SQUAT, *zero* and *no/nothing*: Syntactic negation vs. Semantic negation•

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1. Introduction

In this paper I will propose a distinction between syntactic and semantic sentential negation. I will motivate the distinction by discussing some core properties of three downward entailing quantifiers: *no/nothing*, SQUAT, and the numeral *zero*. The syntactic tests I apply to these quantifiers demonstrate that *no/nothing* can give rise to both syntactic and semantic sentential negation, whereas SQUAT and *zero* can only give rise to semantic sentential negation. Beghelli's (1995) clause structure for quantifier scope will be used to capture the available scope positions for these quantifiers based on their syntactic properties.

2. Prerequisites

2.1. SQUAT
The terms 'squatitive negation' (Horn 2001) or 'SQUAT' for short (Postal 2004), refers to a class of taboo words that can be used to express negation, as shown in (1). Postal (2004) and Horn (2001) discuss the use of SQUAT (as a class) as a bare noun (BN-SQUAT). Postal (2004) provides a list of squatitive items; his list is

reproduced in (2) updated with some extra British English taboo-words with similar use.

(1) Claudia saw squat.   = 'Claudia saw nothing.'
(2) SQUAT = squat, fuck-all, beans, crap, dick, diddley, diddley-poo, diddley-squat, jack, jack-shit, jack-squat, piss-all, poo, shit, shit-all (Postal 2004), sod-all, bugger-all, naff-all, crap-all.

Neither Postal nor Horn mention the use of SQUAT as a determiner (from now on referred to as 'D°-SQUAT'), as illustrated in (3).[i]

(3) John bought fuck-all books. = 'John bought no books.'

In this paper I will use examples with both BN and D°-squat.

2.2. Downward entailing quantifiers
No/nothing, SQUAT (as a class) and *zero* can be semantically classified as downward entailing quantifiers (DE-quantifiers), i.e. quantifiers that denote a monotone decreasing function and thus introduce contexts that support inferences from sets to subsets (Ladusaw 1979; van der Wouden 1994). Even though these quantifiers share this semantic property, they differ in their degree of downward entailingness (Zwarts 1996, 1998). These differences become apparent in some syntactic tests examining the scope taking properties of these quantifiers and the tags they give rise to.

3. Syntactic sentential negation vs. semantic sentential negation

3.1. Syntactic sentential negation: the question tag-test[ii]
In his seminal work on sentential negation Klima (1964) proposes a number of diagnostic tests to detect whether a sentence is negative

(Neg-S) or affirmative (Aff-S). One of the tests is the question tag test: a prototypical Neg-S combines with a positive question tag, an Aff-S combines with a negative question tag, as illustrated in (4) and (5).

(4) John did not buy a book, did/*didn't he?
(5) John bought a book, didn't/*did he?

The question-tag test thus tests the syntactic polarity of the sentence. I use the test to see whether the quantifiers under discussion can give rise to syntactic sentential negation, i.e. whether their presence in the sentence leads to positive question tags and thus to a Neg-S. In what follows I discuss the question tags for *no/nothing*, SQUAT and *zero* in object position.[iii]

In object position, sentences containing BN-SQUAT and D°-SQUAT take negative tags and are thus Aff-S:

(6) a.   Janet read squat, *did she/didn't she?
    b.   Janet read fuck-all books, *did she/ didn't she?

Similarly, *zero* in object position takes negative question tags and gives rise to Aff-S, cf. (7).

(7) Janet read zero books, *did she?/didn't she? (AFF-S)

The tags associated with sentences containing *no/nothing* in object position are ambiguous between positive and negative tags, as illustrated in (8)-(9).

(8) John bought no book, did he/didn't he?
(9) John bought nothing, did he/ didn't he?

Considering the literature on negation, this fact has not been discussed often and mostly it has been taken for granted that

no/nothing in object position leads to a Neg-S (Klima 1964, Postal 2004). However, negative tags are common with *no+* N° and are even the preferred option with *nothing* (Moscati 2006:87, 2010; MacCawley 1988; Ross 1973).[iv]
Summarizing, the question tags suggest that SQUAT and *zero* are similar in that they cannot give rise to a Neg-S, whereas *no/nothing* can, but not necessarily have to.

3.2. Semantic negation or negative scope

3.2.1. DE-quantifiers and semantic sentential negation
Modals interact scopally with negation (Iatridou & Zeijlstra; Iatridou & Sichel 2010; Breitbarth 2010). There appears to be a universal preference for modal verbs to scope below sentential negation (Palmer 1997: 138), apart from some necessity modals which can be analysed as PPIs (Iatridou & Zeijlstra 2009). In (10) this tendency is exemplified: the possibility modal *could* scopes below sentential negation or, to put it differently, negation takes wide scope over the modal.

> (10) He could not buy any books (because the shop was closed).
> a. = It was not possible that he bought any books.
> b. ≠ It is possible that he bought any books.

Taking into account the results of the question tag-test, I will label SQUAT and *zero* non-negative DE-quantifiers and *no/nothing* negative DE-quantifiers. This classification goes back to Beghelli (1995), who divides DE-quantifiers into non-negative and negative DE-quantifiers. Following what was said above, it is expected that *no/nothing* interacts in a similar way with modal verbs as the verbal negator *not* does. However, since SQUAT and *zero* are non-negative, it is expected that neither SQUAT nor *zero* could give rise to the same negative readings in the interaction with modal verbs as

no/nothing could give rise to. However, this prediction is false. (11) shows that in a neutral context, both wide scope and split scope readings are accepted, i.e. with negation scoping above the modal.[v]

(11) He could buy *fuck all/ zero/ no* books (because the shop was closed)
= No books are such that it is possible that he bought them. (wide scope)
= It is not possible that he bought any books. (split scope)
≠ It is possible that he has not bought any books. (narrow scope)

It is hard to get truth-conditional differences between the wide scope reading, i.e. with the interpretation of the entire quantifier higher than the modal, and the split scope reading, i.e. with negation interpreted over the modal and the indefinite below the modal (de Swart 2000). The split scope reading is definitely the most natural reading for speakers of English. Crucial here is that that negation outscopes the modal verb, on a par with the interaction between *not* and most modals.[vi]

Summarizing, the scope interactions with possibility modal *could* show that all DE-quantifiers, including those that do not trigger affirmative tags and hence are non-negative, can scope over the modal in the same way as the verbal negator *not* does. This conclusion is in support of de Swarts' (2000) claim that it is a property of DE-quantifiers in predicative positions to give rise to split scope readings. DE-quantifiers that give rise to split scope readings could thus also be said to give rise to semantic sentential negation. Irrespective of whether they can give rise to positive question tags and thus to a syntactically Neg-S, they can all lead to the same negative interpretations.

The contrast that arose between SQUAT/*zero* on the one hand and *no/nothing* on the other hand when it comes to syntactic sentential negation (cf. section 3.1) disappears when it comes to

giving rise to semantic sentential negation: all three quantifiers can give rise to semantic sentential negation (or split scope). However, even this is not yet the full picture. We have not yet looked at narrow scope. That is what will be done in the next section.

3.2.2. DE-quantifiers and narrow scope

The question tag test showed that all three quantifiers could give rise to an Aff-S. This leads to the expectation that all three of them, in a specific (modal-free-context) could lead to a narrow-scope interpretation, i.e. with the quantifier interpreted in situ, i.e. within the VP. However, an example as (12) shows that this is not the case: *no* and *zero* can be interpreted below root possibility modal *could*, but SQUAT cannot get this low interpretation in exactly the same context.

> (12) Context: A friend giving another friend advise for a diet[vii]:
> You could eat *zero/ no/ *fuck-all* sweets.
> = It is a possibility/ an option to eat no sweets.

(12) shows that SQUAT cannot take narrow scope in a context that is compatible with narrow scope for *zero* and *no*. As such, the parallel between SQUAT and *zero* as established in section 3.1 seems disrupted here and rather *zero* and *no/nothing* seem to have something in common, i.e. the ability to allow an in situ, i.e. cardinal, interpretation of the quantifier.

3.3. Conclusion

When it comes to the distribution of question tags and thus to diagnosing the syntactic polarity of a sentence, *SQUAT* and *zero* are shown to give rise to Aff-S and *no/nothing* can, but need not, give rise to Neg-S. When it comes to their scopal properties *SQUAT*, *zero* and *no/nothing* can all three give rise to split readings with possibility modal *could*, indicating that all three of them can give

rise to semantic sentential negation, exactly like verbal negators do. However, in contexts that allow narrow scope for *zero* and *no/nothing*, SQUAT is ungrammatical, pointing to the fact that these quantifiers do not only differ along the negative/non-negative axis, as was shown with the question tag test, but that more is at stake here. This will be looked at in section 4. The results of the syntactic tests are summarized in table 2.

Table 2

TESTS		*no/nothing*	SQUAT	*zero*
Positive tags (= Neg-S)		✓	-	-
Scope	Split scope	✓	✓	✓
	Narrow scope	✓	-	✓

4.   Analysis

4.1. Introduction: QR

The fact that downward entailing quantifiers like SQUAT, *zero* and *no/nothing* can be interpreted in a higher position than where they surface, as was demonstrated in section 3.2.1, is the consequence of the fact that it has been claimed that all quantifiers can undergo covert A'-movement and adjoin to a higher projection. This process is called quantifier raising (QR) (May 1985; Aoun & Li 1989; Beghelli 1995; Ruys 1997). Some minimalist theories want to do away with QR and covert A'-movement and want to look at quantifier scope as parasitic on case movement (Hornstein 1994). Both proponents (May 1985) and opponents (Hornstein 1994) of QR, however, underlyingly assume that all quantifiers have access to the same scope positions, whereas this is empirically not correct (as was also shown in section 3.2.2). Beghelli (1995) rejects this assumption, which he calls the Uniformity of Quantification Hypothesis, and proposes a cartography of designated scope positions available to certain quantifiers. It is this cartography of

quantifier scope that I will use to capture the differences and similarities that were discussed in section 3.

4.2. Beghelli's cartography of quantifier scope
Beghelli's approach to QR is compatible with Hornstein (1994) in that even a quantifier that gets an in situ interpretation has at least always undergone movement to a case-checking position,[viii] i.e a SpecAgrXP. Beghelli (1995) assumes a standard 'split infl' hypothesis, i.e. AgrSP, TP, NegP and AgrOP, enriched with three extra target landing sites, a distributive projection (DistP), an existential projection (ShareP) and a referential projection (RefP). The standard treatment of how wh-quantifiers (WhQP) and negative quantifiers (NQP) take scope is the model for Beghelli's proposal. For WhQPs it is standardly assumed that they are licensed in SpecCP, undergoing Spec-Head agreement with the question operator in C° (Rizzi 1990, 1996; Haegeman 1995). For negative quantifiers (NQP) (Laka 1990, Zanuttini 1991, Haegeman 1995) it is assumed that they covertly move to SpecNegP to check a [+Neg]-feature against the negative head. Furthermore, he distinguishes three other groups of quantifier types that have designated landing sites: (i) Group-denoting QPs (GQPs) such as *some, several, two students, these students*, … introduce group variables and must be bound by an existential operator. This operator is available both in ShareP and RefP. When in SpecShareP GQPs realize the semantic feature of having a group referent, whereas in SpecRefP they are the subject of predication. (ii) Counting QPs (CQPs), such as *few men, between six and nine students*, … count individuals with a given property and get an *in situ* interpretation, i.e. they only move to their case position, SpecAgrOP or SpecAgrIOP (cf. Hornstein 1994); (iii) Distributive-Universal QPs (DQPs) such as *each* and *every* take scope in DistP. All quantifiers with their possible target landing sites are given in (13).

(13) [$_{RefP}$ GQP [$_{CP}$ WhQP[$_{AgrSP}$ CQP [$_{DistP}$ DQP [$_{ShareP}$ GQP [$_{NegP}$ NQP [$_{AgrOP}$ CQP [$_{VP}$ (CQP)]]]]]]]]]

4.3. Analysis: no/nothing, SQUAT and zero

No/nothing is normally considered a NQP, which moves to SpecNegP to check off a negative feature (Haegeman 1995) to give rise to syntactic sentential negation. However, in object position *no/nothing* is also compatible with negative tags and may thus give rise to an Aff-S. This means that *no/nothing* does not always move to SpecNegP (Haegeman& Zanuttini 1991; Haegeman 1995) at LF and that it can be interpreted in situ with a cardinal reading, i.e. as a CQP. *No/nothing* is thus ambiguous between being a NQP and a CQP. SQUAT patterns differently: while it gives rise to Aff-S, it cannot get the in situ, i.e. narrow, cardinal interpretation associated with CQPs. I therefore propose that in terms of Beghelli's classification, SQUAT is a GQP, which always moves to a position where it can bind its group variable, i.e. in ShareP or RefP. The fact that many SQUAT items contain the quantifier *all,* as in *fuck-all, bugger-all, sod-all, …* supports the assumption that SQUAT is a group-denoting quantifier. Being a numeral, *zero* can definitely be considered a CQP and get an in situ interpretation. However, since *zero* can also give rise to split scope readings, it cannot only be a CQP. If we assume that split scope readings associated with DE-QPs are the consequence of QR (cf. de Swart 2000; Zeijlstra 2007), then *zero* must also be able to take scope and move at least to ShareP. Evidence for the assumption that *zero* is also a GQP could come from the fact that *zero* always takes a plural or collective noun, again pointing to the fact that it can get a group interpretation. *Zero* is thus ambiguous between being a GQP, like SQUAT, and a CQP, like *no/nothing*. Table 3 summarizes the classification and hence the scope positions of the quantifiers under discussion.

Table 3

	CQP	NCQ	GCP
SQUAT	-	-	✓
no/nothing	✓	✓	-
zero	✓	-	✓

5.   Conclusion

This paper identified some distributional and interpretive properties of three downward entailing quantifiers: *no/nothing*, SQUAT and *zero*. By looking at the question tags these quantifiers give rise to on the one hand and the scopal interactions with modals on the other hand, this paper showed that a distinction between syntactic sentential negation and semantic sentential negation is relevant. Only *no/nothing* gives rise to syntactic sentential negation, but all three of them can give rise to semantic sentential negation, i.e. to split scope readings with modal verbs. Finally, by means of Beghelli's cartography of scope, this paper established that SQUAT, unlike *no/nothing* and *zero* cannot get a cardinal, in situ, interpretation and is not a CQP. Being solely a GQP it always needs to move to a designated scope position.

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[i] It is crucial to distinguish SQUAT as a class of taboo-words from the taboo item *squat*. *Squat* is American English and was used by Postal (2004) in many of his examples. The item lent its name to the entire class of taboo-words. My British English informants do not use the lexical item *squat* as a downward entailing quantifier, but they use *fuck-all*, *sod-all* or *bugger-all*. The latter can be used as a determiner, whereas the taboo-word *squat* can – for reasons not clear to me- never be used as a determiner.

[ii] There are two kind of tags: 1) reversal tags (McCawley 1988) or question tags and 2) reduplicative tags or same-way tags (Swan 2005). Reduplicative tags reduplicate the polarity of the matrix clause and are only possible with Aff-S. Question tags reverse the polarity of the matrix clause. Question tags usually check for information, whereas reduplicative tags signal the speaker's conclusion by inference or his sarcastic suspicion (Quirk et al. 1985). It is important to keep them apart.

[iii] A discussion of the tags in subject position is beyond the scope of this paper. Tags with *no/nothing* in subject position are always negative and thus reveal an interesting subject-object asymmetry for *no/nothing*. I will come back to this asymmetry in future research.

[iv] A discussion of the reason for this preference is beyond the scope of this paper.

[v] The fact that split scope arises in the presence of 'non-negative' DE-quantifiers shows that it is not intrinsically related to sentential negation (Rullman 1995; Zeijlstra 2007; van Craenenbroeck&Temmerman 2010). However, it supports the idea that it is the consequence of QR and not of lexical decomposition (Rullman 1995).

[vi] Partitive constructions with SQUAT and *no/nothing* can give rise to wide-scope readings. For reasons of space I cannot go deeper into these examples.

[vii] I want to thank Caroline Heycock for her judgments and for drawing my attention to these data.

[viii] Assuming that case movement is responsible for quantifier scope does not explain why certain scope positions are not available to certain quantifiers. Moreover, reducing quantifier scope to case movement leads to the improbable assumption that also negative quantifiers move for case-checking purposes (cf. Hornstein 1994) and that NegP is an A-position instead of an A'-position.