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On word order and non-conservative percentage quantification in Slavic and German

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This paper discusses conservative and non-conservative construals of percentage quantifiers (%Qs), e.g., *50% of the women* vs. *50% women*, in Slavic and German. Based on data from corpora and cross-linguistic questionnaires, we make the novel empirical generalization that word order plays a crucial role in distinguishing between these two readings, irrespective of whether there is an additional difference between definite vs. bare nominals (German, Bulgarian, Macedonian) or not (the other Slavic languages). Specifically, non-conservative %Qs appear low in the structure, inside the VP, whereas conservative %Qs either appear in their canonical position, depending on their syntactic role as subject or object (German, Bulgarian), or high/VP-externally (the other Slavic languages). We propose that non-conservative %Qs are always interpreted low and combine with the predicate on a par with semantically incorporated nominals and, with intransitives, existential constructions. We argue against previous accounts that ascribe a crucial role to focus for the non-conservative reading to arise, in taking focus to merely be derivative from the requirement of non-conservative %Qs to appear low, paired with a general rule for sentential stress placement.

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1 Introduction

For several decades generalized quantifier theory has been a major framework in the study of quantification. One of its most cherished results is the so-called Conservativity Universal, typically formulated as in (1) (Barwise & Cooper 1981; Keenan & Stavi 1986).

(1) THE CONSERVATIVITY UNIVERSAL

All extensional determiners in natural language denote conservative functions of type $\langle\langle e,t\rangle, \langle\langle e,t\rangle, t\rangle\rangle$.

(1) postulates that conservativity, standardly defined as in (2), is a key property in natural language. According to (2), the extension of the second argument (B) of an $\langle\langle e,t\rangle, \langle\langle e,t\rangle, t\rangle\rangle$ expression (Q) counts only insofar as it overlaps with the extension of its first argument (A). This means that a determiner is conservative if in order to evaluate whether an entire statement containing such a determiner is true or false it is enough to focus on the extension of the NP.

(2) CONSERVATIVITY

Q is conservative iff for all sets A and B , $Q(A)(B)$ is equivalent to $Q(A)(A \cap B)$

As a consequence, conservative determiners support the logical equivalence illustrated in (3). For instance, *all* is conservative because (3a) is logically equivalent to (3b).

- (3) a. All girls played football.
b. \Leftrightarrow All girls are girls that played football.

Soon after the Conservativity Universal was formulated, attempts to demonstrate that in fact it does not hold were made. Among the most widely discussed potential counterexamples are, e.g., *many* and *few* (Westerståhl 1985), *only* (van Benthem 1986; de Mey 1991), and Polish *sami* ‘only; alone’ (Zuber 2004). For instance, since (4a) is not logically equivalent to (4b), *only* is non-conservative: In order to establish whether the entire sentence in (4a) is true one needs to consider not only the extension of the NP but also the extension of the VP (4c).

- (4) a. Only girls played football.
b. \Leftrightarrow Only girls are girls that played football.
c. \Leftrightarrow The only individuals that played football were girls.

Similarly, *many* can have the so-called reverse proportional reading. For instance, consider an interpretation of (5a) that can be paraphrased as in (5b) (examples due to Westerståhl 1985). Clearly, in order to evaluate whether (5a) is true or false on that reading it is insufficient to focus exclusively on the meaning of the NP. Thus, in such a case *many* gives rise to a non-conservative construal.

- (5) a. Many Scandinavians have won the Nobel prize in literature.
 b. Many Nobel prize winners in literature are Scandinavians.

Since then proponents of the Conservativity Universal have been trying to demonstrate that it can be saved and that the submitted counterexamples do not pose a grave threat. Defense strategies come in two types. For some counterexamples, e.g., for *only*, it has been argued that they are not really determiners (von Fintel 1994). For others, e.g., *many*, the strategy was to reduce their meaning to a conservative core and an additional component responsible for the non-conservative reading. For example, Herburger (2000) observed that the reverse proportional reading of *many* only arises due to focus and in environments that display the definiteness effect (in the sense of Milsark 1974). Under her account, focus determines the scope of *many* whereas the non-focused elements constitute the restrictor set.

In a series of recent papers, Uli Sauerland and colleagues observe that percentage quantifiers (%Qs),¹ such as *thirty percent* (which we will often write as *30%*), also give rise to a non-conservative reading, in addition to a conservative one (Sauerland 2014; Ahn & Sauerland 2015a; b; 2017; Pasternak & Sauerland 2022: henceforth S&Co.). This is illustrated in (6) (after Ahn & Sauerland 2015b).²

- (6) a. MIT hired 30% of the women. CONSERVATIVE
 b. MIT hired 30% [women]_F. NON-CONSERVATIVE
 ~ 30% of the people that MIT hired are women.

The semantic contrast between the two sentences above is as follows. Under the conservative construal in (6a), *30%* first combines with its complement *of the women*, which serves as the restrictor, and then with the rest of the sentence. It thus behaves on a par with other natural language quantifiers in that the extension of the first argument with which it combines also syntactically (*of the women*) is crucial for determining the truth conditions, and the extension of the second argument counts only insofar as it overlaps with the extension of the restrictor. Under the reading in (6b), however, *30%* seems to first combine with the rest of the sentence and only then with the NP (*women*), which appears to serve as the nuclear scope. This, at first sight, leads to a non-conservative construal, which is similar to the reverse proportional reading of *many* outlined above.

S&Co. observe that cross-linguistically the distinction between the two readings can be marked by definiteness and case, as can be seen in the English examples above (assuming

¹ In this paper, we will use the term *percentage quantifier* as a purely descriptive label with no implication with regard to the denotation of expressions like *thirty percent*.

² In this paper, we use square brackets accompanied with the subscripted F to mark focus and the constituent that is in focus, and we use small caps to mark prosodic stress.

that *of* is case marking), and that non-conservative %Qs crucially involve focus sensitivity, again similarly to what Herburger (2000) observed for *many*. For example, in (6b) they argue that focus is on *women*. In order to account for the non-conservative construal in (6b), S&Co. develop an approach whose crucial ingredients are focus sensitivity and quantifier raising (QR). They argue that the %Q QRs to a position above the rest of the sentence and is fed by the result of focus assignment in order to ultimately derive a meaning that looks like a semantic effect on the VP.

In this paper, we will investigate conservative and non-conservative interpretations in Slavic languages that lack definiteness marking, and therefore do not formally distinguish between the two construals in the way English does. We will compare these languages with Slavic languages that do have definiteness marking as well as with German. Unlike previous proposals, we will focus on the role that word order plays in bringing about the different readings. In particular, we will present novel evidence suggesting that focus placement is derivative from a difference in word order, rather than the key to understanding non-conservative construals. Such a perspective will also explain an apparent asymmetry that S&Co. observe but cannot account for, namely that in languages like English, but not in, e.g., German, non-conservative %Qs cannot appear in subject position.

The paper is structured as follows. §2 addresses the empirical generalizations that S&Co. arrived at for constructions in which %Qs give rise to non-conservative construals, and raises some empirical issues with these generalizations. After having outlined our background assumptions about prosody and word order in §3, §4 presents our own empirical generalizations for German and Slavic, based on a corpus study and native speaker judgments collected via a cross-linguistic questionnaire, which stress the role of word order for the conservative/non-conservative distinction. In §5, we propose an account, under which the %Q is a type of scalar modifier that has an apparent effect on the verbal predicate due to semantic incorporation ((in)transitives) and to an underlying existential structure (intransitives). §6 discusses the details of the most recent and explicit version of S&Co.'s account of the non-conservative construal, namely Pasternak & Sauerland (2022). We will demonstrate that their analysis can explain only a subset of the data and fails to generate correct truth conditions for configurations with wide focus. Finally, §7 concludes.

2 Percentage quantifiers

2.1 Previous observations on %Qs

Sauerland (2014), Ahn & Sauerland (2015a; b; 2017) and Pasternak & Sauerland (2022) show that the difference between conservative and non-conservative readings of %Qs correlates with different properties cross-linguistically, such as definiteness marking and case marking, as we

already saw for English in (6). German behaves like English in this respect (7). While under the conservative construal in (7a), the DP modified by the %Q appears in genitive case and with a definite determiner, under the non-conservative construal in (7b) the now bare nominal agrees in case with the %Q.

- (7) *German*
- a. Die Firma beschäftigt 50% der Frauen.
 the.NOM company.NOM employs 50%.ACC the.GEN women.GEN
 ‘The company employs 50% of the women.’ CONSERVATIVE
- b. Die Firma beschäftigt 50% Frauen.
 the.NOM company.NOM employs 50%.ACC women.ACC
 ‘The company employs 50% women.’ NON-CONSERVATIVE

S&Co. furthermore observe that some languages pattern with German in allowing for the non-conservative construal with subjects (8), whereas other languages pattern with English, in which the non-conservative construal with a %Q subject is not possible (9). They label this the subject-object asymmetry (SOA).

- (8) *German* (Pasternak & Sauerland 2022)
- 30% Studierende arbeiten hier.
 30%.NOM students.NOM work here
 ‘30% of the workers here are students.’

- (9) ??/*30% students work here. (Pasternak & Sauerland 2022)

The proposals that S&Co. ultimately spell out cannot account for this fact and leave the SOA for future research.

Finally, a property that S&Co. view as crucial for the non-conservative construal in all the languages discussed, is its focus sensitivity. For instance, in (10), sentential stress, which they analyze as focus accent, lies on the nominal that appears after the %Q.

- (10) *German*
- a. 30% **StuDIERende** arbeiten hier.
 30%.NOM students.NOM work here
 ‘30% of the workers here are students.’ (cf. Ahn & Sauerland 2017)
- b. Die Firma beschäftigt 50% **FRAUen**.
 the.NOM company.NOM employs 50%.ACC women.ACC
 ‘The company employs 50% women.’ (our example)

Though S&Co. do not explicitly discuss this, in this respect particularly their intransitive examples differ from the conservative construal where (at least under the default accent pattern) sentential stress falls on the right-most constituent (11).

- (11) *German*
 30% der Studierenden {ARbeiten / arbeiten in RESTAURANTS}.
 30%.NOM the.GEN students.GEN work work in restaurants
 ‘30% of the students work (in restaurants).’

S&Co. take the different accent pattern in the non-conservative cases as marking a particular focus structure that (implicitly) deviates from the default accent pattern. Therefore, the analysis they propose crucially builds on the idea that non-conservative construals are always focus-sensitive. Pasternak & Sauerland (2022) illustrate this with the contrast in (12).

- (12) *German* (after Pasternak & Sauerland 2022)
- a. 30% [westfälische StuDIERende]_F arbeiten hier.
 30%.NOM Westphalian.NOM students.NOM work here
 ‘30% of the workers here are Westphalian students.’
- b. 30% [westFÄlische]_F Studierende arbeiten hier.
 30%.NOM Westphalian.NOM students.NOM work here
 ‘30% of the student workers here are Westphalian.’

They argue that the difference in what is under focus, i.e., ‘Westphalian students’ in (12a) or just ‘Westphalian’ in (12b), leads to a difference in truth conditions. For example, if the employer in question has 100 employees, out of which 50 are students, and 15 of these are Westphalian, the sentence is false under the conservative reading in (12a), because only 15% but not 30% of the workers are Westphalian students, but it is true under the non-conservative reading in (12b).

The relevant cross-linguistic differences S&Co. arrive at are summarized in **Table 1**.

CONSERVATIVE (C)	NON-CONSERVATIVE (NC)
definite NP	bare NP
genitive/partitive	bare/case of %Q
(nothing is said about focus)	focus on (parts of) the NP
no subject-object asymmetry (SOA)	SOA in English, but not in German

Table 1: Morphosyntactic and prosodic differences between C and NC construals cross-linguistically.

While we do not challenge the empirical observation concerning (12) itself, the papers by S&Co. raise several questions.

2.2 Open questions

With respect to S&Co.'s proposal, we have general doubts about the primary role that focus plays in their account, since it is easy to construe non-conservative examples with neutral stress, for which it seems counter-intuitive to talk about focus sensitivity; we will come back to this in §6. Instead, our intuition is that conservative and non-conservative construals have different predicational structures, in some cases leading to different default word order patterns, and that differences in stress are derivative from this difference because of a tendency of neutral stress to fall on the last constituent in a sentence. A more general issue that arises for any formal account is that it has to capture the intuition that the percentage expression first seems to operate on the VP and only then on the NP that it appears with. S&Co. do it by taking focus to be the driving factor. Instead, we propose that it is rather that the %Q needs to stay within the VP to have an effect on it first. Let us see why.

First, according to our intuitions all German non-conservative intransitive examples that S&Co. discuss involve a marked word order, SVPP, whereas the reverse PPVS order sounds more natural. If we only consider examples with unmarked word order and stress pattern, the conservative and non-conservative construals for intransitives do not only differ in definiteness and case marking, but crucially also in word order (13).

- (13) *German*
- | | | | | | | | |
|----|--|----------|--------------|--------------|-----|---------|------------------|
| a. | 30% | der | Studierenden | arbeiten | bei | Pirapo. | |
| | 30%.NOM | the.GEN | students.GEN | work | at | Pirapo | |
| | ‘30% of the students work at Pirapo.’ | | | | | | CONSERVATIVE |
| b. | Bei Pirapo | arbeiten | 30% | StuDIERende. | | | |
| | at Pirapo | work | 30%.NOM | students.NOM | | | |
| | ‘30% of the employees at Pirapo are students.’ | | | | | | NON-CONSERVATIVE |

These examples with neutral word order also involve default stress on the final constituent. If our intuitions are correct, this could be interpreted in such a way that the differences in focus that S&Co. observe are merely derivative from the difference in word order.³

A related observation is that leaving out the location from the German non-conservative intransitive examples leads to ungrammaticality, irrespective of word order (14).

- (14) *German*
- | | | | | | |
|----|----|----------|---------|--------------|-----------------------|
| a. | Es | arbeiten | 30% | Studierende | *(hier / bei Pirapo). |
| | it | work | 30%.NOM | students.NOM | here at Pirapo |

³ A question that arises then is what happens in examples that deviate from the default word order and stress pattern, i.e., all the intransitive examples discussed by S&Co., e.g., (8). In this case we assume that the constituent ‘%Q NP’ has been moved to the left periphery, e.g., as a contrastive topic, and that this also accounts for the deviation from default stress.

- b. 30% Studierende arbeiten *(hier / bei Pirapo).
 30%.NOM students.NOM work here at Pirapo

Returning to English, we observe that changing the structure with intransitives to something that looks like an existential construction leads to a grammatical counterpart; also in this case, leaving out the location results in ungrammaticality (15).

- (15) There are 30% students working *(at Pirapo/here).

Thus, a first research question concerns the role that word order plays in bringing about one or the other reading; word order has not been addressed in previous research on the topic. A second research question that comes out of these initial observations concerns the source of the SOA in English, as opposed to German, how the SOA can be circumvented, and how non-conservative readings with subject %Qs are connected to existential-like structures.

A third research question is raised by the cross-linguistic generalizations presented in **Table 1**. If there are languages that lack definiteness marking altogether and also do not show any of the other distinctions addressed in **Table 1**, how do they express the difference between conservative and non-conservative readings, if at all? In this paper, we will be concerned with Slavic. Except for Bulgarian and Macedonian, Slavic languages lack overt definiteness marking. For example, Polish %Qs uniformly look as in (16), and there is no way to vary the case marking because 5+ numerals are always followed by nominals in the genitive.

- (16) *Polish*
 pięćdziesiąt procent kobiet
 fifty percent women.GEN

We will investigate whether this kind of string gives rise to both conservative and non-conservative readings. Our initial intuitions for Polish are that it does, but that again, word order plays a crucial role in bringing about one or the other interpretation. In §4, we look into the empirical basis for conservative and non-conservative construals in most Slavic languages, both with and without definiteness marking, as well as in German, to explore the role of word order in distinguishing between the two readings. First, however, let us say some words on word order and stress in Slavic and German.

3 Word order and stress

According to the nuclear stress rule (Chomsky & Halle 1968), sentential stress commonly involves a nuclear accent, which is the last pitch accent in an intonation phrase, i.e., roughly the sentence. With Büring (2006) and others we analyse stress as indicating focus (F-marking). We take an all-new configuration as involving the most neutral information structure. In such a constellation,

the nuclear accent lies on the right-most element, and if an integrated object is involved, as in German, the accent is on this integrated object (but see, e.g., Féry & Herbst 2004, for qualification). This leads to the neutral stress pattern for the German transitive examples in (17).

(17) *German*

- a. Eine Frau isst eine ERdbeere.
 a.NOM woman.NOM eats a.ACC strawberry.ACC
 ‘A woman is eating a strawberry.’
- b. Eine Frau hat eine ERdbeere gegessen.
 a.NOM woman.NOM has a.ACC strawberry.ACC eaten
 ‘A woman ate a strawberry.’
- c. ... dass eine Frau eine ERdbeere {isst / gegessen hat}.
 that a.NOM woman.NOM a.ACC strawberry.ACC eats eaten has
 ‘... that a woman {is eating/ate} a strawberry.’

These sentences also illustrate neutral word order in German, which is SOV in combination with V2 (at least with accusative objects; see, e.g., Bader & Häussler 2010): The finite verb form in a main declarative sentence, e.g., (17a)–(17b), is always the second constituent in main clauses, non-finite verb forms appear sentence-finally. In subordinate clauses, e.g., (17c), all verb forms appear sentence-finally.

All Slavic languages (apart from Sorbian), on the other hand, have a canonical SVO order (e.g., Jasinskaja & Šimík to appear), and also here an information-structurally neutral sentence has the nuclear accent on the right-most element. We illustrate this with Russian in (18).

(18) *Russian*

- Ženščina s"ela klubniku.
 woman.NOM ate strawberry.ACC
 ‘{A/The} woman ate {a/the} strawberry.’

The first thing to note here is that in the absence of determiners, bare nominals in Russian and other Slavic languages without articles can be interpreted in a variety of ways, e.g., in argument position as indefinite or definite nominals, and different word orders can correlate with different preferences for one or the other interpretation (see, e.g., Šimík & Wierzba 2017; Šimík & Demian 2020, for Czech, Polish, Russian). For example, there is a strong preference for sentence-initial elements to be interpreted as aboutness topics or as given, which often correlates with a definite interpretation. So a natural answer to the question ‘What happened with the strawberry?’ or ‘Who ate the strawberry?’ is (19), which signals that ‘the strawberry’ is both given and the aboutness topic. In this example, the object appears sentence-initially, thus deviating from the canonical word order, and this keeps the nuclear accent on the right-most element.

- (19) *Russian*
 Klubniku s"ela ŽENščina.
 strawberry.ACC ate woman.NOM
 (i) 'A WOMAN ate the strawberry.'
 (ii) 'The strawberry was eaten by a WOMAN.'

As the translations for (19) indicate, since English has a strict SVO order, one way to convey this more marked information structure is to deviate from the neutral stress pattern and to shift the nuclear accent to the sentence-initial constituent (the new information). Alternatively, the syntactic structure can be changed to a passive construction, which correlates with a given-new order and the default stress pattern that has the nuclear accent on the rightmost element.

German patterns with Russian in that it does not have to resort to a passive structure but can deviate from the canonical SOV order and switch to the more marked OSV order to keep the neutral stress pattern (20a). Alternatively, similar to English it can deviate from the neutral stress pattern in order to keep the canonical word order (20b). A passive construction would also be possible, but we will not discuss passives further here.

- (20) *German*
 a. Die Erdbeere hat eine FRAU gegessen.
 the.ACC strawberry.ACC has a.NOM woman.NOM eaten
 b. Eine FRAU hat die Erdbeere gegessen.
 a.NOM woman.NOM has the.ACC strawberry.ACC eaten

Thus, from a cross-linguistic perspective, word order and stress are two main means to signal a particular information structure and languages can differ to what extent they employ one or the other (see discussion in Büring 2006).

Slavic makes ample use of word order for information structural distinctions (see, e.g., Bailyn 2011; Titov 2013; Jasinskaja & Šimík to appear), even more so than German. In particular, whereas the OVS/OSV order in German is rather marked and probably involves A'-movement to the left periphery, the OVS order in Slavic can also be due to A-scrambling (A-movement of the object to Spec, TP, or base-generation in this position), which could be motivated by a variety of factors, such as givenness or topicality. With these basic assumptions about word order and stress in place, let us move to our data investigation.

4 Data investigation

We discern three patterns for conservative/non-conservative %Qs in Slavic. Pattern 1, represented by Russian, Bosnian/Croatian/Montenegrin/Serbian (BCMS), and Slovenian, involves no formal distinction, and in both construals we find '50% women.GEN' (21).

- (21) *Slovenian* (PATTERN 1)
 pedeset posto žena
 fifty percent women.GEN

Pattern 2, represented by the West Slavic languages Polish, Czech, and Slovak, is similar to Pattern 1 in that these languages also do not make a formal distinction between conservative and non-conservative construals, see (16) and (22a). In addition, they have a true partitive construction, exemplified in (22b), which is ungrammatical with %Qs in Pattern 1 languages (23).

- (22) *Slovak* (PATTERN 2)
 a. päťdesiat percent žien
 fifty percent women.GEN
 b. päťdesiat percent zo žien
 fifty percent out-of women.GEN

- (23) *BCMS* (PATTERN 1)
 *pedeset posto od žena
 fifty percent of women.GEN

Note, however, that true partitive constructions are rather marginal in Slavic. Furthermore, though the connection between partitives and conservativity has been drawn in the literature (e.g., Hoeksema 1996), partitives give rise to a number of semantic phenomena that lie beyond what we are to discuss here. Therefore, we assume that the partitive is outside of the conservative/non-conservative opposition that we are interested in, and it will only take a marginal role in this paper.

Finally, Pattern 3 is represented by Bulgarian and Macedonian, which distinguish between conservative and non-conservative construals via definiteness marking and case, i.e., by the presence or absence of ‘of’ (24).

- (24) *Bulgarian* (PATTERN 3)
 a. petdeset procenta ženi NON-CONSERVATIVE
 fifty percent women
 b. petdeset procenta ot ženite CONSERVATIVE
 fifty percent of women.DEF

In the absence of morphological case-marking in Pattern 3 languages, we take the definite/‘of’-marked variant to be equivalent to the German definite/genitive variant and the English definite/‘of’-variant, even though at this point it is theoretically possible that it might be ambiguous between this structure and a true partitive.⁴

⁴ The same is true for English. In German, the question of whether the string is ambiguous between the conservative construal and a true partitive does not arise because the true partitive is expressed with a PP (e.g., *50% von den Frauen* ‘50% of the women’), and thus formally differs from the conservative construal with genitive case marking.

In the following sections, we show that our intuitions about the role of word order are confirmed by both corpus data and native speaker judgments in German and in Slavic. First, however, let us address the empirical research questions and hypotheses.

4.1 Empirical research questions and hypotheses

The empirical research questions we explore in this paper are the following.

- (25) EQ1 Can %Qs in Slavic languages without definiteness marking give rise to both conservative and non-conservative readings?
 EQ2 (If the answer to EQ1 is ‘yes:’) What is the role of word order in Slavic languages without definiteness marking?
 EQ3 What is the role of word order in Slavic languages with definiteness marking and German?
 EQ4 (If the expectations for EQ2 and EQ3 are correct:) Is the correlation between reading and word order categorical (a requirement) or just a tendency?

EQ1 concerns the question whether the same string in Slavic languages without definiteness marking, recall (16) and (22a), can license both readings under examination. We expect that this is the case. If so, EQ2 arises, which concerns the role of word order, as possibly the only means to distinguish between the two construals in these languages. EQ3, then, explores the interaction between definiteness and case marking, on the one hand, and word order, as a means to additionally distinguish the two interpretations, on the other.

Our expectations for both EQ2 and EQ3 are that non-conservative readings involve (syntactically) low/VP-internal %Qs, irrespective of whether they are subjects or objects. A further expectation is that conservative construals involve syntactically high subject %Qs, because all the Slavic languages involve canonical SVO order, and German involves canonical SOV order (+ V2). On the other hand, we do not have clear expectations for conservative readings with objects, since there are two options: Either we have low object %Qs, because of canonical SVO/SOV order, or we have high object %Qs, because this would lead to a maximal disambiguation of the readings by word order. Finally, if the expectations for EQ2 and EQ3 turn out to be correct, we can ask EQ4 about whether a particular word order is obligatory or optional for a given reading to arise. We expect that in the absence of other cues, the correlation between word order and reading is rather categorical, and a requirement in Slavic languages without definiteness marking. In contrast, for Slavic languages with definiteness marking and German we expect this correlation to be a tendency, rather than a categorical rule.

4.2 Corpus data

We performed a corpus search for Polish, Czech, and German to get a first impression about the empirical situation. We were interested in whether Polish and Czech %Qs give rise to non-conservative readings, in the absence of definiteness marking (EQ1). Second, we wanted to see

whether there is an indication in the corpus data that the non-conservative construal of %Qs in the languages in question prefers or requires them to appear low (EQ2–4).

In the National Corpus of Polish (Przepiórkowski et al. 2012)⁵, we searched for the string *procent kobiet* ‘percent women.GEN’, which resulted in 101 hits.⁶ Six of these were clear cases of the non-conservative construal, in which the %Qs always appeared in postverbal, never in preverbal position. This suggests that the non-conservative reading is available, but that it is not frequent. Furthermore, the findings suggest that it is possible that the non-conservative reading requires %Qs to appear low.

In the Czech National Corpus (CNC) (Křen et al. 2012)⁷, we similarly searched for the string *procent žen* ‘percent women.GEN’, which resulted in 110 hits. Out of these we had 16 clear cases of the non-conservative construal, 15 of which were in postverbal position, and we only had one instance of the preverbal pattern. We will discuss this example in §6.3. Overall, then, these data confirm our initial intuition that the non-conservative construal is available also in Czech and that there seems to be at least a high preference for the postverbal order.

For German, we searched for the string *Prozent Frauen* ‘percent women’ in the German Reference Corpus (DeReKo) (Kupietz & Keibel 2009)⁸, where *Frauen* appears as a bare nominal, which should therefore give rise to unambiguously non-conservative construals. This search returned 207 hits, out of which many were double or irrelevant, e.g., because there were punctuation marks between *Prozent* and *Frauen*. After filtering, 36 relevant hits remained. We did not find any sentence-initial/higher %Qs. Instead, there were 10 lower subjects of intransitives, which all appeared with sentence-initial PPs. We found only two transitive subjects; none of these appeared in a sentence-initial position, and both were in a nominative-dative constellation (26). The seven transitive objects were all low, but given that objects canonically appear low this is less telling. We found three headlines, all with PPs, and 14 other instances of this string in PPs or adjuncts.

(26) *German* (DeReKo)

2009 gehörten 36,8 Prozent Frauen dem Landtag an.
 2009 belonged.3PL 36.8%.NOM women.NOM the.DAT Landtag.DAT PRT
 ‘In 2009, the Landtag (state parliament) consisted of 36.8% women.’

Thus, also this search confirms our intuition that the non-conservative construal correlates with a low position of the %Q, even when it is the syntactic subject (in nominative case). The German data additionally confirm that with intransitives a sentence-initial PP seems to be required or at least the default case. Let us then turn to the native speaker judgments we elicited via a questionnaire.

⁵ URL: <http://nkjp.pl>.

⁶ Other searches returned too much noise, also in Czech and German.

⁷ URL: <https://www.korpus.cz/>.

⁸ URL: <https://korap.ids-mannheim.de/>.

4.3 Cross-linguistic questionnaire

In order to investigate whether Slavic languages without a formal distinction between possibly conservative and non-conservative construals nevertheless have both readings available (EQ1), and to furthermore compare this with German and with Slavic languages with definiteness marking (EQ2–4), we designed a questionnaire with %Qs as subjects of intransitive sentences and as objects of transitive sentences. In the test items we varied the word order (preverbal/sentence-initial vs. postverbal/sentence-final), and they were judged in scenarios that favor either the conservative or the non-conservative reading. We first built scenarios and schematic test items in English and then translated these into German, Polish, Czech, Slovak, Russian, BCMS, Slovenian, Bulgarian, and Macedonian.⁹

4.3.1 Scenarios and test items: Schematized

Our intransitive and transitive test items are illustrated schematically in (27) and (28), respectively.

(27) INTRANSITIVE TEST ITEMS

- a. It is interesting that [fifty percent] (.NOM) (of the) women work at (the) company X.
- b. It is interesting that at (the) company X work [fifty percent] (.NOM) (of the) women.

(28) TRANSITIVE TEST ITEMS

- a. It is interesting that [(the) company Y](.NOM) employs [fifty percent] (.ACC) (of the) women.
- b. It is interesting that [fifty percent](.ACC) (of the) women employs [(the) company Y] (.NOM).

The test items varied in word order, with the %Q in either preverbal/sentence-initial (27a) or post-verbal/sentence-final (27b) position. This was the only factor we manipulated across the Slavic languages without articles, leading to a total of 4 test items. For Slavic languages with articles (Bulgarian, Macedonian) and for German, we additionally manipulated definiteness and case: The relevant contrast is between ‘50%’ + bare nominal (e.g., Macedonian *50% ženi*/German *50% Frauen* ‘50% women’), on the one hand, and ‘50%’ + definite nominal introduced by ‘of’ (e.g., Macedonian *od ženite* ‘of women.DEF’) or in genitive case (German *der Frauen* ‘the.GEN women.GEN’), on the other. This gives a total of 8 test items for these languages.¹⁰

⁹ For Slovak and Slovenian we only had the test items translated into the respective language, but used the scenarios in Czech and English, respectively.

¹⁰ The definite article in front of ‘company’ in (27)–(28) appears in brackets because either there is no definite article (Slavic without articles), or the definiteness marking sounds more or less natural in the other languages. Since we were not interested in definiteness marking or the absence thereof on elements other than the nominal appearing after the %Q we chose the variant that was most natural in the given language.

Each set of test items (varying only in word order) was prefaced by a scenario describing a situation under which either the non-conservative (29)–(30) or the conservative (31)–(32) construal would be the preferred reading.

(29) NON-CONSERVATIVE INTRANSITIVE SCENARIO

The company X is located not far from a village that is otherwise quite remote. A few people from the village work there. The company observes gender equality and half of their employees are women.

(30) NON-CONSERVATIVE TRANSITIVE SCENARIO

The two rivaling companies X and Y have about the same amount of employees. While most of the employees at X are men/male, half of the employees of Y are women/female.

(31) CONSERVATIVE INTRANSITIVE SCENARIO

The company X is located not far from a village that is otherwise quite remote. The company employs half of the women from that village.

(32) CONSERVATIVE TRANSITIVE SCENARIO

The two companies X and Y are not far from a village that is otherwise quite remote. Therefore, X and Y are the main employers for the village inhabitants. While most of the men from the village work at X, half of the women from the village work at Y.

Given that we already know from S&Co. that in German the conservative construal requires definiteness and genitive case, whereas the non-conservative construal requires a bare nominal and case agreement with the %Q, we did not test all 4 items for each scenario. Instead, we only varied the word order, with fixed definite/genitive nominals in the conservative construal, and with fixed bare nominals in the non-conservative construal. Since our Bulgarian and Macedonian translators confirmed that the same situation holds for these languages we did the same here, and thus only varied word order. For Macedonian, we had a further variation concerning the presence/absence of a clitic in the transitive conservative examples, leading to a total of 10 test items. In the following section, we exemplify test items for each of the Slavic patterns we discerned. The complete set of test items and scenarios used for each language is provided in a supplementary file.¹¹

4.3.2 Some test item examples

We illustrate the Slavic Pattern 1 (no formal distinction, no partitive) with the following four Russian test items.

¹¹ <https://doi.org/10.16995/glossa.5803.s1>.

(33) *Russian*: Intransitive test items

- a. Interesno, čto **pjat'desjat procentov ženščin** rabotajut v kompanii
interesting that fifty.NOM percent.GEN.PL women.GEN work in company
Kaloma.
Kaloma
- b. Interesno, čto v kompanii Kaloma rabotajut **pjat'desjat procentov ženščin**.
interesting that in company Kaloma work fifty.NOM percent.GEN.PL
women.GEN

(34) *Russian*: Transitive test items

- a. Interesno, čto **pjat'desjat procentov ženščin** deržit na službe
interesting that fifty.ACC percent.GEN.PL women.GEN holds on service
kompanija Ketara.
company.NOM Ketara.NOM
- b. Interesno, čto kompanija Ketara deržit na službe **pjat'desjat procentov ženščin**.
interesting that company.NOM Ketara.NOM holds on service fifty.ACC
percent.GEN.PL women.GEN

The Slavic Pattern 2 also has the corresponding four test items without a formal distinction, but in addition they have true partitives, which we illustrate with Czech.

(35) *Czech*: Intransitive partitive test items

- a. Je zajímavé, že **padesát procent z žen** pracuje ve
is interesting that fifty.NOM percent from women.GEN works in
společnosti Spedex.
company.LOC Spedex
- b. Je zajímavé, že ve společnosti Spedex pracuje **padesát procent z žen**.
is interesting that in company.LOC Spedex works fifty.NOM percent from
women.GEN

Finally, the Slavic Pattern 3 (with vs. without definiteness marking) with corresponding eight test items is illustrated by Macedonian. The German test items followed the same pattern (see supplementary file, DOI: <https://doi.org/10.16995/glossa.5803.s1>).

(36) *Macedonian*: Intransitive test items, non-conservative (bare)

- a. Interesno e što **pedeset procenti ženi** rabotat vo firmata Kaloma.
interesting is that fifty percent women work in firm.DEF Kaloma

- b. Interesno e što vo firmata Kaloma rabotat **pedeset procenti ženi**.
interesting is that in firm.DEF Kaloma work fifty percent women
'It is interesting that 50% of the people working at the company Kaloma are women.'

(37) *Macedonian*: Intransitive test items, conservative (definite)

- a. Interesno e što **pedeset procenti od ženite** rabotat vo firmata Kaloma.
interesting is that fifty percent of women.DEF work in firm.DEF Kaloma
- b. Interesno e što vo firmata Kaloma rabotat **pedeset procenti od ženite**.
interesting is that in firm.DEF Kaloma work fifty percent of women.DEF
'It is interesting that 50% of the women work at the company Kaloma.'

(38) *Macedonian*: Transitive test items, non-conservative (bare)

- a. Interesno e što **pedeset procenti ženi** vrabotuva firmata Ketara.
interesting is that fifty percent women employs firm.DEF Ketara
- b. Interesno e što firmata Ketara vrabotuva **pedeset procenti ženi**.
interesting is that firm.DEF Ketara employs fifty percent women
'It is interesting that the company Ketara employs 50% women.'

(39) *Macedonian*: Transitive test items, conservative I (definite, without clitic)

- a. Interesno e što **pedeset procenti od ženite** vrabotuva firmata Ketara.
interesting is that fifty percent of women.DEF employs firm.DEF Ketara
- b. Interesno e što firmata Ketara vrabotuva **pedeset procenti od ženite**.
interesting is that firm.DEF Ketara employs fifty percent of women.DEF
'It is interesting that the company Ketara employs 50% of the women.'

Macedonian additionally has a clitic in the transitive conservative test items (the clitic is unacceptable with bare nominals), so that in the corresponding scenarios we additionally tested the following test items with clitics.

(40) *Macedonian*: Transitive test items, conservative II (definite, with clitic)

- a. Interesno e što **pedeset procenti od ženite gi** vrabotuva
interesting is that fifty percent of women.DEF CL.ACC.PL employs
firmata Ketara.
firm.DEF Ketara
- b. Interesno e što firmata Ketara **gi** vrabotuva **pedeset procenti od**
interesting is that firm.DEF Ketara CL.ACC.PL employs fifty percent of
ženite.
women.DEF
'It is interesting that the company Ketara employs 50% of the women.'

Our Bulgarian translator did not indicate additional options with clitics so we did not have such test items for Bulgarian. Let us then move to the methodology.

4.3.3 Methodology

We distributed the questionnaires among 4–7 speakers per language, with the exception of Slovak, where we had only one speaker. Due to the subtle nature of the data and since we wanted to get more detailed feedback about the judgments, we only consulted linguists. We had two test rounds, with several days in between.

In the first round, we tested the acceptability of the two different word orders (i.e., the respective translations of the test items in (27) and (28)) in the two non-conservative scenarios, i.e., (29) and (30) in the respective languages. For the languages with definiteness marking (Bulgarian, Macedonian, German), we used %Qs with bare nominals, e.g., (36), (38). For the Slavic languages that additionally have a true partitive, e.g., (35), the non-conservative intransitive scenarios had two more partitive test items, varied in word order, leading to these scenarios being followed by 4 test items to be judged. We were not really concerned with the role of word order for partitives, rather we were interested in whether partitives could ever get a non-conservative reading, which is why we tested them only in the intransitive non-conservative scenario, but disregarded them elsewhere.

In the second round, we tested the acceptability of the two word orders in the conservative scenarios in (31)–(32). In the Slavic languages without definiteness marking, the test items were identical to the ones we used in the non-conservative scenarios, e.g., (33), (34). In contrast, in Bulgarian, Macedonian, and German, we switched to definite/case-marked nominals, e.g., (37), (39). In Macedonian, the transitive conservative scenario was followed by two additional test items, given in (40), due to the presence vs. absence of a clitic; thus in this language the conservative transitive scenario was followed by 4, rather than just 2 test items.

For Russian, Macedonian, Bulgarian, and German, the speakers were asked whether both (or all four) sentences are acceptable in the given scenario, and if they were, whether one is better than the other. For Czech, Polish, Slovak, BCMS, and Slovenian, the speakers were asked whether the sentences were true (adequate) or false (inadequate) in the given scenario. While it is certainly a methodological flaw on our part that we did not ask the same questions, we do not think that this influenced the judgments themselves. In §4.3.4, where we discuss the results, we will see, e.g., that Russian patterns with the other Slavic languages without definiteness marking and that there are further differences between Macedonian and Bulgarian.

Another potential methodological flaw on our part was that we intended the scenarios to be scenarios in the strict sense used in experimental work. Unfortunately, we named these scenarios ‘contexts’ (e.g., Russian *kontekst* or German *Kontext*). While we believe that most speakers still read this as ‘scenario’ (one Czech speaker even explicitly mentioned that), it is plausible that at

least two Russian speakers might have read ‘context’ in the more narrow technical sense, which led to somewhat inconclusive results, especially in the conservative scenarios. We will come back to this in §4.3.4.

Given that the test items were presented in written format only, where we did (and could) not control for prosody, we embedded them as subordinate clauses under ‘It is interesting’, recall §4.3.2, in order to ensure that they are preferably read with a neutral prosody and accent pattern and that they would report on sheer facts that were interesting. In addition, while main clauses in Slavic languages display a whole variety of word order and accent patterns, e.g., Bailyn (2011) argues (for Russian) that this variation is more limited in subordinate clauses.

In both transitive scenarios we built in a contrast between two companies X and Y. We initially did this because we had the intuitions that the order in which the accusative appears before the nominative in (28b) would be unacceptable otherwise, and we needed a scenario where we could see this sentence being used naturally. This is so because in all languages we discuss the order in which the nominative appears before the accusative is the canonical order (recall §3). Furthermore, in all the tested languages, the nominative and the accusative on ‘50%’ do not differ morphologically, due to either the lack of case marking (Bulgarian, Macedonian) or case syncretism (German, the other Slavic languages). Given the unmarked word order (nominative before accusative), by first encountering ‘50% (of the) women’ the default interpretation is to parse it as a nominative subject. Only upon encountering the verb form that does not agree in plural but in singular one realizes that ‘50% (of the) women’ cannot be the nominative subject; but at this point one might have already entered a garden path. We will see in §4.3.4 that for one participant that was indeed the case. Let us then move on to the results.

4.3.4 Results

Let us start with the results for German, illustrated in **Table 2**, which are based on the judgments of 6 speakers.

	INTRANSITIVE		TRANSITIVE	
	C	NC	C	NC
HIGH	✓	marked	marked/✓	very marked
LOW	marked	✓	✓	✓

Table 2: Results for German.

Table 2 shows that there are no categorical judgments: None of the test items were judged as outright infelicitous, but there is always one neutral/preferred option, with the respective other option being judged as ‘marked’ or ‘very marked’. We summarized the judgments as ‘marked’ if the majority of speakers preferred the other option as “more natural” or as “unmarked”, and we

labeled the judgments as ‘very marked’ if the majority of speakers had a hard time accepting the item but could still not rule it out as unacceptable. We added two labels (e.g., ‘marked/✓’) when there was a split in the speaker judgments.

Even if the judgments are not categorical, we see that the non-conservative readings are best with %Qs in a low position, rather than sentence-initially. This corresponds to a PPSV order for intransitives, arguably deviating from the canonical word order that has subjects appear high, and an SOV order for transitives, which is the canonical word order for transitives. In contrast, the conservative construal is best with the canonical word order for both intransitives and transitives. This corresponds to a SPPV order for intransitives and a SOV order for transitives. Thus, the word order contrast between the two readings is mainly found with subjects of intransitives.

Let us then turn to the results for Bulgarian (6 speakers consulted) and Macedonian (5 speakers), given in the **Tables 3** and **4**, respectively.

	INTRANSITIVE		TRANSITIVE	
	C	NC	C	NC
PREV.	✓	marked	very marked/#	#
POSTV.	marked/✓	✓	✓	✓

Table 3: Results for Bulgarian.

	INTRANSITIVE		TRANSITIVE	
	C	NC	C	NC
PREV.	✓	#	✓ w/clitic	marked/#
POSTV.	marked	✓	✓ w/o clitic	✓

Table 4: Results for Macedonian.

Although all three languages (German, Bulgarian, Macedonian) make a formal distinction between conservative and non-conservative construals (definite vs. bare), the results are not identical, even if they point in the same direction: While the German judgments about non-conservative construals involved tendencies, in Bulgarian and Macedonian they seem more categorical, albeit not in the same categories. Specifically, Bulgarian prefers and Macedonian requires the postverbal position for non-conservative construals with subjects of intransitives. Transitive non-conservative %Qs, in turn, have to appear postverbally for all Bulgarian speakers and for two of the Macedonian speakers, while the other three Macedonian speakers merely preferred the postverbal position.

Let us zoom in on the Macedonian bare intransitive test items in the non-conservative scenario. Interestingly, contra to what we expected, two of the five speakers accepted the preverbal position under a conservative interpretation, adding the question “50% of which women?”, at the same time indicating that this is not an acceptable utterance in the given scenario. The three other speakers reported that these test items are grammatical but that they are “less clear” or “mean something else”, which could mean that also these speakers get a conservative construal for the preverbal position, despite the absence of definiteness and case marking. Similarly, one of the speakers indicated for the high %Q object in the transitive cases in the non-conservative scenario that this could also mean “half of all women”, which again supports the finding that a conservative interpretation is available for this string. What these results indicate, though, is that the postverbal position is the one needed for a non-conservative construal, whereas the preverbal position is prone to give rise to a conservative construal, even in the absence of definiteness and case marking. This in turn suggests that in cases where languages like German and even Bulgarian seem to require definiteness marking, Macedonian can do without. This is in and by itself an interesting finding and needs to be explored in future research.

With the transitive conservative test items, Bulgarian highly preferred the canonical SVO order, and two speakers indicated that they needed a passive construction for preverbal %Qs (which would still be SVO). In Macedonian, this is where the clitic comes into play, and we had a lot of speaker variation here. One speaker did not like the clitic at all because “there is no definite”. This speaker patterned with Bulgarian in preferring the SVO order with a postverbal %Q. Out of the remaining four speakers one preferred a preverbal %Q and the OVS order with the clitic, while another one preferred the postverbal %Q and the SVO order without the clitic; both indicated that the respective other option was the second best option. The remaining two accepted both equally, and all four speakers accepted preverbal %Qs without clitics (ranked third for the two speakers that provided rankings of all acceptable options). None of the speakers accepted a postverbal %Q co-occurring with the clitic, i.e., (40b).

Let us then move on to the Slavic languages without definiteness marking. **Table 5** collapses the results of Czech (5 speakers consulted), Polish (7 speakers), and Slovak (1 speaker) into one, since they were the same.

	INTRANSITIVE		TRANSITIVE		PARTITIVE
	C	NC	C	NC	NC
PREVERBAL	✓	#	✓	#	#
POSTVERBAL	#	✓	marked	✓	#

Table 5: Results for Polish, Czech, Slovak.

Table 5 shows a categorical judgment pattern: Non-conservative readings require postverbal %Qs, leading to the PPVS order for intransitives and to SVO for transitives. Second, conservative readings require preverbal %Qs in intransitives (SVPP) and prefer preverbal %Qs in transitives (OVS). Finally, partitives, which were only tested in the non-conservative intransitive scenario were judged as unacceptable, thus confirming our intuition that they do not give rise to non-conservative readings.

Similar results were obtained for the other Slavic languages without definiteness marking, i.e., BCMS (5 speakers), Slovenian (4 speakers), and Russian (non-conservative scenarios: 6 speakers; conservative: 8 speakers). The results are summarized in **Tables 6–8**.

	INTRANSITIVE		TRANSITIVE	
	C	NC	C	NC
PREVERBAL	✓	#	inconclusive/✓	# (ok for 1)
POSTVERBAL	#	✓	inconclusive	✓

Table 6: Results for Russian.

	INTRANSITIVE		TRANSITIVE	
	C	NC	C	NC
PREVERBAL	✓	#	✓	#
POSTVERBAL	marked	✓	marked	✓

Table 7: Results for Slovenian.

	INTRANSITIVE		TRANSITIVE	
	C	NC	C	NC
PREVERBAL	✓	# (ok w/ CT for 2)	✓	# (ok for 1)
POSTVERBAL	#	✓	marked	✓

Table 8: Results for BCMS.

In all three languages non-conservative readings require postverbal positions, whereas conservative readings require or at least prefer preverbal positions. There was one BCMS speaker who preferred to express non-conservative meanings with a different construction and one Russian speaker for whom the non-conservative interpretation was harder to obtain in general. For both speakers, preverbal non-conservative %Qs were acceptable, but we suspect that these

speakers might not have the non-conservative reading to begin with. This circumstance would be interesting in itself and needs to be explored in future research.

Finally, the results for Russian conservative transitives were not fully conclusive, even when we disregard the judgments of that one speaker who had problems getting a non-conservative reading at all (they preferred the postverbal order). Out of six speakers, two categorically chose the preverbal order. The other four stated that they preferred the postverbal order, but two of these made additional remarks suggesting that they were judging the sentences as acceptable or unacceptable in general, rather than (un)acceptable in the given scenario. One of these speakers more generally was missing further specification of ‘women’ in all conservative scenarios. They reported the non-conservative interpretation for the variant with postverbal %Qs, whereas for the preverbal variant they required the domain restriction to be explicitly introduced by a PP modifier (‘women from the village’). The other speaker was confused since they read ‘context’ in the narrow experimental sense and assumed that the test items directly followed the linguistic context rather than judging them in a particular scenario. We believe that both speakers prefer the postverbal order for non-conservative, and the preverbal order for conservative readings, but their reported judgments did not indicate this because the first speaker was missing something additional to make ‘women’ more specific (‘from the village’) and the other speaker judged the sentences for general acceptability, rather than for felicity in the given scenario.

A third one of the speakers that preferred the postverbal order mentioned processing difficulties, which we already described in §4.3.3 as a garden path effect: due to case syncretism, they first parsed the preverbal %Q as a subject, and only when encountering the verb form in singular it is obvious that it should have been processed as an object. We do not know why or whether this problem only occurred for this one speaker, since it could have been an issue for all the languages we examined (including German). Again, this is something we will leave for future research. Finally, the fourth one who preferred the postverbal order found the preverbal order acceptable as well.

4.4 General discussion

Let us first provide answers to the empirical research questions we started out with in (25):

(41) Empirical research questions

EQ1 Can %Qs in Slavic languages without definiteness marking give rise to both conservative and non-conservative readings?

Answer: Yes (for most speakers).

EQ2 What is the role of word order in Slavic languages without definiteness marking?

EQ3 What is the role of word order in Slavic languages with definiteness marking, as well as in German?

Answer to both EQ2 and EQ3: It distinguishes between conservative, high %Qs and non-conservative, low %Qs.

EQ4 Is the correlation between reading and word order categorical (a requirement) or just a tendency?

Answer: The correlation is a tendency in German and Bulgarian, but rather categorical in the other Slavic languages.

Both the corpus data and the native speaker judgments confirmed the intuitions we had for German and Polish about the role of word order, and furthermore showed that other Slavic languages behaved similarly. For German, it was clear that the non-conservative reading was best with %Qs in a low position. For transitives, this is also the canonical word order SOV, but for intransitives this results in a potential deviance from the canonical word order, namely in PPSV. For the conservative reading, %Qs were preferred in their canonical word order, i.e., SPPV for intransitives and SOV for transitives.

For Slavic languages without definiteness marking, the judgments were more categorical in that non-conservative readings required postverbal %Qs (PPVS and SVO), whereas conservative readings required (intransitive SVPP) or preferred (transitive OVS) preverbal %Qs. Thus, the differences between these languages and German were twofold. First, a potential reason for the more categorical judgments in Slavic languages without definiteness marking could be that in the absence of a formal distinction, word order is the only means to differentiate between the two readings. The second difference is that in transitives German adheres to the canonical word order SOV for both readings, whereas the Slavic languages without definiteness marking readily accept the OVS order for the conservative reading.

We assume that the reason for this second difference is that even though both types of languages display word order variation to some extent, Slavic languages exhibit even more flexibility (see, e.g., Bailyn 2011; Jasinskaja & Šimík to appear). In particular, whereas the OVS/OSV order in German is rather marked in requiring an explicit contrast and therefore probably involving A'-movement to the left periphery, the OVS order in the Slavic languages under discussion can also be due to A-scrambling that does not require any contrast but could be motivated by other factors (recall §3). However, note that even in the presence of a contrast in both transitive scenarios, which could have facilitated the OVS order (the deviance from the canonical SVO order) in the conservative scenario, our informants still preferred or required the canonical SVO order in the non-conservative scenario, in either German or Slavic.

For Slavic languages with definiteness marking we expected the results to either be similar to German, since both make a formal distinction between the two readings, or to the other Slavic languages, because it is generally assumed that all Slavic languages exploit word order variation to a great extent (for Bulgarian and Macedonian, see, e.g., Rudin 1990; Jaeger & Gerassimova 2002; Tomić 2008). The results suggest that the latter is true for Macedonian and the former for Bulgarian. In particular, the Macedonian speakers had more categorical judgments and a

preference for OVS in the conservative transitive scenario (albeit with the additional clitic), whereas the Bulgarian speakers had a strong preference for the canonical SVO order for all transitives and less categorical judgments.

The Macedonian and Bulgarian data raise several questions, to which we do not have an answer at this point. One question concerns the role of the Macedonian clitic *gi*, whose semantics is not understood (on its syntax, see, e.g., Tomić 2008; Franks 2009). For some of our informants it seemed to require definiteness of the element thus doubled, for others specificity; for some it seemed to be able to pick up both ‘50%’ and ‘the women’, for others only one of these. A more general question concerns the precise semantics/pragmatics of definiteness marking in these languages, in comparison to definite articles in German and other languages. Unfortunately, we are not aware of any formal semantic/pragmatic account of definiteness in these languages, other than a few works on Bulgarian ‘one’ on the grammaticalization path to an indefinite article (Geist 2013; Gorishneva 2016).

Finally, let us briefly comment on ways in which our informants suggested that a marked or unacceptable test item can be rescued in a given scenario. Several German and Bulgarian speakers remarked that sentence-initial objects, which deviate from the canonical SOV/SVO order, were possible in transitive scenarios but that they require explicit contrast, surprise or an element like *only*. This requirement was stronger for the non-conservative construal than for the conservative one. Similar remarks were made for the other Slavic languages about preverbal non-conservative %Qs, in that a particular information structure or their function as a contrastive topic could improve the acceptability of such items in the non-conservative scenarios. We will come back to this in §6.3.

The empirical generalizations we arrived at lead to five research questions that an adequate analysis of the non-conservative reading has to account for, see (42). We add a sixth one (TQ5), based on a further empirical observation we made in Gehrke & Wągiel (2022).

- (42) Theoretical research questions concerning non-conservative %Qs
- TQ1 Why do they have to appear low?
 - TQ2 Why do they have to involve bare nominals?
 - TQ3 What is the source of the subject-object-asymmetry in, e.g., English and why is it absent in, e.g., German?
 - TQ4 Why do intransitives appear in or behave like existential constructions, with seemingly obligatory sentence-initial locative PP?
 - TQ5 Why do we observe restrictions to existential (-like) and HAVE-predicates (Gehrke & Wągiel 2022)?
 - TQ6 With respect to Pasternak & Sauerland’s (2022) ‘Westphalian’ examples in (12): Why do we get truth-conditional differences, depending on whether we stress the noun or the adjectival modifier?

The account we propose in §5 will provide answers to the first five questions. In particular, we will argue that non-conservative %Qs are always interpreted low, on a par with semantically incorporated nominals. This accounts for their low position (TQ1), the restriction to bare nominals (TQ2) and to HAVE- and existential-like predicates (TQ5). The answer to TQ4 is connected to this, since we propose that %Qs with intransitives are, in fact, existential constructions. Finally, the answer to TQ3 will be that in languages with a rigid word order, like English, subjects have to appear high/sentence-initially, in a position from which incorporation is impossible. This is why there are no ‘true’ subject %Qs in English, and an existential construction has to be used instead (or a passive with transitives). In languages with a more flexible word order, on the other hand, like German and Slavic, subjects (nominals in nominative case) can remain low, in a position from which they can incorporate into the predicate.

Our account will not be able to provide an answer to TQ6, however, but we assume that such examples always involve a marked information structure; we leave this for future research. Instead, as a point of departure for our account we take the unmarked cases with neutral stress and neutral word order. This is a major difference between our analysis and the alternative account by S&Co.’s account, which we will come back to in §6.

5 The account

In this section, we spell out an account of non-conservative readings of %Qs that starts out from the following empirical generalizations. First, non-conservative readings only arise with bare nominals, never with nominals that appear with articles, even when we are dealing with count nouns in languages with articles. Second, the non-conservative reading requires %Qs to appear low, as the German and Slavic data reported in §4 show. Third, %Qs with intransitive predicates have much in common with existential constructions, evidenced by the fact that English has to resort to such a construction to obviate the SOA and by the fact that sentence-initial locative PPs seem to be obligatory (recall §2.2). A final empirical point concerns the fact that the German corpus data reveal restrictions to particular predicates that combine with non-conservative %Qs, which we discussed in more detail in Gehrke & Wągiel (2022). In particular, we observed that all of the transitive verbs that combine with %Qs as objects or subjects (in a nominative-dative constellation; recall §4.2) can be subsumed under HAVE-predicates (‘belong to’, ‘have’, ‘buy’, ‘invite’, ‘place’), in the sense of Barker (1995); Sæbø (2009); Le Bruyn et al. (2016). The intransitive verbs, in turn, were existential predicates in more than half of the cases, as well as ‘live’, ‘teach’, and ‘work’, which can be construed as typical ways of existing at a location.

We propose an account that capitalizes on the empirical commonalities between the transitive examples and incorporation structures (bare nominals, objects, HAVE-predicates) (§5.1), and those between the intransitive examples and existential constructions (definiteness effect, obligatory locative, word order) (§5.2). In particular, we argue that %Qs are always interpreted low, as

part of the predicate. We take the effect of %Qs on the predicate (a kind of adverbial reading) to come about due to semantic incorporation, modeled in terms of Chung & Ladusaw's (2003) RESTRICT. Chung & Ladusaw propose that nominals in internal argument position can combine with verbal predicates in at least two ways: either they saturate the internal argument slot, which is the standard way to compose predicates and their arguments (via functional application); or they merely restrict the verbal concept to a subtype of that concept, which is similar to modification, and this mode of composition displays hallmark properties of semantic or pseudo-incorporation, such as restrictions to bare nominals in object position and (in some languages) to HAVE-predicates (see, e.g., Borik & Gehrke 2015). In the case of intransitives, in turn, the structure we argue for is essentially a kind of existential construction (see, e.g., McNally 2016). Existential constructions can be contrasted with locative predications of the type 'DP is PP' (43).

- | | | |
|------|-------------------------------|-------------|
| (43) | a. There is a doctor in town. | EXISTENTIAL |
| | b. A/The doctor is in town. | LOCATIVE |

An existential construction describes the existence of an entity at a location or time, and the nominal that designates this entity (called the pivot) is necessarily a weak nominal (the definiteness effect). The pivot, e.g., *a doctor* in (43a), is in a different position than it is in the locative counterpart. Cross-linguistically, existentials involve verbs like 'to be', 'to have', or dedicated existential predicates, such as Spanish *hay* (which diachronically derives from 'there has'), and they can differ in their structure while still expressing an existential meaning. For example, a common assumption for English existentials holds that *there* is the logical subject and the pivot denotes a property (of type $\langle e, t \rangle$); the material following the pivot, e.g., *in town* in (43a), is the coda, which has been analysed as an adjunct.

In our analysis, %Qs themselves will not be treated as determiners in a generalized quantifier sense (type $\langle \langle e, t \rangle, \langle \langle e, t \rangle, t \rangle \rangle$). Rather, we argue that they are of type $\langle \langle d, \langle e, t \rangle \rangle, \langle e, t \rangle \rangle$, as they take a gradable predicate encoding a quantity-based scale grounded on the part-whole structure of the individual argument, to return a predicate. The %Q is modeled in the spirit of Bochnak's (2010) treatment of cross-categorial *half*, and we argue that %Qs involve a measure function that has a built-in proportional "quantificational" semantics. In this way, they essentially work like a scalar modifier that operates on a scale provided by the modified expression.

5.1 Transitives

Given the morphosyntactic evidence discussed in previous sections, we propose that non-conservative transitive construals involve semantic incorporation of the bare plural noun in object position into the verbal predicate and that the resulting complex predicate is subsequently shifted to a scalar expression on which the %Q operates. The idea is that (44) has a meaning that could (roughly) be paraphrased as 'The company women-employs to the extent of 50%'.

- (44) *Polish*
 Firma Ekspol zatrudnia pięćdziesiąt procent kobiet.
 company.NOM Ekspol employs fifty.ACC percent women.GEN
 ‘The company Ekspol employs 50% women.’

In this constellation, the grammatical subject is the logical subject of the sentence. We assume that in (44) the noun ‘company’ is interpreted as a group noun of sorts, and thus it denotes a set of singular company members as well as pluralities thereof. Hence, the DP ‘company Ekspol’ provides the argument for the main predicate, the maximal plural individual in the extension of ‘company’, which we will call *ce*.

We propose that the bare plural is semantically incorporated and combines with the transitive verb via Chung & Ladusaw’s (2003) RESTRICT mode of composition (45a). Under this account, the internal argument is not referential (or quantificational), rather it is a property-denoting expression that does not saturate the verbal predicate but merely modifies (RESTRICTS) it. The internal argument variable is then existentially closed (EC) in the subsequent derivation (45b).

- (45) a. $\text{RESTRICT}(\lambda x_e \lambda y_e [R(x)(y)], \lambda z_e [P(z)]) = \lambda x_e \lambda y_e [R(x)(y) \wedge P(x)]$
 b. $\text{EC}(\lambda x_e \lambda y_e [R(x)(y)]) = \lambda y_e \exists x_e [R(x)(y)]$

For convenience, we will represent the incorporation expression as ‘women-employ’ (46). Notice that we do not apply EC at this stage.

- (46) $\llbracket \text{women-employ} \rrbracket = \text{RESTRICT}(\lambda x_e \lambda y_e [\text{EMPLOY}(x)(y)], \lambda z_e [\text{WOMEN}(z)]) =$
 $\lambda x_e \lambda y_e [\text{EMPLOY}(x)(y) \wedge \text{WOMEN}(x)]$

Subsequently, (46) will be shifted to a gradable property associated with a fully closed cardinality-based scale and the %Q will operate on that scale. Building on Bochnak’s (2010) treatment of cross-categorical uses of *half*, we analyse %Qs as scalar modifiers that target an ordered set of degrees provided by the modified expression. This is supported by the fact that %Qs can be used to modify gradable adjectives encoding fully closed scales (47).

- (47) The glass is {half / fifty percent} full.

Unlike *half*, %Qs are complex expressions, and thus we decompose them into two components. The numeral simply refers to a natural number (type *d*) (48), whereas ‘percent’ denotes a function that takes a degree and yields a scalar modifier of type $\langle\langle d, \langle e, t \rangle \rangle, \langle e, t \rangle \rangle$, see (49), where *G* is a gradable predicate (an expression of type $\langle d, \langle e, t \rangle \rangle$), S_e is a fully closed scale encoded by that predicate, MAX returns the maximal degree on that scale, and *d* is the value provided by the numeral. For instance, (50) specifies that the extent to which a gradable property applies to an individual is 50%.

$$(48) \quad \llbracket \text{fifty} \rrbracket = 50$$

$$(49) \quad \llbracket \text{percent} \rrbracket = \lambda d_d \lambda G_{\langle d, \langle e, t \rangle \rangle} \lambda x_e [G(x) (\frac{d}{100} \times \text{MAX}(S_G))]]$$

$$(50) \quad \llbracket \text{fifty percent} \rrbracket = \lambda G_{\langle d, \langle e, t \rangle \rangle} \lambda x_e [G(x) (50\% (S_G))] , \text{ where } 50\% (S_G) \text{ is an abbreviation for } \frac{50}{100} \times \text{MAX}(S_G)$$

Given (50), the %Q cannot combine with the incorporation expression in (46) directly, as it combines with the gradable adjective in (47). However, following Bochnak's analysis of the degree/quantity ambiguity in (51), we assume that in (44) the %Q targets a cardinality-based scale in order to provide a proportion of a plurality.

$$(51) \quad \text{The meat is half cooked.}$$

For this purpose, we adapt Bochnak's μ operation, which on our account relates the part-whole structure of a plurality denoted by the subject with a cardinality scale, i.e., an ordered set of degrees that can be accessed by the %Q. As defined in (52), μ_R shifts a relation between individuals into a scalar expression of type $\langle d, \langle e, t \rangle \rangle$ by existentially binding the direct object variable and introducing an open degree argument associated with the cardinality of the relevant (plural) individual via the # measure function. After μ_R combines with the incorporation construction, we obtain the gradable predicate in (53).

$$(52) \quad \llbracket \mu_R \rrbracket = \lambda R_{\langle e, \langle e, t \rangle \rangle} \lambda d_d \lambda y_e \exists x_e [R(x)(y) \wedge \#(x) = d]$$

$$(53) \quad \llbracket \mu_R \rrbracket (\llbracket \text{women-employ} \rrbracket) = \lambda d_d \lambda y_e \exists x_e [\text{EMPLOY}(x)(y) \wedge \text{WOMEN}(x) \wedge \#(x) = d]$$

(53) encodes a cardinality scale, based on the part-whole structure of the λ -bound nominal argument, which will be saturated by the subject. Since that argument represents a bounded individual, the corresponding scale is also bounded, and thus fully closed, which makes it compatible with (50). Consequently, (53) serves as the input for the %Q and the output is the predicate in (54), where $S_{\text{women-employ}}$ is a cardinality-based fully closed scale.

$$(54) \quad \llbracket \text{fifty percent} \rrbracket (\llbracket \mu_R \text{ women-employ} \rrbracket) = \\ \lambda G_{\langle d, \langle e, t \rangle \rangle} \lambda x_e [G(x) (50\% (S_G))] (\lambda d_d \lambda z_e \exists y_e [\text{EMPLOY}(y)(z) \wedge \text{WOMEN}(y) \wedge \#(y) = d] = \\ \lambda x_e [(\lambda d_d \lambda z_e \exists y_e [\text{EMPLOY}(y)(z) \wedge \text{WOMEN}(y) \wedge \#(y) = d](x) (50\% (S_{\text{women-employ}}))] = \\ \lambda x_e \exists y_e [\text{EMPLOY}(y)(x) \wedge \text{WOMEN}(y) \wedge \#(y) = 50\% (S_{\text{women-employ}})]]$$

Finally, the predicate in (54) combines with the subject DP, and thus gets saturated by the entity *ce*. As a result, (55) states that the extent to which the company employs women is 50% of the maximal value on a cardinality scale based on the part-whole structure of *ce*. These are the desired truth conditions capturing the non-conservative meaning of (44).

- (55) $\llbracket \text{fifty percent } \mu_r \text{ women-employ} \rrbracket(\llbracket \text{company Ekspol} \rrbracket) =$
 $\exists y_e [\text{EMPLOY}(y)(ce) \wedge \text{WOMEN}(y) \wedge \#(y) = 50\% (S_{\text{women-employ}})]$

Let us now see how this approach allows us to capture non-conservative intransitive construals.

5.2 Intransitives

The overall idea is that non-conservative intransitive construals underlyingly resemble existential constructions. This view is supported by the fact that German and Slavic sentences like (56) can be expressed in English by existentials (57), despite the fact that in English regular declarative non-conservative intransitives are infelicitous, recall (9). In Slavic and German, however, the existential has a structure as in (58), which looks like our intransitive non-conservative %Q examples, except that the verb is ‘to be’.

- (56) *Polish*
 W firmie Ekspol pracuje pięćdziesiąt procent kobiet.
 in company.LOC Ekspol works fifty.NOM percent women.GEN
 ‘Fifty percent of the employees at the Ekspol company are women.’

- (57) There are fifty percent women working at this company.

- (58) *German*
 Im Garten sind Blumen.
 in-the garden are flowers
 ‘There are flowers in the garden.’

We assume for German and Slavic that it is the location (or more precisely: a plural individual at that location) that is the subject (see Bassaganyas-Bars 2015 for one such account of existentials). In (56), we take the PP ‘at the Ekspol company’ to denote a set that is pragmatically restricted to include only individuals that work at the company. We take its extension to involve both atomic individuals and pluralities thereof. Consequently, the PP predicate is shifted by the standard IOTA-shift to the maximal plurality in its extension, i.e., the plurality that contains all the individuals that work at Ekspol (59). Let us call this plural individual *atec*.

- (59) $\text{IOTA}(\llbracket \text{at the Ekspol company} \rrbracket) = \alpha x_e [\text{AT-THE-EKSPOL-COMPANY}(x)] = \textit{atec}$

As for the VP, we follow Bassaganyas-Bars (2015) in assuming that in existentials the verb is interpreted as introducing a general pragmatically determined relation π (Barker 1995). Specifically, we propose that ‘work’ in (56) denotes π_{work} , which is resolved as a working relation

between two individuals. Furthermore, we assume that the bare plural ‘women’ in the pivot is incorporated into the verbal predicate via RESTRICT and then the result in (60) feeds μ_R in order to yield the gradable property in (61), associated with a fully closed scale.

$$(60) \quad \llbracket \text{women-work} \rrbracket = \text{RESTRICT}(\lambda x_e \lambda y_e [\pi_{\text{work}}(x)(y)], \lambda z_e [\text{WOMEN}(z)]) = \lambda x_e \lambda y_e [\pi_{\text{work}}(x)(y) \wedge \text{WOMEN}(x)]$$

$$(61) \quad \llbracket \mu_R \rrbracket(\llbracket \text{women-work} \rrbracket) = \lambda d_d \lambda y_e \exists x_e [\pi_{\text{work}}(x)(y) \wedge \text{WOMEN}(x) \wedge \#(x) = d]$$

The scalar expression in (61) combines with the %Q, which targets the cardinality scale $S_{\text{women-work}}$ (62). That scale is again based on the part-whole structure of the λ -bound variable.

$$(62) \quad \llbracket \text{fifty percent} \rrbracket(\llbracket \mu_R \text{ women-work} \rrbracket) = \lambda G_{\langle d, \langle e, t \rangle \rangle} \lambda x_e [G(x)(50\%(S_G))] (\lambda d_d \lambda z_e \exists y_e [\pi_{\text{work}}(y)(z) \wedge \text{WOMEN}(y) \wedge \#(y) = d]) = \lambda x_e [(\lambda d_d \lambda z_e \exists y_e [\pi_{\text{work}}(y)(z) \wedge \text{WOMEN}(y) \wedge \#(y) = d](x)(50\%(S_{\text{women-work}})))] = \lambda x_e \exists y_e [\pi_{\text{work}}(y)(x) \wedge \text{WOMEN}(y) \wedge \#(y) = 50\%(S_{\text{women-work}})]$$

The resulting expression in (62) gets saturated by the maximal plurality of individuals working at Ekspol, i.e., *atec* from (59), and we arrive at the truth conditions in (63), which state that (56) is true if the extent to which there is a working relationship between women and the individuals working at this company is 50% of the maximal degree on the relevant cardinality scale, i.e., if 50% of the individuals working at this company are women. These are the desired truth conditions for (56) since the proportion of the women is calculated with respect to the individuals working at the company.

$$(63) \quad \llbracket \text{fifty percent } \mu_R \text{ women-work} \rrbracket(\llbracket \text{at the Ekspol company} \rrbracket) = \exists y_e [\pi_{\text{work}}(y)(\text{atec}) \wedge \text{WOMEN}(y) \wedge \#(y) = 50\%(S_{\text{women-work}})]$$

To conclude, our analysis captures the empirical facts we arrived at in previous sections and also observed in Gehrke & Wągiel (2022). First of all, it explains the use of bare plurals in non-conservative construals with %Qs, the fact that %Qs in such constructions appear low, as well as the restriction to particular predicates (HAVE and existential-like predicates). The reason is an incorporation structure in transitive constructions and an underlying existential-like structure coupled with incorporation in intransitive configurations. This in turn accounts for the apparent effect of the %Q on the VP. Specifically, the %Q always operates on a gradable expression derived from the main predicate.

A first advantage of our account over S&Co.’s proposals, to which we will turn shortly, is that we have an explanation for the SOA that they observed for languages like English, as opposed to German, but which they could not account for. Under our account, true subject

%Qs in sentence-initial position cannot get a non-conservative interpretation because they generally appear too high. Instead they either have to appear VP-internally, which is possible in languages with a more flexible word order, like German or the Slavic languages, or one has to resort to a different construction, such as an existential construction (with intransitives) or a passive construction (with transitives), which is the case in languages with a rigid word order, like English.

A second advantage of our account over S&Co.'s proposals is that we base it on the unmarked cases with neutral stress and word order. Instead, S&Co.'s account starts out with what is in our opinion a marked contrast that leads to a truth-conditional difference, namely the contrast in (12). In this way, they provide an answer to TQ6, which we do not have; at the same time, however, their proposal lacks direct answers to the other questions, which raises additional problems, as we will see in the following section.

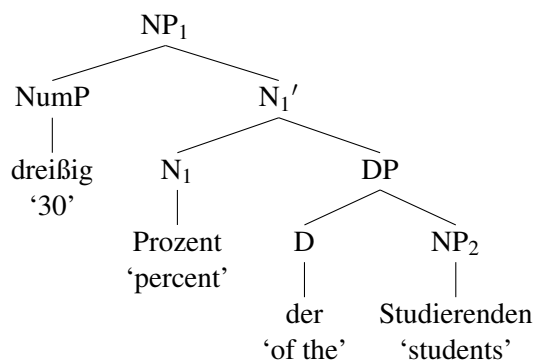
6 Back to S&Co.

The proposals developed by S&Co. are much in the spirit of Herburger's (2000) and others, in that they require non-conservative readings to arise with a particular focus structure. In general, there are two key components these analyses rely on. First, they are based in a Roothian framework for the semantics of focus (Rooth 1985; 1992) and, second, they assume QR of the %Q. In this section, we will discuss the analysis by Pasternak & Sauerland (2022) and we will demonstrate that it faces serious problems with respect to deriving non-conservative interpretations in neutral stress/word order configurations. Finally, we will take a closer look at examples that involve focus on an element other than the NP that the non-conservative %Q appears with, which will show the need to further explore the role of focus.

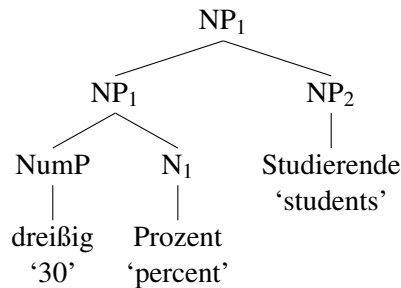
6.1 Pasternak & Sauerland's (2022) analysis

Let us first discuss the syntactic structures argued for by Pasternak & Sauerland. The trees in (64) and (65) represent the conservative and non-conservative NP in German, respectively.

(64) CONSERVATIVE



(65) NON-CONSERVATIVE



Under both construals in (64)–(65) the measure noun ‘percent’ (N_1) projects an NP (NP_1), which receives case depending on its position in the clause, e.g., nominative or accusative. At the DP-level (not represented here), in both cases NP_1 serves as the complement to a silent indefinite determiner D which introduces existential quantification. Where the two construals differ is in the second NP (NP_2), i.e., ‘the students’ vs. ‘students’. Under the conservative construal in (64), NP_2 further projects to a DP that is the complement of the measure noun (N_1) so that it gets assigned genitive case. Under the non-conservative construal in (64), however, NP_2 does not project to a DP. Rather, it is merely adjoined to the measure NP_1 , and thus agrees with it in case. Under this analysis of the non-conservative construal, the measure noun and the numeral, e.g., ‘30%’, form a syntactic constituent, to the exclusion of NP_2 . Pasternak & Sauerland show convincingly that the proposed structures make correct predictions concerning constituency.

On Pasternak & Sauerland’s semantic account, %Qs, i.e., measure nouns combined with a numeral, are treated as degree quantifiers. Their denotation of ‘percent’ is given in (66), where n and D are types for numbers and functions from degrees to truth values, respectively. $MAX(D)$ is the maximal degree of which D is true and $MAX(DOM(D))$ gives the maximal degree for which D yields a defined truth value. Thus, what (66) does is that for a number n and a set of degrees D , it returns \top (true) if the maximal degree in D is greater than or equal to n percent of the maximal degree in D ’s domain.

$$(66) \quad \llbracket \text{Prozent} \rrbracket = \lambda n \lambda D. MAX(D) \geq \frac{n}{100} \times MAX(DOM(D))$$

In order to explain the non-conservative construal in (65), Pasternak & Sauerland’s approach builds on two crucial ingredients, specifically focus sensitivity and QR of the %Q (NP_1). Before we present what we believe to be a flaw of the analysis they propose, let us go through their derivation of (8), repeated here as (67), step by step.

(67) *German* (Pasternak & Sauerland 2022)
 30% Studierende arbeiten hier.
 30%.NOM students.NOM work here
 ‘30% of the workers here are students.’

As evident from (65), the measure noun (N_1) combines directly with the numeral which saturates its first argument. This results in an expression of type $\langle\langle d,t \rangle, t \rangle$ (NP_1), i.e., a quantifier over degrees (68).

$$(68) \quad \llbracket \text{dreißig Prozent} \rrbracket = \lambda D. \text{MAX}(D) \geq \frac{30}{100} \times \text{MAX}(\text{DOM}(D))$$

However, as a degree quantifier NP_1 cannot combine with ‘students’ (NP_2). Thus, Pasternak & Sauerland propose the covert operator DEG, as defined in (69), where μ^c is a contextually determined measure function (here, it is cardinality). In our case, DEG takes NP_2 and returns a function from a degree to a set of pluralities of students whose cardinality is greater or equal to that degree.

$$(69) \quad \llbracket \text{DEG} \rrbracket^c = \lambda P \lambda d \lambda x. P(x) \wedge \mu^c(x) \geq d$$

Though the application of DEG does not resolve the type mismatch between NP_2 and NP_1 , by changing its nature it creates conditions for QR. Consequently, NP_1 moves from the DP to the left edge of the clause (70) leaving a degree-denoting trace, and thus forming a degree predicate (let us call it D_a), true of a degree d iff at least d -many students work here (71).¹²

$$(70) \quad [\text{dreißig Prozent}] \lambda_1 [[D t_1 \text{ Studierende DEG}] \text{ arbeiten hier}]$$

$$(71) \quad \llbracket \lambda_1 [D t_1 \text{ Studierende DEG}] \text{ arbeiten hier} \rrbracket = \\ = \lambda d. \exists x [\text{STUDENTS}(x) \wedge \mu^c(x) \geq d \wedge \text{WORK-HERE}(x)] \quad (\text{henceforth } D_a)$$

After D_a saturates the $\langle d, t \rangle$ argument of the QRed degree quantifier (NP_1), the result is the interpretation in (72). In prose, (67) is predicted to be true if the maximal cardinality degree, i.e., the number, of students working here is at least 30% of the maximal degree for which D_a is defined.

$$(72) \quad \llbracket \text{dreißig Prozent} \rrbracket (D_a) = \text{MAX}(D_a) \geq \frac{30}{100} \times \text{MAX}(\text{DOM}(D_a))$$

At this point, Pasternak & Sauerland observe that the semantics in (72) faces a problem they call NOMAXDOM. In particular, since D_a is a predicate defined for degrees of cardinality, computing $\text{MAX}(\text{DOM}(D_a))$ is impossible. The reason is that unlike, e.g., the scale of fullness, the cardinality scale has no maximal degree. Therefore, there is no maximal degree for which D_a yields true or false, and thus $\text{MAX}(\text{DOM}(D_a))$ remains undefined.

In order to solve the NOMAXDOM problem, Pasternak & Sauerland invoke focus-derived presuppositions, recall the discussion of the apparent focus-sensitivity of %Qs in §2. Adopting

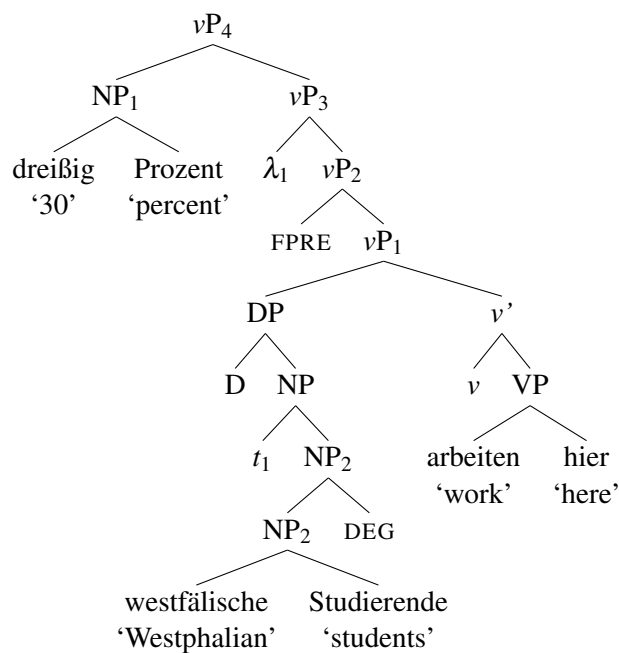
¹² Recall that Pasternak & Sauerland assume that in both the conservative and the non-conservative construal NP_1 is a complement to a silent indefinite determiner D which contributes existential closure.

a Roothian framework of focus semantics (Rooth 1985; 1992), they assume both a standard interpretation $\llbracket X \rrbracket$ and a focus interpretation $\llbracket X \rrbracket_f$, which is a set of alternatives of the same type as $\llbracket X \rrbracket$. In addition, they assume that a sentence presupposes that at least one of its focus alternatives is true (Abusch 2010). This is ensured by the syntactic head FPRE, see (73), where $\vee \llbracket X \rrbracket_f$ is the grand disjunction of the set of alternatives to $\llbracket X \rrbracket$.

(73) $\llbracket \text{FPRE } X \rrbracket$ is defined if $\vee \llbracket X \rrbracket_f$ is true; where defined, $\llbracket \text{FPRE } X \rrbracket = \llbracket X \rrbracket$

According to the proposal, FPRE attaches to the proposition-denoting node (vP). As a result, we obtain (74) as a full syntactic representation of the non-conservative examples in (12) (with the noun ‘students’ modified by the adjective ‘Westphalian’ inside NP_2), which will ultimately allow Pasternak & Sauerland to both capture focus sensitivity and avoid the NOMAXDOM problem in cases such as (72).

(74) NON-CONSERVATIVE CONSTRUAL



For the examples in (12), the ordinary interpretation of vP_1 in (74) does not depend on the placement of focus and can be informally described as in (75), where g stands for the variable assignment function.

(75) $\llbracket [D t_1 [\text{westfälische Studierende}]_f \text{ DEG arbeiten hier}]^{g,c} \rrbracket =$
 $= \llbracket [D t_1 [\text{westfälische}]_f \text{ Studierende DEG arbeiten hier}]^{g,c} \rrbracket \approx$
 \approx at least $g(1)$ -many Westphalian students work here

On the other hand, the focus interpretation differs with respect to where focus is placed. In the discussed examples, the alternatives are ‘at least $g(1)$ -many P s work here’ and ‘at least $g(1)$ -many P students work here’ for (76) (focus on ‘Westphalian students’, as in (12a)) and (77) (focus on ‘Westphalian’, as in (12b)), respectively.

$$(76) \quad \llbracket \text{D } t_1 \text{ [westfälische Studierende]}_F \text{ DEG arbeiten hier} \rrbracket_f^{g,c} \approx$$

$$\approx \left\{ \begin{array}{l} \text{at least } g(1)\text{-many Westphalian students work here,} \\ \text{at least } g(1)\text{-many Macedonians work here,} \\ \text{at least } g(1)\text{-many women work here,} \\ \vdots \end{array} \right\}$$

$$(77) \quad \llbracket \text{D } t_1 \text{ [westfälische]}_F \text{ Studierende DEG arbeiten hier} \rrbracket_f^{g,c} \approx$$

$$\approx \left\{ \begin{array}{l} \text{at least } g(1)\text{-many Westphalian students work here,} \\ \text{at least } g(1)\text{-many Bavarian students work here,} \\ \text{at least } g(1)\text{-many Silesian students work here,} \\ \vdots \end{array} \right\}$$

Now, in order to solve the NOMAXDOM problem and to capture the semantic effect on the VP, Pasternak & Sauerland postulate that among the alternatives for ‘Westphalian students’ as well as for ‘Westphalian’ is the vacuously true predicate $\lambda x. \top$ (or a similarly unrestrictive expression). Consequently, among the alternatives in the sets in (76) and (77) will be ‘at least $g(1)$ -many individuals work here’ and ‘at least $g(1)$ -many students work here’, respectively. Since they are the weakest alternatives in the corresponding sets they are what the meaning of the grand disjunction introduced by FPRE (νP_2) will amount to, recall (73). As a result, once we perform lambda abstraction over $g(1)$ (νP_3), depending on the placement of focus in NP_2 we will obtain the degree predicates in (78) (henceforth D_α) and (79) (henceforth D_β).

$$(78) \quad \llbracket \lambda_1 \text{ FPRE D } t_1 \text{ [westfälische Studierende]}_F \text{ DEG arbeiten hier} \rrbracket^c =$$

$$= \lambda d : \text{at least } d\text{-many } \mathbf{individuals} \text{ work here.}$$

$$\text{at least } d\text{-many Westphalian students work here} \quad (\text{henceforth } D_\alpha)$$

$$(79) \quad \llbracket \lambda_1 \text{ FPRE D } t_1 \text{ [westfälische]}_F \text{ Studierende DEG arbeiten hier} \rrbracket^c =$$

$$= \lambda d : \text{at least } d\text{-many } \mathbf{students} \text{ work here.}$$

$$\text{at least } d\text{-many Westphalian students work here} \quad (\text{henceforth } D_\beta)$$

Notice that the two degree predicates share the same truth conditions. Specifically, both D_α and D_β would be true for degrees not exceeding the cardinality of Westphalian students working here. Where they differ is their definedness conditions imposed by FPRE via the grand disjunction. While the domain of D_α is a set of degrees exceeding the cardinality of individuals working here,

for D_β it is a set of degrees not exceeding the cardinality of students working here. In both cases, the domains have the maximal degree. Hence, when D_α and D_β combine with the QRed $\langle\langle d, t \rangle, t \rangle$ -type %Q (NP_1), see (80)–(81), the NOMAXDOM problem does not arise.

$$(80) \quad \llbracket \text{dreißig Prozent [westfälische Studierende]}_F \text{ DEG arbeiten hier} \rrbracket^c = \\ = \text{MAX}(D_\alpha) \geq \frac{30}{100} \times \text{MAX}(\text{DOM}(D_\alpha))$$

$$(81) \quad \llbracket \text{dreißig Prozent [westfälische]}_F \text{ Studierende DEG arbeiten hier} \rrbracket^c = \\ = \text{MAX}(D_\beta) \geq \frac{30}{100} \times \text{MAX}(\text{DOM}(D_\beta))$$

The semantics of ‘percent’, recall (66), allows Pasternak & Sauerland to capture the correct truth conditions in (80)–(81). Since D_α and D_β differ in their domains, (80) is true if Westphalian students constitute at least 30% of the total workforce, whereas (81) is true if Westphalian students constitute at least 30% of the student workforce.

In the discussed cases, Pasternak & Sauerland’s account seems to work neatly. However, closer investigation reveals what we believe are serious problems for their approach.

6.2 Some doubts, or: There is 50% truth to the story

Though the work by S&Co. is an important contribution and an interesting attempt to explain the distinction between the conservative and the non-conservative construal with %Qs as a result of a structural difference, there are a number of doubts we have with respect to their analysis. In general, we agree with S&Co. that in the case of non-conservative construals the truth conditions can vary depending on focus assignment and we acknowledge that the analysis by Pasternak & Sauerland in (80)–(81) does account for the contrast in (12). On the other hand, we feel that their approach does not capture the crucial intuition that what is essential about %Qs is that they have a semantic effect on the VP irrespective of where focus is placed.

As already discussed, the key ingredients of Pasternak & Sauerland’s account are domain sensitivity encoded in the semantics of the %Q, recall (66) and (68), QR, recall (70), and focus sensitivity coupled with presupposition triggering, recall (73). Importantly, all of the non-conservative examples that S&Co. discuss involve stress on (part of) the NP following the %Q (NP_2), e.g., on ‘students’ in (10a) or ‘Westphalian’ in (12b), which is analyzed as marking focus. On their account, it is essential that the focus is within NP_2 for the non-conservative reading to arise. What, then, happens when stress is elsewhere? And what happens with cases involving neutral stress? In this and the following section, we will go through a number of examples that in our opinion pose a problem for Pasternak & Sauerland’s account.

Let us first discuss sentences with neutral stress and word order, which we will illustrate with German, against our background assumptions outlined in §3. As discussed in §4.4, neutral word order for the conservative construal is SPPV (SVPP with V2) with intransitives and SOV (SVO

with V2) with transitives. The neutral word order for the non-conservative construal is, in turn, PPSV (PPVS with V2) and also SOV (SVO with V2). This is illustrated in (82) and (83).

(82) *German*

- a. 50% der Frauen arbeiten bei Pirapo.
 50%.NOM the.GEN women.GEN work at Pirapo
 ‘50% of the women work at Pirapo.’ CONSERVATIVE
- b. Bei Pirapo arbeiten 50% FRAUEN.
 at Pirapo work 50%.NOM women.NOM
 ‘50% of the employees at Pirapo are women.’ NON-CONSERVATIVE

(83) *German*

- a. Pirapo beschäftigt 50% der FRAUEN.
 Pirapo.NOM employs 50%.ACC the.GEN women.GEN
 ‘Pirapo employs 50% of the women.’ CONSERVATIVE
- b. Pirapo beschäftigt 50% FRAUEN.
 Pirapo.NOM employs 50%.ACC women.ACC
 ‘Pirapo employs 50% women.’ NON-CONSERVATIVE

What is crucial for our purpose is that under the constellation in (82)–(83) focus can project all the way (e.g., Höhle 1982), which allows for an all-new interpretation, where focus alternatives could be basically anything. Importantly, irrespective of this fact (82b) and (83b) still get non-conservative interpretations. In order to show why Pasternak & Sauerland’s approach fails in such wide-focus configurations, let us go through the derivation of the intransitive sentence in (82b).

Within the subject DP, the DEG head, recall (69), transforms ‘women’ (NP_2) into an expression requiring a degree argument as its first input, which, in turn, causes the %Q (NP_1) to QR. For the purpose of this demonstration, we adopt a standard assumption that propositions are functions from possible worlds to truth values. Thus, the ordinary interpretation of (82b) up to the FPRE node (vP_1) is as the semi-formal description in (84). In other words, for a world w , (84) yields truth if at least $g(1)$ -many women work at Pirapo in w .

(84) $\llbracket [\text{bei Pirapo arbeiten } D \ t_1 \text{ Frauen DEG}]_F \rrbracket^{g,c} \approx$
 $\approx \lambda w. \text{ at least } g(1)\text{-many women work at Pirapo in } w$

On the other hand, the focus interpretation of vP_1 in (82b) is a set of propositions such that each proposition in that set includes $g(1)$ -many individuals involved in some event or some state. This is illustrated in (85), which contains alternatives of the same form as (84).

$$(85) \quad \llbracket [\text{bei Pirapo arbeiten } D \ t_1 \text{ Frauen DEG}]_F \rrbracket_f^{g,c} \approx$$

$$\approx \left\{ \begin{array}{l} \lambda w. \text{ at least } g(1)\text{-many women work at Pirapo in } w, \\ \lambda w. \text{ at least } g(1)\text{-many forests burn in Slovakia in } w, \\ \lambda w. \text{ at least } g(1)\text{-many cats walk on Jasna's bed in } w, \\ \vdots \end{array} \right\}$$

So far, everything goes smoothly. Yet, in order to see how a serious problem for Pasternak & Sauerland arises, let us follow their reasoning and include a vacuously true (or similarly unrestrictive) function among the alternatives in (85). For convenience, we will assume a proposition with extremely weak truth conditions (86).

$$(86) \quad \lambda w. \text{ at least } g(1)\text{-many individuals are involved in some eventuality in } w$$

Since (86) is weaker than any other alternative in the set in (85), it will be the output of the grand disjunction applied by the FPRE head (νP_2), recall (73). Thus, once the derivation reaches the lambda abstraction over $g(1)$ (νP_3), (86) will serve as the definedness condition of the degree predicate in (87) (let us call it D_p). For convenience, we assume that at this point the world variable w is replaced by the actual world $@$.

$$(87) \quad \llbracket \lambda_1 \text{ FPRE } [\text{bei Pirapo arbeiten } D \ t_1 \text{ Frauen DEG}]_F \rrbracket^c \approx$$

$$\approx \lambda d : \text{ at least } d\text{-many individuals are involved in some eventuality in } @.$$

$$\text{at least } d\text{-many women work at Pirapo in } @ \quad \text{(henceforth } D_p)$$

Finally, D_p serves as the argument of the QRed %Q, recall (68). As a result, we obtain (88) as the interpretation of (82b).

$$(88) \quad \llbracket 50\% [\text{bei Pirapo arbeiten } D \ t_1 \text{ Frauen DEG}]_F \rrbracket^c =$$

$$= \text{MAX}(D_p) \geq \frac{50}{100} \times \text{MAX}(\text{DOM}(D_p))$$

Even at first blush, (88) does not feel right. In particular, there are two serious problems with this denotation. First, notice that the NOMAXDOM problem still applies here. Since the definedness condition of D_p is extremely weak, recall (87), in effect there is no maximal degree for which D_p would yield a defined truth value (think, e.g., of statements such as *Infinitely many prime numbers exist*). Hence, the application of MAX to $\text{DOM}(D_p)$ would result in an undefined output.

However, for the sake of the argument, let us assume that somehow the NOMAXDOM problem could be resolved. This would, nevertheless, by no means help save (88). The reason is that the definedness condition of D_p does not capture the semantic effect on the VP, and thus gives rise to incorrect truth conditions every time the total number of individuals involved in some eventuality is greater than the number of individuals who work at Pirapo. For instance, imagine that in total

there are 1000 individuals involved in some eventuality and that 100 people work at Pirapo, out of which 50 are women. In that case, the sentence in (82b) is definitely true. And yet, contrary to fact the semantics in (88) predicts it to be false since the number of female workers at Pirapo, i.e., 50, is less than 500, which corresponds to 50% of the individuals involved in some eventuality. This is a serious flaw and we cannot see how it could be fixed in the proposed system.

In this section, we showed that Pasternak & Sauerland's account fails to capture non-conservativity understood as the semantic effect of the %Q on the VP in sentences with wide focus. As a result, the proposed derivation either crashes or generates incorrect truth conditions for sentences with neutral stress and word order such as (82b) and (83b). In the next section, we will discuss further data, which we believe show the need to be more explicit about the kind of focus involved in non-conservative readings.

6.3 Another issue: Focus elsewhere

In the previous section, we showed that Pasternak & Sauerland's (2022) approach fails to account for the non-conservative construal in a wide-focus configuration giving rise to an all-new interpretation, which we consider a serious flaw of the analysis. In this section, we address a further potential issue, namely cases in which focus is not inside the NP following the %Q, as expected under S&Co.'s account, but elsewhere. For example, one of our German informants provided (89) to improve on the sentence-initial order of the non-conservative %Q object. Here, the focus particle *nur* 'only' associates with 'Pirapo', which is marked with prosodic prominence.

- (89) *German*
 50% Frauen beschäftigt nur [die Firma Pirapo]_F.
 50%.ACC women.ACC employs only the.NOM company.NOM Pirapo.NOM
 'It is only the company Pirapo that employs 50% women.'

For examples like these, S&Co. would have to assume a structure with multiple foci. For example, a structure with two foci is illustrated in (90) (from Wold 1996).

- (90) John also only introduced [SUE]_F to [BILL]_F.

In (90), the focus particles *also* and *only* lexically associate with focus, which is marked by stress on *Sue* and on *Bill*. While this has to be tested empirically, our intuition is that the right intonation for (89) is different, though, since there seems to be just one instance of prosodic prominence; this would speak against S&Co.'s account. Alternatively, it could be that we are dealing with a second occurrence focus on a given constituent, '(50%) women', which would be less prominent or not prominent at all, since given material tends to be defocused (see Baumann 2016).

An example where givenness most likely leads to the NP occurring with a %Q to not be prosodically prominent is one of the Czech examples we have collected within the CNC corpus

study. (91b) is the only attested instance of a non-conservative %Q in preverbal position in the entire sample; here it is an object to a transitive verb. As is clear from the English translation of the preceding sentence provided in (91a), the previous discourse discussed the relative ranking of countries with respect to the proportions of women in different parliaments across the world, with higher proportions leading to a higher ranking. Consequently, the whole predicate in (91b) ('has more than 40% women') is given (because it is an instance of an apparently higher proportion) and the new information focus is on 'Sweden'. To comply with the nuclear stress rule, this stressed constituent appears sentence-finally. There is no additional prosodic prominence of 'women', but the example nevertheless has a non-conservative reading.

(91) *Czech* (CNC)

- a. CONTEXT: "Currently, we are ranked 78th in the worldwide ranking tracking the representation of women in the parliament," said Jana Smiggels-Kavková, the head of Fórum 50%.
- b. Více než 40 procent žen v dolní komoře parlamentu
 more than 40.ACC percent women.GEN in low.LOC chamber.LOC parliament.GEN
 má z evropských zemí například [Švédsko]_F [...]
 has from European.PL.GEN countries.GEN for-instance Sweden.NOM
 'Among the European countries that have more than 40% women in the low chamber of the parliament there is, for instance, Sweden...'

Our cross-linguistic investigation yielded further examples in which focus is on an element other than (part of) NP₂. In particular, a number of informants reported for BCMS, Bulgarian, Czech, German, Macedonian, and Polish, that in non-conservative scenarios, transitive sentences with a preverbal object %Q become more felicitous with heavy stress on the postverbal subject to mark surprisal or contrastive focus, ideally with an adversative continuation. In all of these examples '50% women' can be treated as a contrastive topic, which, according to, e.g., Büring (2006), involves additional prosodic prominence, and this could arguably be treated on a par with second occurrence focus, as discussed in Baumann (2016). For instance, in Czech (92) the NP 'company Spedex' is prosodically prominent, which gives rise to a contrastive focus interpretation, further reinforced by the following phrase 'and not Bustrans'.

(92) *Czech*

- Je zajímavé, že padesát procent žen zaměstnává [společnost
 is interesting that fifty.ACC percent women.GEN employs company.NOM
 Spedex]_{CF} a nikoliv Bustrans.
 Spedex and not Bustrans
 'It is interesting that it is the company Spedex that employs fifty percent women and not Bustrans.'

Finally, in Polish, the non-conservative interpretation is possible even with fronting of the element that would be required to bear focus under S&Co.’s account. For instance, consider (93) with the %Q in postverbal position. The moved NP ‘women’ surfaces to the left of the VP and is immediately followed by the lexical marker *to*. In this construction (termed *true topicalization*), *to* is analyzed as an overt topic marker and according to Cegłowski & Tajsner (2006) and Tajsner (2015) a fronted element preceding *to* cannot bear a focal stress.¹³ Crucially, however, (93) definitely gets a non-conservative interpretation.

(93) *Polish*

[Kobiet]_T to w firmie Ekspol pracuje pięćdziesiąt procent.
 women.GEN TOP in company.LOC Ekspol works fifty.NOM percent

‘As for women, they make up fifty percent of the people working at the company Ekspol.’

A complete account of the kind of focus sensitivity involved with %Qs, if any, needs to explain examples like the ones discussed in this section, but it is currently unclear how exactly S&Co.’s approach would capture them. Since our account is not built on focus sensitivity we do not run into issues with the examples discussed here, but would treat them as information-structurally marked. Similarly, we treat the contrast in the ‘Westphalian’ examples in (12) to arise due to a marked information structure in case only the adjective is stressed, and a full account of cases where one deviates from default stress and word order, which we leave for future research, hopefully addresses these issues, without the need to resort to a general focus sensitivity for the unmarked cases.

7 Conclusion

In this paper, we discussed conservative and non-conservative readings of percentage quantifiers (%Qs) in German and Slavic, based on data from corpora and cross-linguistic questionnaires. While only German and Slavic languages with definiteness marking (Bulgarian and Macedonian) make a formal distinction between these two construals, whereas Slavic languages without definiteness marking do not, we arrived at a novel empirical generalization for both types of languages, namely that the difference in readings correlates with a difference in word order. Specifically, non-conservative %Qs appear low in the structure whereas conservative %Qs either appear in their canonical position depending on their syntactic role as subject or object (German and Bulgarian) or they appear high (all other Slavic languages).

On our analysis of the data, the %Q is a scalar modifier that operates on a cardinality-based scale associated with a property of individuals and specifies the extent to which a gradable property applies to an individual. The apparent effect on the VP comes about by assuming that

¹³ Neutral stress in (93) is either on ‘percent’, as indicated here, or on ‘Ekspol’.

the nominal with %Qs incorporates into the verbal predicate, and that in the case of intransitives we additionally have an existential structure, in which %Qs are part of the predicate. This general idea also provides a solution to the subject-object asymmetry, which was a puzzle for previous accounts. In particular, we hypothesized that this asymmetry arises in languages with rigid word order, such as English, which has to resort to different syntactic structures, e.g., existential constructions and passives, in order for %Qs to appear low in the structure. In contrast, it does not arise in languages with ‘free’ word order, such as German and Slavic, in which also syntactic subjects can appear low in the structure.

We critically evaluated previous accounts of the non-conservative reading by Uli Sauerland and colleagues (S&Co.), which crucially require focus on (part of) the NP following the %Q for the non-conservative reading to arise. In particular, we demonstrated that Pasternak & Sauerland’s (2022) version of the approach fails to provide correct truth conditions for non-conservative neutral stress/word order configurations with a wide-focus (all-new) interpretation. We also pointed out that non-conservative interpretations arise in various types of information structure and since it is not straightforward how S&Co. would account for these, it might turn out that their proposal encounters further problems.

Let us then come back to the Conservativity Universal we started out with in §1 and the question whether non-conservative readings of %Qs pose a challenge to it. Our answer is that they do not: While %Qs are not treated as GQ-style determiners in the traditional sense, under either analysis discussed in this paper (S&Co or ours), both accounts still preserve something resembling conservativity, in the sense that %Qs first have an effect on the VP and then on the rest of the sentence. Only the means by which this is achieved differ.

Several issues remain for future research. First, we would have to investigate what happens in information-structurally marked examples, like the ones discussed in §6.3, and in particular what leads to the truth-conditional difference in S&P’s ‘Westphalian’ example in (12), if, as we argued, focus sensitivity is not a hallmark of non-conservative %Qs. Second, it would be good to back up our data with quantitative corpus work that also takes into account %Qs in other positions (indirect objections, PPs), as well as with experimental work and auditory stimuli in which we can control for prosody. Third, we need a better understanding of the semantics of definiteness in Bulgarian and Macedonian, including the contribution of object clitics. Finally, we saw that some Macedonian speakers could use bare nominals with a conservative reading, and a similar corpus example from German is discussed in Gehrke & Wągiel (2022). It would be important to understand under which circumstances bare nominals in languages that do have definiteness marking can nevertheless participate in conservative interpretations.

Abbreviations

%Q = percentage quantifier, ACC = accusative, BCMS = Bosnian/Croatian/Montenegrin/Serbian, C = conservative, CF = contrastive focus, CL = clitic, CNC = Czech National Corpus, CT = contrastive topic, DAT = dative, DEF = definite, DO = direct (accusative) object, F = focus, DEREKO = German Reference Corpus, GEN = genitive, LOC = locative, NC = non-conservative, NOM = nominative, O = object, PP = prepositional phrase, PPP = past passive participle, PL = plural, PRT = particle, S = subject, SG = singular, T = topic, TOP = topic marker, V = verb

Supplementary files

The complete Slavic data used in the cross-linguistic questionnaire is provided in the supplementary file *On word order and non-conservative percentage quantification in Slavic and German: Supplementary file*. DOI: <https://doi.org/10.16995/glossa.5803.s1>

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Competing interests

The authors have no competing interests to declare.

Author contribution

Both authors have contributed equally to this work. They are listed in alphabetical order.

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