally lower XP being more richly specified than the higher one in terms of its featural content.[20,21] (See also footnote 19.)

As for the landing site of argument inversion, any XP can raise into it (e.g., a dative-marked goal in (20b), an accusative-marked theme in (21b), and a PP argument in (22b)). The unrestricted nature of argument inversion strongly suggests that movement into this position is not associated with case assignment (cf. Haddican & Holmberg 2019) but provides visibility for the phrase that moves there in terms of its ability to participate in further probe–goal relations.[22] Chomsky 2001 argues that the vP edge is endowed with certain interpretive properties, which accounts for the semantics of shifted objects crosslinguistically. Mykhaylyk 2011 argues extensively for the universality of these vP-edge interpretive properties based on the Ukrainian data (contra Lavine & Freidin 2002, which argues that spec,vP is not projected in Ukrainian). We therefore hypothesize that in Ukrainian (and other languages with similar properties), VP must be a phase, too, and that accordingly its edge holds a similarly prominent status with respect to further syntactic movement and to the interpretational correlates of such movement.[23]

[19]Antonyuk 2021a proposes a rather different account, one that is based on the finding that argument inversion leads to the advancement of a [+animate] argument to a more prominent position (i.e., preceding and c-commanding its coargument) within the vP in a wide range of constructions and across verb classes. It is argued that animacy plays a central role in the syntax of (East) Slavic and the requirements imposed by animacy are likely the reason argument inversion is generally available. Argument inversion itself is thus crucially argued not to take place for information-structural reasons, though its application is shown to have strong information-structure-relevant consequences.

[20]Here we assume, in accord with Bošković 2007, that movement to the phase edge is driven by the feature-checking needs of an XP carrying the feature rather than those of a probe.

[21]A prominent idea in the Slavic literature is that the relevant trigger has to do with givenness (see esp. Kučerová 2007, 2012, Mykhaylyk et al. 2013, among others). There is also an interesting body of research suggesting that topicality is not only an important feature that may affect argument-structure alternations (see, e.g., Jiménez Fernández & Rozwadowska 2016**)** but may sometimes be *part* of argument structure: see especially Onea & Mardale 2020. For the purposes of this remark, it is not necessary to identify the featural trigger of argument inversion.

[22]Note that in contrast to Scandinavian languages, OS of PPs in Ukrainian is licit, thus strongly suggesting that it is not driven by case-related considerations (cf. Haddican & Holmberg 2019, Holmberg 1986, Holmberg & Platzack 1995, Vikner 1994, among others).

[23]There are numerous cases where the argument-inversion step is not followed by subsequent movement. Argument inversion is *always* a licit step in its own right in Ukrainian (cf. Anagnostopoulou 2003). This fact provides further support for the claim that argument inversion has its own syntactic and interpretational import, since, by Economy, it would be prohibited if it did not have an effect on interpretation and/or did not feed any subsequent syntactic movement (Fox 1999).

4.2 | Towards an account of Ukrainian OS and its interactions with quantification

4.2.1 | Cyclic linearization and Scandinavian OS

Fox & Pesetsky (henceforth F&P) 2005 proposes an architecture for the syntax–phonology interface, at the heart of which is a linearization algorithm, carried out phase by phase (Spellout domain, in F&P's system). According to this linearization algorithm, when Spellout applies, the elements inside a Spellout domain are linearized in the order in which they appear at that point, with subsequent domains obligatorily maintaining the linearization order established when the original domain was spelled out. Thus, once a domain D has been built, with the domain-internal order linearized as $[_{D}$ X Y Z], a subsequent Spellout domain D′ may not violate this order: thus *$[_{D'}$ Y $[_{D}$ X t_{Y} Z]] and *$[_{D'}$ Z $[_{D}$ X Y t_{Z}]]. An interface thus configured derives the successive-cyclic nature of movement, then, since the proposed linearization algorithm will only tolerate (i) movement that proceeds through the edge of Spellout domains or (ii) movement that does not proceed through the edge yet takes place in a way that does not contradict the linearization established at the spellout of the initial domain. The latter, according to F&P, is exactly what happens with Scandinavian OS. They argue that it is a type of movement that cannot proceed through the edge (presumably as a matter of parameterization), which, in turn, entails that it may take place only if higher material within an initial Spellout domain has undergone movement as well, in a way that preserves the original linearization: for example, $[_{D'}$ X Y $[_{D}$ t_{X} t_{Y} Z]] or $[_{D'}$ X Y Z $[_{D}$ t_{X} t_{Y} t_{Z}]].

In the cyclic-linearization framework of F&P, Holmberg's Generalization thus emerges not as an inalienable property of OS but rather as a predictable consequence of a parameterized restriction on OS that precludes it from taking place through the edge of Spellout domains. In order to derive the data on Scandinavian OS, F&P must also assume that VP and CP (but crucially not vP) are the relevant Spellout domains in Scandinavian languages. This is a necessary assumption, since Scandinavian OS is constrained relative to VP-internal material but the subject (assumed to be generated in spec,vP) is not constrained in a similar way, being able to occur either above the verb (when the subject is in spec,TP) or below it (when the verb raises to C).

Anagnostopoulou 2005 provides additional evidence for VP being the relevant domain. Subject-quantifier stranding under OS is grammatical in Scandinavian languages, as (23) and (24) illustrate, in contrast to the ungrammatical subject-quantifier stranding under OS in Korean and Japanese, exemplified by (25), where vP rather than VP is assumed to be the relevant domain, per Ko 2007.

(23) Lásu stúdentarnir greinina ekki allir? Icelandic
read the.students the.article not all
'Didn't the students all read the article?'

(24) Läste studenterna den inte alla? Swedish
read the.students it not all
'Didn't the students all read it?'

(25) *Haksayng-tul-i_1 maykewu-lul$_2$ t_1 sey-myeng t_2 Korean
student-PL-NOM beer-ACC three-CLF_{person}
masi-ess-ta.
drink-PST-DECL
'Three students drank beer.'

The data in (23) and (24) additionally suggest that object and subject XPs are not constrained relative to each other. This conclusion is supported by the possibility of OS over the subject:

(26) Därför gav mej Marit inte nagon present. Swedish
therefore gave me Marit not any present
'Therefore Mary did not give me any present.'
(Holmberg 1999)

Anagnostopoulou also discusses Swedish and Norwegian ditransitives, which show rather striking similarities to our Ukrainian data. Specifically, she points out that while Holmberg's Generalization is enforced in Swedish and Norwegian, direct objects in these languages can undergo OS across indirect objects (taken to be generated above direct objects), and she argues that this is possible exactly because the two objects may invert in the postverbal field, arguably because the two objects form a Spellout domain to the exclusion of the verb. The facts of Swedish and Norwegian OS can then be easily derived if the lower object crosses over the higher one and moves through the edge of this initial domain, as shown in (27a), thus establishing a linearization of the two objects that is the opposite of the base order. However, the movement through the second domain, which includes the verb (i.e., VP), will not take place through the edge, as shown in (27b); this means that when the second domain is spelled out, the object(s) will be linearized *after* the verb, and this order will then have to be maintained throughout the derivation, giving rise to Holmberg's Generalization effects.

(27) a. [$_{\text{domain B}}$ V [$_{\text{domain A}}$ DO IO t_{DO}]]
b. [$_{\text{domain B}}$ V DO [$_{\text{domain A}}$ t_{DO} IO t_{DO}]]

4.2.2 | Cyclic linearization and Ukrainian OS

We believe that F&P's cyclic linearization not only provides an adequate framework in which to derive the Ukrainian OS shape-preservation data but also offers a straightforward way of accounting for the crosslinguistic differences observed in the Ukrainian and the Scandinavian data. As we will show, the original framework proposed in Fox & Pesetsky 2005 will require only minimal modification in order to account for the totality of Ukrainian data. Let us see how the framework would handle the core cases of Ukrainian OS.

In accord with Fox & Pesetsky 2005, we take VP, crucially not vP, to constitute the initial Spellout domain that will provide the first linearization statement in Ukrainian. As is the case with Scandinavian OS, this is a necessary minimal assumption in order to account for the fact that Ukrainian OS is not constrained relative to the subject. As discussed in Anagnostopoulou

2005, the necessity of this assumption can be shown in several ways. First, Ukrainian OS, like Scandinavian OS, targets a position above a quantifier stranded by the subject:[24]

(28) Divčata knyhu (vsi) dviči (vsi) pročytaly.
girls.NOM book.ACC all twice all read.PST.PL
'All the girls have read the/this book twice.'

Additionally, Ukrainian routinely allows word orders in which the subject surfaces postverbally, thus being linearized after both the verb and its object(s):[25]

(29) a. Tsju knyhu bahato rokiv tomu podaruvala meni moja babusja.
this book.ACC many years ago present.PST.F me.DAT my grandmother.NOM
'This book was gifted to me many years ago by my grandmother.'

b. Tsju knyhu meni bahato rokiv tomu podaruvala moja babusja.
this book.ACC me.DAT many years ago present.PST.F my grandmother.NOM
'This book was gifted to me many years ago by my grandmother.'

The ability of the object to precede the subject or a quantifier floated by the subject indicates that in Ukrainian the domain relevant for linearization must exclude the subject; hence VP rather than vP must be the relevant domain, just as it must be in Scandinavian languages.

Furthermore, Anagnostopoulou 2005's treatment of object inversion under OS in Swedish and Norwegian seems to provide a ready solution that can accommodate the argument inversion observed in the Ukrainian OS data. Thus, we may want to assume that the two objects in Ukrainian similarly form a minimal domain that excludes the verb, with the lower object's ability to undergo movement through the edge of this domain deriving the ability of the two objects to be linearized in either order when Spellout applies.

However, how do we derive the facts of Ukrainian OS that differ from those of Scandinavian OS? Most conspicuously, how do we derive the absence of any Holmberg's Generalization effects in Ukrainian? Recall that F&P account for Holmberg's Generalization by proposing that OS is the kind of movement that, perhaps for parameterization reasons, cannot take place via the edge of Spellout domains (in Anagnostopoulou's treatment, this is true of the second Spellout domain, VP, as well as all the following ones, but not the first one, which includes the two internal arguments only). As a result of this restriction on the VP domain, the internal objects are constrained

[24]This example indicates only the quantifier-float positions of the subject that are relevant for our discussion. Crucially, if OS in Ukrainian were constrained relative to the subject, such instances would be ungrammatical, as indeed they are in Korean and Japanese (Ko 2007; see (25)).

[25]These examples, though in active voice, are translated with passive voice in order to convey the information-structural partition involved in subject-final sentences in Slavic.

in their movement relative to the verb (adverbs and negation are taken to be outside the VP domain, hence the ability of Scandinavian OS to move across them).

A natural solution is to posit that, in contrast to Scandinavian OS, OS in Ukrainian must *always* take place via the edge of Spellout domains:

(30) a. $[_{\text{domain B}}$ O2 V $[_{\text{domain A}}\ t_{O2}$ O1 $t_{O2}]]$ or
b. $[_{\text{domain B}}$ O2 O1 V $[_{\text{domain A}}\ t_{O2}\ t_{O1}\ t_{O2}]]$

This assumption by itself will derive the fact that Ukrainian OS never incurs Holmberg's Generalization effects. Notice now that this assumption by itself is also insufficient, since, "as is," it in fact derives the inverse of Holmberg's Generalization, observed with quantifier movement in Icelandic (Svenonius 2000): the fact that this movement is free with respect to VP-internal material but that VP-internal material, including the verb, may not precede a quantifier that has undergone this movement. F&P derive the inverse Holmberg's Generalization effects of Icelandic quantifier movement by suggesting that quantifier movement, unlike OS, must proceed through the edge of Spellout domains, which means the verb will be linearized after the QP when Spellout applies.

The task at hand, then, is more complex than it might seem at first glance: we need to derive the freedom of Ukrainian OS relative to the verb and also derive the freedom of verb movement relative to the shifted object(s). If this is correct, we do in fact need to ensure that the linearization protocols in place will derive the freedom of the verb relative to the shifted object(s).

Finally, while the question of whether the verb in Slavic ever moves to T is a matter of highly heated debate in the literature (Antonyuk 2021b, [to appear], Bailyn 1995, 2017, Bowers 1993, Dyakonova 2009, Kallestinova 2007, Koeneman & Zejlstra 2014, Slioussar 2007, among others), there is another reason why we believe one must ensure the linearization mechanisms will allow freedom of the verb relative to the object(s): the "optional" nature of OS and its interaction with prosody. Experimentally elicited data on Ukrainian OS (Antonyuk-Yudina & Mykhaylyk 2013) show that in cases where OS is expected (given contextual embedding that entails specificity of the object in question) but fails to apply, native speakers obligatorily repair such sentences with prosodic recontouring, which thus functions as an alternative means of signaling the specificity semantics associated with OS (Diesing 1996). This means two things. First, there is no true optionality with OS; there is merely a choice between encoding the relevant semantics syntactically (via XP movement) and prosodically (by assigning the strongest pitch accent to the verb, with the object(s) in question remaining VP internal and prosodically destressed). Second, assuming that successful accounts of linearization must be able to capture interface phenomena of this sort, the cases of prosodically encoded object specificity present a serious further problem for us to resolve. Let us consider one such case in detail.

The problem for theories of linearization that is posed by the syntax–semantics–prosody interface is readily apparent in, for example, transitive cases where linearization of the direct object with respect to the verb is at issue. Any configuration in which the direct object precedes the verb inside the VP Spellout domain will cause a linearization problem in a scenario in which the direct object remains VP internal.[26] One possible scenario to model is when a direct object that needs to

[26]Note that one's assumptions about the structure of the Slavic VP are inconsequential in this instance, given that movement to the edge of the Spellout domain is clearly always an option in Ukrainian. Thus, whether one assumes that the direct object is always generated in spec,VP (in accord with Bailyn 1995, 2010, 2012, among others) or as complement to the verb (Dyakonova 2009, Greenberg & Franks 1991, among others), a configuration $[_{\text{VP}}$ DO V] in the first case or $[_{\text{VP}}$ DO V $t_{\text{DO}}]$ in the second will still present the problem discussed here.

undergo OS in order to be interpreted as specific nevertheless remains unshifted, resulting in obligatory prosodic recontouring, as in (31).[27] This will result in a linearization conflict between the VP and CP Spellout domains, schematized in (32).

(31) Marijka pročyTAla (tu) knyhu.
Mary.NOM read that.ACC.F book.ACC.F
'Mary read the book.'

(32) a. $[_{CP}\ V\ [_{VP}\ DO\ t_V\ (t_{DO})]]$
b. Linearization statements
VP domain: DO > V
CP domain: V > DO

On the basis of the above, we conclude that ensuring the freedom of verb movement relative to the internal arguments is indeed crucial. We propose that the most straightforward way to do that (already anticipated by F&P) is to introduce the *timing* of head movement into the calculation. The proposal is then quite simple: the verb in Ukrainian must undergo head raising to v (and hence be outside the relevant Spellout domain containing the objects) prior to the application of Spellout, thus being excluded from the initial linearization. This will ensure that no inverse Holmberg's Generalization effects will arise: that is, the verb will be free to move (or not) irrespective of any OS-related movement.

Notice now that, since considering the timing of verb movement appears to be independently required, it may be redundant to assume a separate minimal Spellout domain for the two objects that excludes the verb, as per Anagnostopoupou 2005. The two key ingredients needed to derive the syntactic component of the Ukrainian OS data as well as the consequences for linearization of its alternative prosodic realization are these:

(33) a. OS in Ukrainian must always take place via the edge of Spellout domains.
b. Head raising of the verb to v must crucially take place *before* the spelling out and linearization of the VP domain.

Both of these components were already anticipated in Fox & Pesetsky 2005's cyclic-linearization proposal. Thus, that Ukrainian OS in all its complexity can be shown to be derivable in this way provides, in our view, strong support for the cyclic-linearization treatment of OS, with observable crosslinguistic differences relative to Scandinavian OS following naturally. Crucially, on this proposal Holmberg's Generalization effects can be viewed as a consequence of Scandinavian OS not being able to move through the VP edge rather than being an inherent, definitional, yet entirely mysterious property of OS.

Several important general observations need to be made before concluding. First, while the account of Ukrainian OS in terms of Fox & Pesetsky 2005 is fully compatible with our earlier observation that OS (unlike QR) is in fact a Superiority-obeying operation, this characterization becomes redundant, with the "Superiority-obeying" nature of OS now following entirely from the fact that phonologically overt material inside each successive Spellout domain is required to linearize in a way that replicates the ordering statement produced when the initial domain was spelled out (see also Surányi 2005).

[27]The obligatory prosodic recontouring in (31) is indicated via capitalization of the syllable receiving pitch accent.

Furthermore, the apparently Superiority-nonconforming nature of QR also follows naturally from cyclic linearization: since the linearization algorithm only cares about the phonologically overt material, covert syntactic movement like QR will be free to change the relative order of QPs in the covert component in any way necessary, so long as it does not violate any existing constraints on syntactic movement.

Finally, we are now in a position to account for the empirical generalization that OS in Ukrainian preserves scope relations that were established prior to its application. If it is indeed an instance of VP-internal argument inversion that causes QP scope to "freeze," with subsequent operations apparently unable to disrupt this relation, on the cyclic-linearization account it is actually expected that OS will not be able to affect scope relations. Any sentence that is scopally ambiguous before OS will thus continue to be ambiguous after OS, since covert QR will be able to continue to apply. This account predicts that true scope freezing (a phenomenon categorically distinct from scope bias) will be confined to "first-phase syntax"; that is, in our terms, it will hold between elements of the first Spellout domain.

5 | CONCLUSIONS

The data from OS in Ukrainian ditransitives present a clear generalization that whatever scope interpretations are available in the postverbal field will carry over to the preverbal field, with OS being unable to either induce scope freezing or disrupt the scope-freezing relation established prior to OS. Bruening 2001's Superiority account of scope freezing, which predicts that OS will *induce* freezing, is thus falsified. A careful analysis suggests that Ukrainian OS *is* in fact a Superiority-obeying movement, with argument inversion being a necessary step that enables OS involving a structurally lower object phrase, while QR, on the other hand, does not appear to be Superiority obeying after all.

We have further argued that pursuing the cyclic-linearization account of Fox & Pesetsky 2005 presents a simple and straightforward way of accounting for all the data patterns and interactions observed. The proposed account has the additional benefit of being sufficiently general, with the differences between Ukrainian and Scandinavian OS boiling down to the fact that movement through the left edge of VP is permitted in Ukrainian while this step is arguably unavailable in the Scandinavian languages, as originally hypothesized in Fox & Pesetsky 2005. Finally, the observed freedom of verb movement relative to the shifted objects (i.e., the absence of so-called inverse Holmberg's Generalization effects) and the cases of nonshifted objects where specificity is marked prosodically can all follow as well if timing of head movement with respect to the application of Spellout is taken into account, with verb raising taking place before the VP domain is spelled out, thus escaping linearization.

ACKNOWLEDGMENTS

Parts of the material in this article were presented at the 25th meeting of Formal Approaches to Slavic Linguistics; at the Research Institute for Linguistics of the Hungarian Academy of Sciences in May of 2018; at Penn Linguistics Colloquium 43; at the University of Connecticut's LingLunch in March of 2019; and at the Linearizing Constituents across Domains 2020 conference. We would like to thank the participants at these venues for discussions, questions, and helpful suggestions. The first author would especially like to thank Boban Arsenijević, John F. Bailyn, Željko Bošković, Éva Dékány, Marcel den Dikken, Peter Hallman, Renato Lacerda, Richard K. Larson, Sabine Laszakovitz, Edgar Onea, and Adrian Stegovec for their generous

comments on various portions of this material. Finally, we thank the two anonymous reviewers and the editors of *Syntax* for the suggestions that helped us significantly improve the quality of this remark and David Hill for copyediting and editorial support throughout the process. The first author's research was partially supported by an Austrian Science Fund grant awarded to Dr. Peter Hallman (P27384-G23).

DATA-AVAILABILITY STATEMENT

The original data discussed in this article are available from the corresponding author upon reasonable request.

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How to cite this article: Antonyuk, Svitlana and Roksolana Mykhaylyk. 2022. Scope freezing and object shift in Ukrainian: Does Superiority matter? *Syntax* 25.122–146. https://doi.org/10.1111/synt.12229