Plurality is Distinct from Number Neutrality*

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1. Introduction

The average speaker of English would most likely agree with the grammarian's description that "the English number system constitutes a two-tied contrast: SINGULAR, which denotes 'one', and PLURAL, which denotes 'more than one'" (Quirk et al. 1985: 297). Yet, recent work in the semantic literature has argued that this is precisely not the interpretation one should assign to the plural. Indeed, a theory where the plural designates *more than one* faces severe difficulties in cases such as those shown in (1)-(3), where the plural noun is compatible with an interpretation including just a single entity.

(1) Q: Do you have children? A: Yes, I have one./ # No, I have one.

(2) Ed didn't see dogs. False if Ed saw even a single dog.

(3) If you have children, raise your hand. True for those with one child.

In response to such data, many recent analyses (Sauerland et al. 2005, Spector 2007, Zweig 2009) have treated the plural as *inclusive*, i.e. designating *one or more*, rather than *exclusive*, designating *more than one*. These accounts place pragmatic reasoning center stage and the occurrence of an inclusive reading is linked to appearance in a downward entailing or scale reversing environment. This paper gives an alternate account, where the interpretation of plural nouns is not built upon a contrast between upwards or downwards entailing environments, but rather on whether the noun is interpreted as referring to particular entities, where quantity is relevant, or referring more generally to the type of thing designated by the noun, where quantity is then irrelevant. Section 2 shows that the distribution of the inclusive reading of plural noun phrases does not fully coincide with downward

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entailing environments or even those which license negative polarity items (NPIs). Section 3 provides experimental evidence demonstrating that speakers prefer exclusive readings in contexts where reference is made to particular objects, but prefer inclusive readings in more generic modes of discourse. Section 4 builds upon the refined empirical landscape to develop a new analysis, using a combination of the theory of common nouns of Krifka (1995) and Roberts (1996)'s analysis of discourse structure.

2. Examining the Distribution of the Inclusive Plural

The family of theories which propose inclusive analyses of the plural all appeal to similar ingredients to explain the behavior of the plural: (a) an inclusive reading of the plural (including sums and atoms), (b) a blocking account which rules out singular interpretations, and (c) a context where the blocking does not operate, namely downward entailing environments, where the inclusive denotation of the plural can be seen for what it truly is. Sauerland et al. (2005) attribute the interpretation of the plural to be the result of competition of forms or alternates during the process of calculating the meaning, where the stronger interpretation wins. On their analysis, the denotations of singular and plural nouns include both atoms and sums, but the singular form additionally includes an atomicity presupposition. They further assume the principle of "maximize presupposition" (Heim 1991) which ensures that the form with the strongest presupposition must be selected, unless a presupposition failure would arise. The crucial role of downward entailing contexts for this analysis is that it reverses which interpretation is stronger. In positive contexts as in (4a), the singular has stronger presuppositions and must be selected, if appropriate. The use of the plural implies that an atomic interpretation is not licensed, and from this the exclusive reading is derived. In negative contexts as in (4b), singulars are logically weaker than plurals within the scope of negation. In this case, maximize presupposition is not in effect since selecting the singular with its atomicity presupposition would not strengthen the entire utterance. Thus, for (4b) there is no further implicature that atoms have been excluded, allowing the plural to be interpreted inclusively.

(4) a. Ed saw dogs. [exclusive reading: two or more dogs]
b. Ed didn't see dogs. [inclusive reading: one or more dogs]

A second line of analyses (Spector 2007; Zweig 2009) assumes an inclusive interpretation of the plural form and then uses scalar reasoning to derive the interpretations in (4). In essence, the exclusive and inclusive interpretations can form a scale, whereby the exclusive is the stronger interpretation and must be selected according to standard pragmatic reasoning. In downward entailing contexts, the entailment patterns are reversed and the inclusive interpretation must be selected.

While the downward entailing environment plays a pivotal role for the analyses just reviewed, I will show that causally linking the inclusive reading to downward entailing or "scale reversal" environments turns out to be problematic: it is too weak if considering only strictly downward entailing contexts, but too strong if considering NPI-licensing environ-

ments. In particular, inclusive readings appear outside strictly downward entailing contexts (interrogatives, modals) and are both found where NPIs do not occur and not found where NPIs do occur. Analyzing NPIs as licensed directly by downward entailing environments has historically been stymied by a set of grammatical environments which are not downward entailing, yet do allow NPIs. These same environments pose similar problems for aligning inclusive readings with downward entailing environments. The inclusive reading is claimed to be available with interrogatives; however, as Sauerland et al. (2005) note, the relationship between interrogatives with respect to monotonicity and entailment properties and what is licensed is a vexed issue (see also discussion in Giannakidou 2006). Similarly, modal environments also permit inclusive readings, illustrated by (5) from Zweig (2009). Zweig summarizes that "[g]iven [(5)], it does not follow that Holmes needs to question the residents in groups of two or more; nor does it follow that if the first resident that he questions happens to be the thief, he must nonetheless question a second one" (p. 362).

(5) Sherlock Holmes should question local residents to find the thief.

While the inclusive plural interpretation is clear, this environment is neither strictly downward entailing, as shown in (6), nor does it reverse scalar implicatures, as shown in (7), where a standard test demonstrates that implicatures may be preserved.

(6) Sherlock Holmes should question local residents.
$\not\Rightarrow$ Sherlock Holmes should question local residents with red hair.

(7) Sherlock Holmes should question three local residents.
$\Rightarrow$ "exactly" three implicature preserved

These observations can also be extended to certain transitive opaque verbs such as *look for*. If lost during a hiking excursion, while climbing to higher ground, I could utter (8) to a companion to explain my actions. This sentence as well does not indicate that I am looking for groups of two or more houses, and if I spot one house that is suitable, I need look no further. The verb *look for* is particularly interesting since it also allows for upward monotonic inferences (see Zimmermann 2006).

(8) I am looking for houses.

As downward entailing environments do not fully align with inclusive readings, one may be tempted to think that licensing of the inclusive plural reading is dependent on NPI-licensing environments. This alignment would, however, under- and over-generate. Positions which license NPIs may fail to license the inclusive reading, as with emotive factives, shown in (9). The quantifier *both* provides an example where NPIs are not licensed (cf. Homer 2008) but an inclusive reading may still appear.

(9) a. I am surprised that anything was there. [NPI OK]
b. I am surprised that boxes were in the office. [exclusive plural only]

(10) a. #Both students who saw *anybody* reported to the police. [NPI not OK]
b. Both students who saw *spies* reported to the police. [inclusive plural]

An alternative to explaining the appearance of NPIs due to monotonicity properties has been pursued by Giannakidou (2006) *inter alia*, who link NPI licensing to "nonveridical" contexts, defined relative to propositional operators as follows: "A propositional operator F is veridical iff $F\,p$ entails or presupposes that p is true in some individuals epistemic model M_E(x); otherwise F is nonveridical" (Giannakidou 2006: 589). This notion comes quite close to characterizing where inclusive readings occur and the reason for the emergence of inclusive readings in these environments is most likely deeply entwined with non-veridicality. Yet, there is not complete overlap between the distribution of inclusive readings and non-veridical environments. First, while some transitive opaque verbs, such as *look for*, allow the inclusive reading, others, such as *owe* in (11), do not.

(11) Ed owes Sam horses. [exclusive plural only]

More investigation and nuanced distinctions could elucidate a connection between (a form of) non-veridicality and the possibility of inclusive readings; however, non-veridical environments cannot be the complete explanation. Sections 3 and 4 provide evidence that the interpretation of a noun as inclusive or exclusive cannot be only due to its grammatical environment, but is also intimately linked with the overall discourse context.

While the distribution of the inclusive plural reading does not entirely overlap with downward entailing environments, the environments reviewed above do have something else in common, namely the weakened referentiality status of the nominal. The inclusive plural readings all arose in contexts where the nominal did not presuppose the existence of any particular referents. Negation and modals both allow for contexts where, although a nominal is used, no reference to any particular objects is made. The core examples of interrogatives exhibiting inclusive plural reading are of a limited type—primarily involving the verb *have* in questions, as in (1). This use of *have* is commonly referred to as the *existential have* construction, related to and sharing many properties with existential constructions (Partee 2004). An existential construction in an interrogative context is also only weakly referential: since an interrogative context actually puts the existence of the NP in question, there is no reference made to entities already available in the discourse. For instance, the speaker of (1) does not presuppose that there are any children in the first place.

Given the above, another avenue of analysis emerges: NPs in referential contexts may be sensitive to number contrasts in a way that NPs occurring in weakly referential contexts would not be. Put differently, when NPs have particular referential responsibilities, number matters, while when an NP refers only in general terms, number is less apt to matter, rather it is the description of the *type* of entity which is at issue. Such a distinction between particular and general reference is independently argued for in the the literature on generics, where object-level entities, which are spatio-temporally bounded, are contrasted with kind-level entities, which are not bounded in space or time (Carlson 1980; Müller-

Reichau 2006). Krifka (1995) and Müller-Reichau (2006) contend that kinds are actually a subclass of a larger class under the name of 'concept', members of which do not, for instance, need to be "well-established", unlike kinds proper. I will follow them and consider *object-level* and *concept-level* to be the relevant distinctions. Section 4 spells out in detail the meanings involved, but I now turn to presenting evidence that this is the view that aligns correctly with the explanation of inclusive plurals in interrogative contexts.

3. Experimentally Probing the Interrogative Environment

Aligning the *exclusive/inclusive* interpretations of a plural noun phrase with the distinction between particular and general reference has testable predictions which differ from accounts which link the occurrence of an inclusive plural reading to the nominal's occurrence in particular grammatical environments. The interrogative environment supplies a suitable test case. Sauerland et al. (2005) tentatively claim that the inclusive plural interpretation should arise with "true information seeking" questions where the questioner does not already know the answer. The second hypothesis just advanced suggests that the inclusive plural reading arises when a nominal does not refer to particular entities, or equivalently, when a nominal is responsible for a type of generalized reference.

I now describe two experiments which use plural nouns in different contexts, designed to test these hypotheses. In the first experiment, participants were presented with pictures which clearly instantiate the object under question. In the second experiment, participants are presented with text questions within a "rules-and-regulations" environment, which is known to foster generic/kind-level construals (Carlson 1995).

Experimental 1: Spatio-Temporally Bounded Context 40 participants were presented with pictures displaying either one or multiple instances of a physical object. For example, one pair of stimuli presented a photo of a woman asking *Is the woman in this picture holding mugs?*, permitting a *yes* or *no* answer. The variable manipulated was the number of objects in the picture corresponding to the plural noun, here whether the woman was holding one mug or two. The study was conducted online via Amazon's Mechanical Turk which provides a heterogeneous population sample. Participants were additionally shown twice as many filler questions also involving answering questions about pictures.

If the inclusive plural interpretation is licensed by virtue of an (information-seeking) interrogative context, then the experimental manipulation should not have an effect; however, the manipulation did have an effect. When presented with multiple objects, the participants almost uniformly answered *yes* (92%), but when presented with a single object, only a minority of participants answered *yes* (32%). The result (χ^2 (df =1, N = 240) = 76.56 p $< .001$) was statistically reliable.

Experiment 2: Rules and Regulations Context The second experiment presented questions from a "rules-and-regulations" environment which has been claimed to promote generic construals. Participants saw questions that they were told could have come from

a corporate environment, along with facts about an employee, and were asked to answer as they thought the employee should answer. An example stimulus is given in (12). This study was also conducted on Mechanical Turk and all other aspects of the design were as in Experiment 1. The variable manipulated was the number of objects in the "employee facts" line which correspond to the plural noun in the question—for the sample stimuli, whether the employee's team completed one or three projects. The results were again clear. When the "employee facts" line contained a plural entity, here *three projects*, the participants almost uniformly answered *yes* (99%). In contrast to Experiment 1, participants largely preferred the inclusive plural reading for the critical items (78% *yes* responses).

(12)
Did your team terminate projects this fiscal quarter?
EMPLOYEE FACTS: employee's team has terminated exactly one project this fiscal quarter
What answer should the employee give? *Yes/No*

Discussion While the two experiments cannot be rigorously compared due to a variety of differences, such as participants and mode of presentation, the picture they present is compelling: when participants are considering what are undoubtably object-referring uses of plural nouns, the inclusive readings are disfavored, whereas when the participants are considering plural nouns in a context which encourages general reference, then the inclusive readings are favored. While the preference in each case was a sizable majority, it was not absolute, which may indicate that the judgements concerning the inclusive plural are rather delicate, and that there may be competing interpretations. The analysis in the following section indeed allows for exactly such a possibility.

4 Analysis

This section integrates a version of the analysis of common nouns given by Krifka (1995) within Roberts (1996)'s framework for discourse, deriving where number-neutral readings are (not) licensed for the crucial cases. The central assumption, shared by researchers since Carlson (1980), albeit in different fashions, is that nouns lead a double life: they designate a type of thing, i.e. referring to a kind, as well as individual objects of that type in the world. In the analysis here, both types of information are relevant to structuring discourse, and both can be queried as a Question Under Discussion (QUD).

Common Nouns: The theory of Krifka (1995) Building on much research in genericity, Krifka (1995) provides a broad view of noun meaning, meant to span languages as diverse as Chinese and English. Within his analysis of common nouns, three elements of meaning are present: reference to *concepts* (a broader notion than *kinds*), *objects* and *number*. These different elements are related by two different relations.[1] The relation R is a realization relation between *concepts* and the instances of the concept at the level of objects. OU is an operator which, given a concept and a set of objects, provides a measure,

[1]The presentation here abstracts away from issues related to taxonomic reference, whereby the relations presented are simplified from what Krifka (1995) actually proposes.

n, of the number elements of which qualify as instances of the concept. It is assumed that n is greater than 0. Given all these different elements, the denotation of common nouns is the following, where i is a variable of type s ranging over possible worlds:

(13) $\lambda y \lambda i \lambda n \lambda x[\mathrm{R_i}(x,y) \wedge \mathrm{OU_i}(y)(x) = n]$

Krifka then allows for two different types of derivation for a common noun, here represented by *dog*. One derivation is related to the object reading, where the number argument is filled during composition, yielding what I will call a *quantified object* reading. The second derivation takes the bare plural to denote a kind/concept, and subsequently the number argument undergoes existential closure, yielding an *instance of a concept* reading.

(14) a. Quantified Object: $\lambda n \lambda i \lambda x[\mathrm{R_i}(x,\mathrm{DOG}) \wedge \mathrm{OU_i}(\mathrm{DOG})(x) = n]$
b. Instances of a Concept: $\lambda i \lambda x \exists n[\mathrm{R_i}(x,\mathrm{DOG}) \wedge \mathrm{OU_i}(\mathrm{DOG})(x) = \ n]$

These representations allow two possible interpretations for a given plural noun. In (15a), the plural marker is interpreted as a number marker, which I, diverging from Krifka, will assume is interpreted as *more than one*. In (15b), the plural noun enters the derivation as a kind/concept and the plural marker is not interpreted. Since n is assumed to be greater than 0, the interpretation succeeds when at least one entity realizes the kind *dog*.

(15) a. $[\![dogs]\!] := \lambda i \lambda x[\mathrm{R_i}(x,\mathrm{DOG}) \wedge \mathrm{OU_i}(\mathrm{DOG})(x) \geq 2]$
b. $[\![dogs]\!] := \lambda i \lambda x \exists n[\mathrm{R_i}(x,\mathrm{DOG}) \wedge \mathrm{OU_i}(\mathrm{DOG})(x) = n]$

This analysis delivers the two distinct readings needed. One reading is plural, true when the noun's referent both is the type of thing named and meets quantificational conditions, being greater than one. The other reading is number-neutral, true just when the noun's referent is the type of thing named. It is these two interpretations of plural nouns in English, embedded within an articulated theory of discourse, which will provide an analysis of the (non-)occurrence of inclusive plural readings.

The Structure of Discourse and the Question Under Discussion I situate my analysis following Roberts (1996)'s theory of discourse where the main organizational force comes from the Question Under Discussion (QUD). I also assume the meaning of a question, $?p$, is given by a partition theory of questions (Groenendijk and Stokhof 1984), which guarantees that answers are strongly exhaustive. The partition theory further establishes entailment relations between questions: a question $q1$ entails question $q2$ iff answering $q1$ gives a complete answer to $q2$. I define the question operator as in (16), where $\overrightarrow{e}$ represents a run of variables, which when empty reduces to abstracting over propositions ($\lambda P_{<s,t>}$).

(16) $[\![?]\!] = \lambda P_{<s,<\overrightarrow{e},t>>}\ \lambda w \lambda v[P(w) = P(v)]$

Given the picture developed above, we can turn to what question sets are permitted

under this theory of noun meaning. Taking the example sentence *Ed saw dogs*, and recalling the logical form of common nouns given in (13), the QUDs in (17)-(19) can be derived, which query the kind, existence or number of objects, respectively.

(17) What (kinds of things) did Ed see? (Kind QUD) :
$?(\lambda i \lambda y \exists n \exists x[\text{Ed see } x \text{ in } i \wedge \mathrm{R_i}(x,y) \wedge \mathrm{OU_i}(y)(x) = n])$

(18) Did Ed see dogs? (Existential QUD) :
$?(\lambda i \exists x \exists n[\text{Ed see } x \text{ in } i \wedge \mathrm{R_i}(x,\mathrm{DOG}) \wedge \mathrm{OU_i}(\mathrm{DOG})(x) = n])$

(19) How many dogs did Ed see? (Quantitative QUD) :
$?(\lambda i \lambda n \exists x[\text{Ed see } x \text{ in } i \wedge \mathrm{R_i}(x,\mathrm{DOG}) \wedge \mathrm{OU_i}(\mathrm{DOG})(x) = n])$

Considering the entailment relations among the different QUDs shows further structure. Here a complete answer to (17) gives a complete answer to (18), whereby (17) entails (18). The relationship between (18) and (19) differs as they do not stand in an entailment relation: an answer to (18) resolves whether Ed saw any dogs or not, but not the number of dogs he might have seen. Despite the lack of entailment, there is an implied precedence relationship between (18) and (19) as an element of the question alternatives to *How many dogs did Ed see?* will be undefined if there do not exist any dogs in the relevant domain (recalling $n > 0$). *How many dogs did Ed see?* is typically an appropriate question only when *Did Ed see dogs?* is affirmatively resolved.[2]

The question alternatives for the closed proposition corresponding to *Ed saw dogs* can be derived in two different fashions with different interpretations depending on which meaning of the noun is at issue, i.e. whether the number argument is existentially closed, related to the instances of a concept reading, or saturated by a number value, related to the quantified object reading. Note that these two readings clearly relate to the two modes of discourse, *kind/concept-oriented* and *object-oriented*, discussed in section 3.

(20) a. Did Ed see dogs? (Existential QUD):
$?(\lambda i \exists x \exists n[\text{Ed see } x \text{ in } i \wedge \mathrm{R_i}(x,\mathrm{DOG}) \wedge \mathrm{OU_i}(\mathrm{DOG})(x) = n])$
b. Did Ed see dogs ? (Quantitative QUD):
$?(\lambda i \exists x[\text{Ed see } x \text{ in } i \wedge \mathrm{R_i}(x,\mathrm{DOG}) \wedge \mathrm{OU_i}(\mathrm{DOG})(x) \geq 2])$

The interpretation of the plural noun will be guided by which of these two forms is taken to be the question the conversational participants are attempting to answer, in other words, the immediate QUD.[3] In particular, the inclusive reading is tied to the Existential

[2] Answers with "none" or "zero" are of course appropriate answers, even though they are not in the question alternatives. See Roberts 1996: 24.

[3] Farkas and de Swart (2010) observe that referents of nouns may be associated with default expectations, i.e. that a person only has one nose or father, which influence the felicity of inclusive readings. I fully agree, and although space prohibits taking this up here, this is an additional level of constraints which will be necessary for a full story of licensing the inclusive or exclusive plural.

QUD. When reference to particular entities is not yet already determined, the Existential QUD is appropriate, and an inclusive reading is licensed. When, however, reference to particular entities is determined, then the Existential QUD is no longer appropriate, rather the Quantitative QUD is the immediate QUD, and the exclusive reading results.

Polar Interrogatives Returning to the initial example (1), considering the possible QUDs involved gives a clear reason why the inclusive interpretation is preferred. The respondent must decide which of the QUDs in (21) is relevant. Due to the precedence relation between the Existential and Quantitative QUDs, the Quantitative QUD is only licensed when the Existential QUD has been resolved. Yet, such questions are typically put forth precisely when the Existential QUD has not been resolved. Since the respondent would *not* assume that the Existential QUD has been resolved, and it would be proper to consider the Existential QUD to be the immediate QUD, in turn licensing the inclusive reading of the plural.

(21) a. Do you have children? (Existential QUD) :
$?(\lambda i \exists x \exists n[\text{You have } x \text{ in } i \wedge \mathrm{R_i}(x, \mathrm{CHILD}) \wedge \mathrm{OU_i}(\mathrm{CHILD})(x) = n])$

b. Do you have children? (Quantitative QUD) :
$?(\lambda i \exists x[\text{You have } x \text{ in } i \wedge \mathrm{R_i}(x, \mathrm{CHILD}) \wedge \mathrm{OU_i}(\mathrm{CHILD})(x) \geq 2])$

The above makes the prediction that if either (i) quantity is relevant to the QUD or (ii) the Existential QUD is previously resolved, then the range of answers should be different. Simple manipulations to the context of the polar interrogative, as in (22), demonstrate that when quantity is relevant to the QUD, then the exclusive reading is preferable.

(22) *Context*: Several colleagues are looking for a meeting place. B has an office in the building:
A: Do you have chairs in your office?
B: ?Yes, one/ No, only one.

The responses elicited during the experiments presented in section 3 have a natural explanation in light of the two potential QUDs, and further show that when the Existential QUD is resolved, the Quantitative QUD is preferred. Within the questionnaire environment, there is no presumption that, for example, any projects were completed, which licenses the Existential QUD, and in turn a *yes* response as long as any project was complete. Yet, when speakers were presented with a particular situation, where it was plausible that the type of object under discussion, e.g. *a mug*, was fixed, then it would be reasonable to assume that the Quantitative QUD was under discussion, resulting in a *no* response if only one mug was present. Although the Quantitative QUD was preferred, the Existential QUD was still a plausible option, as the variation in responses presumably demonstrates.

Conditionals The exact same explanation is available in the case of the antecedents of conditionals. For the following examples from the literature, the antecedent of a conditional evokes a QUD, which when resolved, determines the action the hearer should take. Yet, the QUD evoked is the Existential QUD, which in turn favors an inclusive interpretation.

(23) If you have children, raise your hand. (Bale et al. to appear)
Existential QUD: Do you have children?

(24) If you have ever seen horses in this meadow, you should call us. (Farkas and de Swart 2010)
Existential QUD: Were there horses in this meadow?

While the antecedent of a conditional may be hospitable to the Existential QUD, other interpretive possibilities are available, as (25) illustrates. This sentence admits of two interpretations: (i) if John has eaten even one apple, then he will be sick, e.g. in the case where he is allergic, or (ii) if he ate a sufficient number of apples, with the lower bound being two, then he will be sick.

(25) If John ate apples at lunch, he will be sick.
Existential QUD: Did John eat any apples?
Quantitative QUD: Did John eat a plurality of apples?

The environments discussed in section 2 can be treated similarly. Sentences involving modals may create an environment where an NP does not refer to any particular individuals, as in (5) and (8), whereupon the Existential QUD would be appropriate, and accordingly the inclusive reading as well. On the other hand, for nouns within the environment of an emotive factive, which presupposes the truth of their complement, the Existential QUD is not at issue, and the inclusive reading is not accessible. The verb *owe* in (11) deserves a more nuanced analysis than can be given here, where for present purposes it is sufficient to note that quantity is highly relevant to its use.

Negation Objects under negation provide the most recalcitrant examples of inclusive readings. Under the analysis here, this is expected: negation, in uses such as (26), deny the existence of entities designated by the noun, consonant with the Existential, but not the Quantitative, QUD. Yet, an exclusive reading is still possible under negation, as in the sentence *I didn't turn in assignments*, for which (27) shows a naturally-occuring use.

(26) Ed didn't see dogs.
Existential QUD: Did Ed see any dogs?
?*Quantitative QUD*: Did Ed see a plurality of dogs?

(27) I FAILED Algebra in High School–FAILED IT. . . . You have to do a LOT of NOTHING to fail a class. I didn't turn in assignments, I didn't ask for help and that's why I got an F. (from `http://www.city-data.com/forum/`)

On one reading of (27), no assignments were handed in; however, while (26) is felt to be false if Ed saw even one dog, the statement in (27) is not false if the speaker has turned in one assignment. Instead, there is a second reading, and probably the dominant one here, where the QUD revolves around quantity: how much did the student do? The speaker

answers this overall question (*a lot of nothing*) and then answers a reasonable subquestion: how many assignments did he turn in? The answer, *I didn't turn in assignments*, indicates that the student didn't hand in *two or more* (and most likely *more*). For the second reading, the Existential QUD, *Did the student turn in any assignments?*, is presumably resolved, given the world knowledge that a class typically has many assignments and the speaker most likely did at least one of them, and thus the Quantitative QUD is appropriate.

In (27), the bare plural must have wide scope over negation, otherwise the sentence would be true only if the speaker had handed in one or no assignments.[4] While the wide scope (exclusive) reading and the narrow scope (inclusive) reading are intuitively clear, the negation of the Quantitative QUD reading, viz. (28), appears to be missing.

(28) $\neg\exists x[\text{I hand in x in } i \wedge \mathrm{R_i}(x, \text{ASSIGNMENT}) \wedge \mathrm{OU_i}(\text{ASSIGNMENT})(x) \geq 2]$

It is worth considering what work the meaning in (28) does. The two verifying situations are if the speaker had handed in one assignment or no assignments; yet, both situations can already be expressed otherwise. In the first situation, it is only necessary to state *I turned in one assignment*. In the second situation, the negation of the instances of a concept reading covers that meaning. As such, this meaning will rarely be very useful to speakers and one expects that it would be generally blocked. Yet, this use is indeed possible in situations of denial or meta-linguistic negation, where in fact the denial concerns the quantity referred to, viz. *I didn't run over DOGS in the street, I ran over A/ONE dog.*

5. Conclusion

This paper has provided an alternate account of the source of inclusive plural readings, grounded in the distinction between particularized or general reference, whereby nouns interpreted as plural are distinct from nouns interpreted as number-neutral. While previous analyses related the inclusive reading to a set of grammatical contexts, both inclusive and exclusive readings were shown to be available in these contexts when licensed by the QUD.

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[4] This sentence is a counter-example to the claim that bare plurals always scope under negation. While bare plural partitives, e.g. *parts of this machine*, are known to permit wide scope readings, (27) demonstrates for the first time to my knowledge that a simple, i.e. one word, bare plural can have a wide scope reading.

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