Imprecision, structural complexity and the Gricean maxim of Manner[1]

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Abstract. Several recent approaches to imprecision in the plural domain entail that it is possible for a sentence with a definite plural and its alternative with an *all*-type quantifier to express contextually equivalent truth conditions. This raises the question of why we can use *all* in such contexts, given that "needless" structural complexity leads to unacceptability in other cases, such as Hurford disjunctions. This paper proposes an account in terms of trade-offs between pragmatic preferences, including a preference for simpler structures and a preference for avoiding imprecision. When combined with certain assumptions about when two sentences compete, this perspective can account for the markedness asymmetry between plural definites and *all*-type QPs, and the lack of a similarly consistent asymmetry between definites and indefinites.

Keywords: imprecision, non-maximality, universal quantifiers, structural complexity, Manner

1. Introduction

The question of how different aspects of Gricean pragmatic reasoning are implemented in the grammar has given rise to a productive research program, but most work in this vein has focused on the Maxim of Quantity. The question arises how natural language grammars implement the preferences underlying Grice's (1975) **Maxim of Manner** in case a speaker has to choose between potential utterances whose truth conditions are contextually equivalent. This paper addresses a form of Manner-based competition that has received relatively little attention—the choice between imprecise expressions and their precise counterparts. My focus will be on the contrast between definite plurals as in (1a), which permit so-called **non-maximal** construals that allow exceptions, and plural universal quantifiers as in (1b), which do not.

(1) a. *The switches are on.*
b. *All the switches are on.*

I will analyze the choice between the alternatives in (1) in terms of a trade-off between a preference for precision and a preference for syntactically simple structures. The Manner principle I will propose would require us to choose the more precise (1b) if it weren't for the fact that (1a) has the advantage of being structurally simpler (cf. also Krifka 2007 a.o. on numeral imprecision). This trade-off requires certain meanings to systematically correspond to more complex structures than others and therefore has far-reaching consequences for the way the grammar is organized. This is not a new idea; for a related proposal in the Rational Speech Act framework, see Spector (2017). My contribution here is to spell out a version of this idea in a more conventional neo-Gricean setting and bring out some of its empirical advantages.

[1]This paper is a revised version of certain parts of chapters 3 and 5 of my PhD thesis (Haslinger, 2024). I would like to thank my thesis committee: Clemens Steiner-Mayr and Viola Schmitt for investing an incredible amount of time and effort in supervising me, and Daniel Büring and Benjamin Spector for many inspiring discussions that shaped this project. I also benefited from comments by many others, including Keny Chatain, Daniel Gutzmann, Roni Katzir, Gurmeet Kaur, Jan Köpping, Andrea Matticchio, Adi Behar Medrano, Mathieu Paillé, Emil Eva Rosina, Maik Thalmann, Ekaterina Vostrikova, Thomas Weskott and Valerie Wurm. I would also like to thank my audiences at the Göttingen English Linguistics Oberseminar, the Bochum Language Colloquium, The Ad Hoc Reading Group at Institut Jean Nicod, and of course SuB28. Needless to say, all errors are my own.

The paper is structured as follows. Section 2 provides some theoretical background on imprecision in plural semantics, focusing on a system due to Križ and Spector (2021). Section 3 argues that on this proposal, there are contexts in which the two structures in (1) convey the same truth conditions, which is a challenge for the common view that natural language pragmatics bans "needless complexity", and spells out an account of this puzzle in terms of interacting, defeasible constraints. Section 4 shows how, when combined with certain assumptions about when two sentences compete, this proposal derives a structural asymmetry between *all*-type QPs and plural definites (cf. Matthewson 2001). Section 5 addresses the puzzle of why there is no similarly consistent asymmetry between plural definites and indefinites, and suggests that this reflects yet another Manner-related preference, which is motivated independently by **Maximize Presupposition** effects (Heim, 1991; Sauerland, 2008). Section 6 concludes.

2. Background: Imprecision in plural predication

To provide the necessary background on the semantics of definite plurals and *all*-QPs, I will first informally introduce the phenomena of imprecision and homogeneity and then summarize one particular formal theory of these phenomena, due to Križ and Spector (2021).

2.1. Definite plurals vs. *all*-QPs

Much of the recent literature on plural definites concentrates on two striking properties that distinguish them from *all*-QPs (e.g. Lasersohn 1999; Löbner 2000; Malamud 2012; Križ 2015; Križ and Spector 2021; Bar-Lev 2021 a.o.).[2] First, (1a) exhibits a so-called **homogeneity** effect—a gap between the default interpretations available in upward- and downward-entailing environments: When embedded in a DE environment, the definite in (1a) receives an existential interpretation (2a) which is not available for an *all*-QP (2b).

(2) a. *I don't think the switches are on.*
✓ 'I don't think any of the switches are on.'
b. *I don't think all the switches are on.*
× 'I don't think any of the switches are on.'

Second, definite plurals exhibit a specific form of context-dependency known as **imprecision** (or **non-maximality** in the plural domain), which is removed by *all*. As a first illustration, consider the two minimally contrasting scenarios in (3a)/(3b). While (4b) is clearly false in both scenarios, (4a) expresses something appropriate in scenario (3b), but something misleading in (3a). In what follows, I will use the term **p-truth conditions** for the conditions under which an imprecise sentence is perceived to be true in a given context (i.e. 'true enough' in the sense of Križ 2015). In (3a), the p-truth conditions of (4a) appear to require all the switches to be on, while in (3b) its p-truth conditions seem to be merely existential.

(3) SWITCHES: Abe and Bert just installed a set of 10 new light switches, but made an error that might lead to an electrical fire. Since their shift has already ended, they do not have time to fix the problem right away and decide to leave.
a. MAXIMAL scenario: ... They know that there can be a fire only if all 10 switches are on at the same time. Abe realizes he left two of the switches on.

[2]There is a third difference: *all*-type quantifiers impose a distributive construal on certain subclasses of predicates. This paper abstracts away from this additional issue by focusing on cases in which the alternatives with and without *all* do not contrast with respect to distributivity.

b. NON-MAXIMAL scenario: ... They know that there can be a fire whenever any of the switches are on. Abe realizes he left two of the switches on.

(4) a. Abe: *Oh no, the switches are on!* ?? MAXIMAL, ✓ NON-MAXIMAL
b. Abe: *Oh no, all the switches are on!* ✗ MAXIMAL, ✗ NON-MAXIMAL

Clearly, definite plurals show a form of context-dependency which *all*-QPs lack, and which therefore cannot simply be domain restriction. Recent work by Malamud (2012), Križ (2015) a.o. has argued that the relevant aspect of the context is the implicit QUD or **salient issue**. Descriptively, (4a) can be p-true in a 'some but not all' world, but only if that world is on a par with an 'all' world for the purposes of the salient issue (Križ, 2015). Given the issue 'Is there a chance of a fire?' in (3), this is the case in the NON-MAXIMAL scenario, but not in the MAXIMAL one. Hence, only the NON-MAXIMAL scenario licenses an existential interpretation of (4a). In sum, the hallmarks of imprecision are 1) the existence of a 'strong' default construal and 2) the possibility of licensing weaker construals by manipulating the salient issue.

2.2. From contextual parameters to imprecise truth conditions

Starting with Križ (2015), several authors have attempted to derive imprecision and homogeneity from a common source (Križ and Spector 2021; Bar-Lev 2021; Feinmann 2020; Paillé 2022 a.o.). Here I introduce one such proposal, due to Križ and Spector (2021). In this system, the crucial property of imprecise sentences is that the compositional system does not map them to a unique proposition in a given context c. Instead, they express different propositions depending on the values of certain additional parameters of the semantic evaluation function. The p-truth conditions are determined by selecting a subset of these propositions on the basis of the salient issue I_c, which accounts for the QUD effect illustrated in (3). Homogeneity effects are due to the way the truth definition works in case there are multiple such propositions.

To formalize these ideas while abstracting away from the exact nature of the extra parameters, we will relativize the evaluation function to **parameter vectors**—mappings from a certain set of parameters to their values—so that an expression ϕ is mapped to an extension $[\![\phi]\!]^{c,w,v}$ relative to context c, world w and parameter vector v. An expression ϕ has **potential for imprecision** iff $[\![\phi]\!]^{c,w,v}$ depends on v for some c and w. The semantics then needs to ensure that definite plurals, but not *all*-QPs, introduce potential for imprecision. There are many ways of achieving this; here I follow the implementation of Križ and Spector (2021), but this choice is not crucial.[3] Following them, I take the relevant parameters to be functions f^i_v that map a plurality x to an upward-closed subset of the parts of x, a notion defined in (5).[4] When an expression referring to a plurality x combines with a predicate bearing the index i, the predicate is not required to hold of x itself, but merely of some subplurality of x in the set $f^i_v(x)$. (6a)

[3]The important properties of this system for my purposes are 1) that the different construals of imprecise sentences can be generated by varying certain evaluation parameters and 2) that these parameters are chosen based on the salient issue. Since these properties are shared by exhaustification-based theories that reduce imprecision to alternative pruning (e.g. Bar-Lev 2021), where the relevant parameter is the restricted alternative set, my proposal translates into such frameworks.

[4]I assume that pluralities are elements of the individual domain D_e, which is closed under an operation $\bigoplus$ that maps a nonempty set of individuals to a single individual, its sum. Further, D_e contains a subset A of atomic individuals such that there is a one-to-one correspondence between the individuals in D_e and nonempty subsets of A, i.e. $(D_e, \bigoplus)$ is isomorphic to $(\mathscr{P}(A)\backslash\{\emptyset\}, \bigcup)$. On this basis, we can define the part-whole relation $\leq$: $x \leq y$ iff $x \oplus y = y$.

illustrates this for the switches example[5], and (6b) gives a general schema.

(5) a. An **upward-closed subset** of a set S is a nonempty subset S' of S such that for any $x, y \in S$, if $x \in S'$ and $x \leq y$, then $y \in S'$.
b. The values of the f_v^i parameters are drawn from the set $\mathscr{F} = \{f \in \mathscr{P}(D_e)^{D_e} \wedge \forall x \in D_e . f(x)$ is an upward-closed subset of $\{x' : x' \leq x\}\}$

(6) a. $[\![$*The switches* $[$*are on*$]_2]\!]^{c,w,v} = 1$ iff $\exists x[x \in f_v^2(\bigoplus({}^*\mathbf{switch}_w)) \wedge {}^*\mathbf{on}_w(x)]$
b. Given a plural predicate P affixed with an index i:
$[\![P_i]\!]^{c,w,v} = \lambda y_e . \exists x[x \in f_v^i(y) \wedge [\![P]\!]^{c,w,v}(x)]$

Given (6a), we obtain a maximal construal if f_v^2 returns a singleton set containing the maximal plurality (7a), and an existential construal if f_v^2 returns the set of all subpluralities as in (7b). Various intermediate choices are also possible; for instance, the parameter choice in (7c) produces a construal that requires at least half of the switches to be on.

(7) Given the LF [[*the switches*] [*are on*]$_2$]:
a. MAXIMAL construal: $f_v^2(\bigoplus({}^*\mathbf{switch}_w)) = \{\bigoplus({}^*\mathbf{switch}_w)\}$
b. EXISTENTIAL construal: $f_v^2(\bigoplus({}^*\mathbf{switch}_w)) = \{x : {}^*\mathbf{switch}_w(x)\}$
c. INTERMEDIATE NON-MAXIMAL construal:
e.g. $f_v^2(\bigoplus({}^*\mathbf{switch}_w)) = \{x : {}^*\mathbf{switch}_w(x) \wedge |x| \geq \frac{1}{2} \cdot |\mathbf{switch}_w|\}$

The semantic effect of *all*, on this approach, is to require the plural predicate to hold of its argument under every possible parameter value. This means, in particular, that it must hold of its argument on a maximal construal (8). (The notation $v[f^2 \leftarrow f]$ in (8) stands for the parameter vector v' that is like v except that $f_{v'}^2 = f$.)

(8) $[\![$*All the switches* $[$*are on*$]_2]\!]^{c,w,v} = 1$ iff $\forall f \in \mathscr{F}[[\![on_2]\!]^{c,w,v[f^2 \leftarrow f]}([\![$*the switches*$]\!]^{c,w,v})]$
$= 1$ iff $\forall f \in \mathscr{F}[\exists x[x \in f(\bigoplus({}^*\mathbf{switch}_w)) \wedge {}^*\mathbf{on}_w(x)]]$
$= 1$ iff ${}^*\mathbf{on}_w(\bigoplus({}^*\mathbf{switch}_w))$

Having spelled out how imprecision is introduced in the compositional semantics, let us now turn to the defining property that distinguishes it from other forms of context-dependency—the way the parameter values are selected in a given context c. Essentially, we choose v so that the proposition $[\lambda w.[\![\phi]\!]^{c,w,v}]$ is **strongly relevant** to the salient issue I_c. Viewing I_c as a partition of the logical space (Groenendijk and Stokhof, 1984), a strongly relevant proposition is one that eliminates at least one partition cell without being overinformative, i.e. without making subdivisions within a cell. This is formally defined in (9).

(9) A proposition p is **strongly relevant** to an issue I iff there is a set $I' \subset I$ such that $p \cap \bigcup I = \bigcup I'$. (Križ and Spector, 2021)

Consider an utterance of *The switches are on* in the SWITCHES context in (3), with the issue $I_c =$ 'Is there a risk of a fire?'. In the MAXIMAL variant of the context, the construal in (10a) (generated by choosing v as in (7a)) is the only strongly relevant one, resulting in p-truth conditions that are not met in the scenario. In the NON-MAXIMAL variant, the only construal that is strongly relevant is the existential one in (10b), derived by choosing f_v^2 as in (7b).

[5]Following Link (1983), the pluralized version ${}^*P$ of a predicate extension P is defined as follows: ${}^*P = [\lambda x_e . \exists S[\bigoplus(S) = x \wedge \forall y \in S . P(y)]]$, i.e. ${}^*P$ is true of all sums of one or more P-individuals.

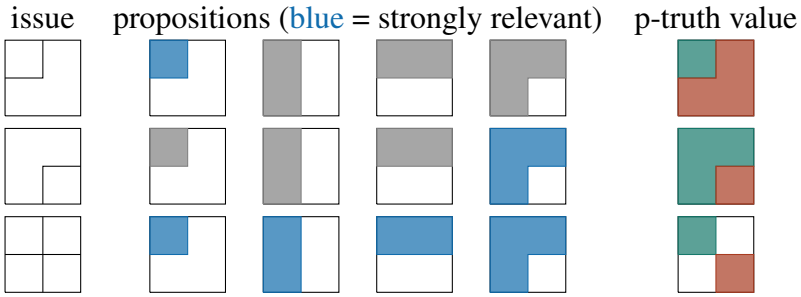


Figure 1: Mapping a set of propositions to p-truth/falsity conditions given an issue I_c (**green** = p-true, **red** = p-false)

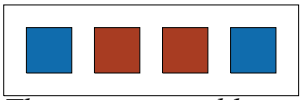
(10) a. $\lambda w.{}^{*}\mathbf{on}_w(\bigoplus({}^{*}\mathbf{switch}_w))$
b. $\lambda w.\exists x[x \leq \bigoplus({}^{*}\mathbf{switch}_w) \wedge {}^{*}\mathbf{on}_w(x)]$

What happens if there are multiple parameter choices that produce a strongly relevant construal? Križ and Spector (2021) propose that in such cases, ϕ is perceived to be true only if all its strongly relevant construals are true, and false only if all of them are false:

(11) Given a sentence ϕ, a context c and a world w, and writing $\mathcal{V}$ for the set of all parameter vectors, we define the **p-truth value** $[\![\phi]\!]^{c,w}_{\mathbf{p}}$ of a sentence ϕ as follows:

$$[\![\phi]\!]^{c,w}_{\mathbf{p}} = \begin{cases} 1 & \text{iff } \forall v \in \mathcal{V}[[\lambda w'.[\![\phi]\!]^{c,w',v}] \text{ strongly relevant to } I_c \rightarrow [\![\phi]\!]^{c,w,v} = 1] \\ 0 & \text{iff } \forall v \in \mathcal{V}[[\lambda w'.[\![\phi]\!]^{c,w',v}] \text{ strongly relevant to } I_c \rightarrow [\![\phi]\!]^{c,w,v} = 0] \\ \# & \text{otherwise} \end{cases}$$

This supervaluation principle derives homogeneity effects, but crucially only in certain contexts. As an example of a context that induces homogeneity, consider an out-of-the-blue utterance of (12b) or (12c) relative to the picture in (12a). Intuitively, neither sentence is straightforwardly true here. Why is this? Presumably, a decontextualized truth-value judgment task involving a picture leads us to accommodate the issue 'What is going on in the picture?'. Relative to this issue, any two worlds that differ in the color of even just one square end up in distinct partition cells. The resulting partition makes $[\![\textit{The squares are blue}]\!]^{c,w,v}$ strongly relevant for any v. As a result, the sentence ends up being p-true only if it is true on its strongest (maximal) construal and p-false only if it is false even on its weakest (existential) construal.

(12) a. 
b. *The squares are blue.*
c. *The squares are not blue.*

The predictions of the system are summarized visually in Figure 1. The first two rows correspond to the SWITCHES (MAXIMAL) and SWITCHES (NON-MAXIMAL) scenarios. Since these scenarios involve binary issues, they make only one construal strongly relevant, resulting in complementary truth and falsity conditions. The third row illustrates out-of-the-blue cases like (12), in which multiple propositions are strongly relevant, which gives rise to a gap.

Besides the role of the issue parameter in generating the different construals of an imprecise sentence, two properties of this account are relevant for us. First, since fully precise sentences

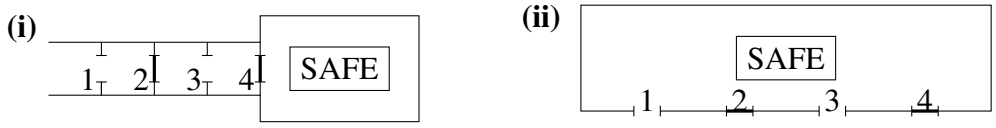


Figure 2: MAXIMAL (left) and NON-MAXIMAL scenario (right) for the ROBBERY example (15)

(e.g. *all*-sentences) are mapped to the same proposition regardless of the parameter vector, their p-truth conditions cannot be manipulated by changing the salient issue. Presumably, if we hear an *all*-sentence and the unique proposition it expresses is not strongly relevant, we have to make it relevant by tacitly accommodating a new issue.

Second, the truth-value gaps underlying homogeneity effects are a side effect of how the truth definition deals with the extra parameters and are explicitly not modeled as presuppositions. This is motivated by the observation that homogeneity differs from standard presuppositions in its projection behavior (Spector, 2013; Križ, 2015). Since the system therefore requires a distinction between two kinds of truth-value gaps, the question arises whether homogeneity gaps and presuppositions also differ pragmatically. I will return to this issue in Section 5.

3. Imprecision and "needless" structural complexity

3.1. The puzzle: Competition in the case of equivalent p-truth conditions

On the theory just presented, the proposition expressed by a precise *all*-sentence is among the possible construals of its definite-plural alternative. For instance, in the SWITCHES (MAXIMAL) context, (13a) and (13b) are assigned contextually equivalent p-truth conditions, a relation I will refer to as **p-equivalence** (14).

(13) a. *The switches are on.*
b. *All the switches are on.*

(14) Two sentences ϕ and ψ are **p-equivalent** in context c iff $\{w \in C_c : [\![\phi]\!]^{c,w}_{\mathbf{p}} = 1\} = \{w \in C_c : [\![\psi]\!]^{c,w}_{\mathbf{p}} = 1\}$ (where C_c is the context set in c).

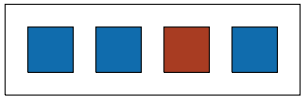
For the SWITCHES context, the claim that the two alternatives are p-equivalent might be too strong, since the context does not rule out other reasons to worry about the switches besides the risk of a fire, leaving us with some uncertainty about I_c. However, more clear-cut examples can be constructed. For instance, consider (15), adapted from Krifka (1996). The salient issue here is whether there was a path to the storeroom, which licenses an existential construal in the NON-MAXIMAL scenario (depicted on the left of Figure 2). In the MAXIMAL scenario (on the right), we predict a maximal interpretation for (16a), which makes it p-equivalent to (16b).

(15) ROBBERY: Ann and Sue made a plan to steal a safe from a storeroom. They bribed someone to let Ann in, but in the end their plan failed. Sue wants to know how it went.
a. MAXIMAL scenario: The floor plan is as depicted in part (i) of Figure 2.
b. NON-MAXIMAL scenario: The floor plan is as depicted in part (ii) of Figure 2.

(16) a. ***The doors were open**, but there was another problem ...* ✕(15a), ✓ (15b)
b. ***All the doors were open**, but there was another problem ...* ✕ (15a), ✕(15b)

Another class of contexts with this property are out-of-the-blue contexts with a small number of visually salient atomic parts. A single exception as in (17) is sufficient for us to no longer

accept (18a) as true, which makes it p-equivalent to (18b) (although its p-*falsity* conditions are different due to homogeneity; see Križ and Chemla 2015).

(17) 

(18) a. *The squares are blue.* ??/✕ in (17)
b. *All the squares are blue.* ✕ in (17)

In sum, there are contexts in which a definite-plural sentence and its *all*-alternative coexist peacefully and seem to express the same p-truth conditions. From a pragmatic perspective, this situation is rather surprising, because there is evidence that natural language grammars disallow needless structural complexity (cf. Grice's (1975) submaxim "Be brief!"). The most prominent example are **Hurford disjunctions** such as (19a), which is blocked because it is contextually equivalent to the simpler (19b) (Hurford 1974; Gazdar 1979; Chierchia et al. 2012 a.o.; but see Meyer 2014 for a different view). But if the existence of a contextually equivalent, simpler structure leads to oddness in (19a), why aren't the uses of *all* in (15) and (18) similarly odd?

(19) a. #*Ann went to France or to Paris.*
b. *Ann went to France.*

It is natural to suspect that the crucial difference has something to do with imprecision, since the alternatives in (19) are both fully precise. There are two possible ways of exploiting imprecision to distinguish between (18) and (19). Let us call those sentences that are semantically close enough to a sentence ϕ to compete with it for the purposes of Manner its **Manner alternatives**. Then one option is to assume that p-equivalence is not sufficient for a sentence to count as a Manner alternative of another; instead, the two sentences have to be p-equivalent regardless of context. If so, definite plurals and *all*-sentences would not compete at all. Here I will explore a second approach, on which definite plurals are Manner alternatives of the corresponding *all*-sentences, but the submaxim "Be brief!" that favors the definite alternative interacts with another submaxim, roughly "Be precise!", that favors the *all*-alternative. Before I return to the question of how to characterize Manner alternatives, let me first show how the two submaxims and the relevant notion of constraint interaction can be formalized.

3.2. Spelling out the imprecision/complexity trade-off

To implement the informal idea just presented, we need 1) a way of ordering sentences according to their structural complexity, 2) a way of ordering sentences according to their potential for imprecision and 3) a way for these two orderings to interact.

Be brief! Recent formalizations of the constraint "Be brief!" typically make use of an ordering relation $\leq$ defined in Katzir (2007), a variant of which is given in (20).[6]

(20) Let ϕ, ψ be parse trees.
a. If we can transform ϕ into ψ in zero or more steps such that each step involves
(i) either replacing a constituent α with a proper subconstituent of α
(ii) or replacing a constituent α with a syntactic terminal,
then $\psi \leq \phi$ ('ϕ is at least as complex as ψ'). [...]

[6]Katzir (2007) restricts lexical replacements to items of the same category, an assumption I will not make here.

b. If $\psi \leq \phi$ but not $\phi \leq \psi$, then $\psi < \phi$. (adapted from Katzir 2007)

Given this definition, we have the complexity asymmetry in (21), assuming that definite plurals do not contain a covert Q element (22).[7] If p-equivalence is sufficient for a sentence to be a Manner alternative of another, a non-violable version of "Be brief!", such as (23), would correctly block Hurford disjunctions, but also incorrectly block the use of *all* in contexts like (15a) and (17). We will now introduce an imprecision-based preference ordering that will help us draw the right distinction between the Hurford case and the *all* case.

(21) *All the squares are blue* > *The squares are blue*

(22) $[_{\text{QP}}$ *all* $[_{\text{DP}}$ *the* NP]] vs. $[_{\text{DP}}$ *the* NP]

(23) A sentence ϕ is blocked in context c if $\phi > \psi$ for some ψ that is a Manner alternative of ϕ in c.

Be precise! Given the close connection Križ and Spector (2021) assume between imprecision and homogeneity (see Section 2.2), one could in principle define a 'more precise' relation by directly comparing the homogeneity gaps of the competing sentences.[8] However, it is unclear whether this link with homogeneity generalizes across all instances of imprecision; round numerals are a potential counterexample (Solt 2023). Here, I will therefore give a definition that relies more directly on the semantic source of imprecision in the present framework—semantic dependence on the parameter vector, which is selected based on the salient issue.

Intuitively, an imprecise sentence ϕ provides many different ways of drawing a distinction in the logical space, depending on the salient issue, whereas a precise sentence makes the same distinction regardless of the issue. Definition (24) exploits this idea by considering the partition $\mathscr{P}_c(\phi)$ of the context set that is induced by the propositions ϕ expresses under different parameter vectors. This must be a bipartition if ϕ is fully precise, but will be more fine-grained otherwise. (24b) then defines an ordering in which sentences that are mapped to more fine-grained partitions by (24a) rank lower.

(24) Given a context c and sentences ϕ and ψ:
   a. $\mathscr{P}_c(\phi)$ is the partition of the context set C_c induced by the set $\{[\![\phi]\!]^{c,w,v} : v \in \mathscr{V}\}$ of propositions ϕ can express under different parameter vectors.
   b. $\phi \trianglelefteq_c \psi$ iff any two worlds in C_c that are distinguished by $\mathscr{P}_c(\phi)$ are also distinguished by $\mathscr{P}_c(\psi)$.

Equipped with this definition, we can now view the competition between definite plurals and *all*-QPs in terms of conflicting preferences: $\leq$ favors the definite, while $\trianglelefteq_c$ favors the *all*-QP. In other words, we cannot satisfy "Be brief!" without violating "Be precise!", and vice versa. This contrasts with the Hurford case, in which the disjunctive alternative violates "Be brief!", but the alternatives are on a par with respect to $\trianglelefteq_c$ so that there is no reason to use the disjunction.

Constraint interaction More generally, I assume that a sentence can be acceptable even if it has an alternative that is superior on one of the preference orderings relevant for Manner, but

[7] Following the literature, I use the symbol $\leq$ both for the part-of relation on D_e and for Katzir's complexity ordering; I hope this will not lead to confusion.

[8] This is what I did in my SuB presentation, but I have since become convinced that it is not the right approach.

only if that alternative is inferior or incomparable on one of the other orderings. Put differently, only the 'Pareto-optimal' alternatives are acceptable. This way of combining a set $\mathscr{O}_c$ of preference relations into a single relation $\preceq_c$ is formalized in definition (25) (cf. Katzir and Singh 2015; Solt 2018 a.o., where the same idea is applied to interactions between Manner and Quantity). For the time being, $\mathscr{O}_c$ contains just the two orderings $\leq$ and $\blacktriangleleft_c$. The blocking principle we need can then be defined as in (26).

(25) Given a set $\mathscr{O}_c$ of preference orderings in a context c and two sentences ϕ and ψ:
a. $\phi \preceq_c \psi$ iff $\forall \preceq \in \mathscr{O}_c . \phi \preceq \psi$
b. $\phi \prec_c \psi$ iff $\phi \preceq_c \psi$, but not $\psi \preceq_c \phi$

(26) NO NEEDLESS MANNER VIOLATIONS
A sentence ϕ is blocked in a context c iff it has a Manner alternative ψ such that $\phi \succ_c \psi$.

This gives us an account of why *all*-sentences are acceptable in contexts where they are p-equivalent to their simpler definite-plural alternatives: Using *all* removes the potential for imprecision, which counterbalances its complexity disadvantage. Of course, from a functional perspective, the question arises why potential for imprecision should matter if the issue I_c already demands a precise interpretation. One potential reason might be that an actual discourse context can involve uncertainty about the exact issue I_c the speaker is addressing, and using *all* reduces this uncertainty even if it has no truth-conditional effect (Haslinger, 2024).

4. From pragmatic preferences to morphosyntactic patterns

This section argues that, when combined with a certain very weak notion of what counts as a Manner alternative, the proposed trade-off between Manner constraints can account for an attested morphosyntactic asymmetry between definite plurals and *all*-QPs.

4.1. Blocked syntactic configurations

Given the pragmatic proposal in the previous section, the fact that English *all*-QPs involve extra morphology on top of a plural definite is more than an accident of the English lexicon. This is because on this account, for an *all*-sentence and its definite alternative to freely coexist in contexts that make them p-equivalent, the *all*-QP must be syntactically more complex, as in row (i) of Table 1. To see this, imagine a hypothetical language that shows the opposite asymmetry, as in row (ii), or no asymmetry at all, as in row (iii). Consider the competition between an *all*-sentence S_{all} and its definite-plural alternative S_{pl} in such a language. By hypothesis, the meanings of the two alternatives are the same as in English, so that $S_{all} \blacktriangleleft_c S_{\text{pl}}$, but unlike in English, we additionally have $S_{all} \leq S_{\text{pl}}$, so that neither of the two preference relations favors S_{pl}. The blocking principle in (26) then predicts that in such languages, S_{pl} should be unavailable in any context c in which it counts as a Manner alternative of S_{all}. It therefore derives a principled relation between the extent of imprecision a sentence permits and its internal morphosyntactic structure. A definite-plural sentence that is less complex than its *all*-alternative can freely coexist with it regardless of whether the two sentences are Manner alternatives, while a definite plural that is equally or more complex would be subject to blocking by the *all*-alternative.

The exact conditions under which this blocking takes place, however, depend on how Manner alternatives are characterized. A natural possibility suggested above is that two sentences are Manner alternatives only if they are p-equivalent. This would predict that it is possible for a

	all-QP (PRECISE)	definite plural (IMPRECISE)
(i)	[Q [D NP]]	[D NP]
(ii)	[Q NP]	[D [Q NP]]
(iii)	[Q NP]	[D NP]

Table 1: Logical possibilities for the structural relation between definites and *all*-QPs

language to show the structural pattern in row (ii) or (iii) in Table 1, but the structure with a definite-plural semantics would be blocked in contexts that demand a maximal interpretation. In all other contexts, it would not compete with the *all*-structure and would therefore be usable. In other words, we would expect such languages to have expressions that have almost the full range of construals definite plurals have—existential and proportional construals as well as construals sensitive to specific exceptions—but lack a genuinely maximal interpretation.

To my knowledge, it is an open question whether this pattern is attested, since an expression with this behavior would likely be misanalyzed as a vague quantifier along the lines of 'many', and descriptive grammars typically do not provide the subtle contextual manipulations that would let us distinguish these two options. But since I am not aware of a clear example, I want to pursue the stronger hypothesis that definite plurals and *all*-QPs are Manner alternatives regardless of the immediate issue at hand. In other words, the Manner alternatives of a sentence ϕ are those sentences that are p-equivalent to ϕ on *some* way of choosing the issue parameter:

(27) Two sentences ϕ and ψ are **potentially p-equivalent** in a context c iff there is a context c' that is like c except for the issue parameter $I_{c'}$ and ϕ and ψ are p-equivalent in c'.

On this view, S_{pl} and S_{all} are Manner alternatives even if I_c does not demand a maximal construal of S_{pl}. As a consequence, the definite-plural structure in a language following pattern (ii) or (iii) in Table 1 would be pragmatically deviant in almost all contexts regardless of the choice of I_c. We therefore do not expect to find these structural patterns at all. More generally, if potential p-equivalence is the only precondition for Manner-based competition, NO NEEDLESS MANNER VIOLATIONS makes the following prediction:

(28) **Imprecision/complexity correlation**
If two potentially p-equivalent alternatives ϕ and ψ are both acceptable in a context c and $\phi \blacktriangleleft_c \psi$, then either $\phi > \psi$ or ϕ and ψ are incomparable wrt. $\leq$.

4.2. Realizations of definite plurals and *all*-QPs across languages

Looking beyond English, some languages with overt definite determiners nonetheless do not realize an overt determiner in *all*-QPs. Taken at face value, this pattern poses a problem for (28). In German, for instance, the default way of expressing the meaning of an English *all*-QP does not transparently involve a definite determiner (30).[9] The fact that the German quantifier form *all-e* in (30a) is bimorphemic could be taken as an indication of a more complex structure, but there are languages with analogous structures in which the quantifier is not transparently

[9]Of course, English *all* can also take a plural NP complement without a determiner, but this structure is commonly described as favoring generic interpretations (see e.g. Löbner 2000: 279, Gajewski 2005: 113), which makes me doubt that it is a direct pragmatic competitor of definite plural DPs.

decomposable at all, such as Wolof ((31); see Tamba et al. 2012).[10]

(29) a. [$_{QP}$ *all* [$_{DP}$ *the switches*]]
b. [$_{DP}$ *the switches*]

(30) German
a. *all-e* *Schalter*
all-PL.NOM switches
'all the switches'
b. *die* *Schalter*
the.PL.NOM switches
'the switches'

(31) Wolof (Tamba et al., 2012)
a. *xale y-epp*
child NCL.PL-all
'all of the children' (Tamba et al., 2012: 917, (72a))
b. *xale y-i*
child NCL.PL-DEF.PROX
'the children' (Tamba et al., 2012: 893, (2a))

Rather than taking the surface morphology in such examples at face value, however, we could also maintain that plural universal quantifiers generally contain a D-head below the quantifier, even in languages lacking an overt realization of D in this position. On this view, which goes back to Matthewson (2001), the Wolof pattern is simply an instance of an intransparent syntax/morphology mapping in which a single exponent can realize two syntactic head positions.

One simple way of achieving this is to posit an allomorph of D conditioned by the presence of Q, which would be *-e* in German and null in Wolof. An arguably more principled option is provided by morphosyntactic frameworks that permit a single exponent to realize a complex subtree or a sequence of multiple heads (see e.g. Starke 2009, Caha 2018, Blix 2021; see Bobaljik 2012 for similar ideas within Distributed Morphology). For instance, in the framework of Blix (2021), it is possible for a vocabulary item to spell out a contiguous 'span' of heads within a functional sequence, even if these heads do not form a constituent. This allows us to formulate the lexical entry in (32a), which jointly spells out Q and its adjacent D in Wolof. In such frameworks, a vocabulary item matches a structure only if it has a superset of the features contained in the structure. Hence, (32b) matches the subtree [D NP], but not [Q [D NP]], whereas (32a) matches both subtrees. Due to a version of the Elsewhere Condition, the structure [D NP] must be realized using (32b), which lacks the unnecessary Q feature.

(32) a. [Q[D]] ↔ *-epp*
b. D ↔ *-i*

On this view, surface forms of the kind found in German and Wolof are compatible with the imprecision/complexity correlation in (28). However, there is another logically possible surface pattern that is not expected given the correlation—an *all*-QP that can be turned into an imprecise definite plural by adding extra morphology. Given a more complex syntactic structure for

[10] According to Tamba et al. (2012), some speakers also accept a structure with an overt definite determiner.

spell-out of S_{all} spell-out of S_{pl}	α+β+NP β+NP	α+NP β+NP	α+NP β+α+NP
expected given $S_{all} > S_{\text{pl}}$	✓	✓	×
expected given $S_{all} \equiv S_{\text{pl}}$	✓	✓	✓
expected given $S_{all} < S_{\text{pl}}$	×	✓	✓

Table 2: Syntactic containment patterns and the surface patterns they lead us to expect

the *all*-QP, this would mean that the surface containment pattern is the inverse of the underlying syntactic asymmetry, a situation that the realizational morphosyntactic frameworks just discussed explicitly aim to block (see Bobaljik 2012 for DM and Caha 2018 for Nanosyntax). In contrast, we would expect to find such patterns if an *all*-structure does not have to exceed its definite alternative in complexity, as shown in Table 2.

A look at a small cross-linguistic dataset suggests that there is indeed a typological asymmetry of the kind predicted by the imprecision/complexity correlation. Table 3 summarizes the formal strategies for definite plurals and plural universal quantifiers in a small sample of languages taken from the "Handbook of Quantifiers in Natural Language" (Keenan and Paperno, 2012; Paperno and Keenan, 2017).[11] While the surface patterns in the first two columns of Table 2 both occur in several unrelated languages, the one in the third column does not. Neither have I encountered an example of this pattern anywhere else in the literature. Of course, a large sample would be needed to tell whether this is a genuine typological gap or just a strong tendency, an issue I hope to address in future work.

In sum, given the assumption that potential p-equivalence is sufficient for Manner-based competition, we derive a structural asymmetry between definite plurals and *all*-QPs. This asymmetry has been proposed before, but has mostly been implemented in terms of lexical constraints on the argument type of quantifiers (Matthewson, 2001), or in cartographic terms. Compared to such approaches, the pragmatic approach makes weaker predictions, since it does not require the extra structure in an *all*-QP to take the form of a D head. But it arguably brings us closer to the goal of saying something explanatory about *why* we find a structural asymmetry.

5. Plural indefinites and presuppositions

Presumably, the factors that determine how we choose between Manner alternatives are not limited to reducing complexity and avoiding imprecision. Generalized to more than two preference relations, the logic behind the imprecision/complexity correlation in (28) takes the following weaker form: If we find two Manner alternatives ϕ and ψ that are both acceptable, and ϕ is preferred to ψ under one of the orderings in $\mathscr{O}_c$, then there must be some other ordering in $\mathscr{O}_c$ that either favors ψ or makes the two sentences incomparable. This logic will now be applied to plural indefinites, which are problematic for generalization (28) in its current form.

As we saw in Section 2, a definite-plural sentence can quantify existentially over all the pluralities in the NP-domain, given the right context. This makes most sentences with plural definites potentially p-equivalent to an indefinite alternative. For instance, the SWITCHES (MAXIMAL)

[11] Most of the languages discussed in this handbook do not overtly mark definiteness. Since it is an open question how imprecision works in such languages, I did not include them in Table 3. I also omitted those languages for which the handbook authors express uncertainty about the quantificational force of the items glossed as 'all'.

scenario (3a) demands an existential construal of (33a) that makes it p-equivalent to (33b).

(33) a. *The switches are on.*
b. *Some of the switches are on.*

In order to see how these two alternatives are ordered by $\underline{\blacktriangleleft}_c$, we need to distinguish imprecision from logical weakness. (33b) expresses a weaker proposition than (33a) in most contexts. But since the interpretation of (33b) is existential regardless of the salient issue, it has less potential for imprecision than (33a). For instance, it is not possible to get (33b) to convey that all the switches were on, or e.g. that at least half of them were on, by varying the issue. If we disregard the optional 'not all' implicature, the proposition conveyed by (33b) therefore does not co-vary with the issue parameter I_c at all. But even if we take the optionality of this implicature to be an imprecision phenomenon (cf. Bar-Lev 2021), we arguably still have (33b) $\blacktriangleleft_c$ (33a): Taken together, the strengthened and non-strengthened construals of (33b) allow us to distinguish between 'none'-worlds, 'some, but not all'-worlds and 'all'-worlds. But these three classes are also distinguished by the existential and the universal construal of (33a), and (33a) additionally has construals sensitive to specific exceptions (Križ and Spector, 2021; Bar-Lev, 2021), which are unavailable for (33b). Therefore, (33a) is associated with a more fine-grained partition.

Given this imprecision asymmetry, generalization (28) predicts plural existentials to have more complex structures than plural definites. This is borne out in the case of (33), but cannot be correct in general: Existential uses of bare plurals provide a systematic counterexample. For instance, the German bare-plural sentence in (34a) seems true in both versions of the SWITCHES scenario in (3), which suggests that its p-truth conditions, unlike those of (34b), are insensitive to the issue parameter.[12] We then expect (34a) to block (34b) unless we assume that despite appearances, (34a) is the structurally more complex alternative. But this would make the lack of an overt determiner in (34a) an accidental property of the German vocabulary, which is implausible given that bare-plural indefinites are common cross-linguistically.

(34) a. *Oh nein, da drinnen sind noch Schalter an!*
oh no there indoors are still switches on
'Oh no, some switches in there are still on!'
✓ SWITCHES (NON-MAXIMAL) scenario, ✓ SWITCHES (MAXIMAL) scenario
b. *Oh nein, da drinnen sind noch die Schalter an!*
oh no there indoors are still the switches on
'Oh no, the switches in there are still on!'
✓ SWITCHES (NON-MAXIMAL) scenario, ✗ SWITCHES (MAXIMAL) scenario

Bare plurals therefore pose a genuine problem for the imprecision/complexity correlation. In principle, the problem could be addressed by weakening the notion of a Manner alternative so that (34a) and (34b) do not compete. But there is a potentially more insightful way out. Given the general view that acceptable utterances must be Pareto-optimal relative to a set $\mathscr{O}_c$ of preference relations, we could interpret the free coexistence of (34b) and (34a) as indicating that there must be another preference relation in $\mathscr{O}_c$ that favors definites over bare plurals. The question then arises whether there is a suitable relation with independent empirical motivation.

[12] Generally speaking, bare-plural sentences are often not p-equivalent to their alternatives with plural definites because the definite imposes an additional domain restriction. But in some contexts, the quantificational domains happen to coincide; the SWITCHES context, in which the ten switches are explicitly introduced, is a case in point.

Given that (34b) presupposes the existence of switches in the building, whereas (34a) merely asserts it, a natural candidate for such an independently motivated preference ordering is the preference for utterances with stronger presuppositions ('**Maximize Presupposition**'; Heim 1991; Sauerland 2008). While **Maximize Presupposition** is not usually discussed in the context of Manner, it can be fit easily into the picture of constraint interaction proposed here. This would amount to adding an ordering relation along the lines of (35) to the set $\mathscr{O}_c$:

(35) $\phi \trianglelefteq_c \psi$ iff the set of worlds in which ϕ is a presupposition failure in c is a superset of the corresponding set of worlds for ψ.

On this proposal, the outcome of the competition between plural definites and indefinites depends on whether the indefinite carries the same existential presupposition as the definite, as shown in Table 4. In the partitive case (33), the alternatives should arguably be on a par with respect to (35); since the imprecision ordering $\underline{\blacktriangleleft}_c$ favors the indefinite, the definite must then be less complex to avoid being blocked. In the bare-plural case (34), $\underline{\blacktriangleleft}_c$ favors the indefinite, but $\trianglelefteq_c$ favors the definite, so that neither structure is blocked regardless of the complexity relation.

The idea that **Maximize Presupposition** is a defeasible preference that interacts with our preference for simpler structures predicts that we should find sentences ϕ that are acceptable despite having a p-equivalent simpler alternative ψ, as long as ψ has a weaker presupposition. Arguably, this pattern is exemplified by indefinites with and without partitives: Both sentences in (36) entail the existence of female panelists, but only (36b) presupposes it, so while the complexity ordering $\leq$ favors (36a), the presupposition ordering $\trianglelefteq_c$ favors (36b), with the result that neither structure is blocked. As in the imprecision case, the notion of constraint interaction is crucial to understand why (36b) is not unacceptable in the same way Hurford disjunctions are, even though it has a structurally less complex and truth-conditionally equivalent alternative.

(36) a. *John talked to some female panelists at the conference.*
b. *John talked to some of the female panelists at the conference.*

To summarize, extending the competition mechanism with a preference for stronger presuppositions allows us to accommodate some counterexamples to generalization (28) and additionally accounts for the lack of blocking in cases like (36). Two other non-obvious consequences of this move are worth pointing out. First, standard versions of **Maximize Presupposition** (e.g. Sauerland 2008) apply only if the presuppositions of both alternatives are satisfied prior to the utterance, whereas our $\trianglelefteq_c$ relation favors a presuppositional sentence over its non-presuppositional alternative even if it requires some accommodation. I take this to be unproblematic, since Anvari (2018) argues independently that the standard view is too restrictive in this respect.

Second, the present proposal is not straightforwardly compatible with the idea that homogeneity effects reflect an 'all or nothing' presupposition, such that e.g. *The switches are on* is a presupposition failure if some, but not all switches are on (e.g. Löbner 2000). Following the logic of the present account, homogeneity effects are systematically associated with smaller structures and therefore a pragmatically dispreferred property, while presuppositions are a preferred property that is systematically associated with bigger structures. If so, there must be two distinguishable ways for a sentence to be 'neither true nor false'. This might be needed independently, since homogeneity gaps differ from typical presuppositions both pragmatically and in terms of their projection behavior (see e.g. Spector 2013). But the question arises how

to implement it without having to posit two unrelated types of gaps, as illustrated in (37).

(37) $[\![\textit{The switches are on}]\!]^{c,w}_{\mathbf{p}}$

$$= \begin{cases} 1 & \text{iff there is at least one switch in } w \text{ and all switches are on in } w \\ 0 & \text{iff there is at least one switch in } w \text{ and none of the switches are on in } w \\ \# & \text{iff there is at least one switch in } w \\ & \quad \text{and some, but not all of the switches are on in } w \\ \text{undefined} & \text{iff there are no switches in } w \end{cases}$$

Further, the question arises why the Maxim of Manner should favor one type of truth-value gap while disfavoring the other. In Haslinger (2024: ch. 5), I speculate that the orderings $\underline{\blacktriangleleft}_c$ and $\trianglelefteq_c$ can both be viewed as special cases of a general preference for reducing uncertainty about the values of contextual parameters, but this idea still lacks a predictive implementation.

6. Conclusion and outlook

The starting point of this paper was the question of why the existence of a less complex, contextually equivalent alternative leads to unacceptability in some cases, but not in others. I proposed that by looking at pairs of contextually equivalent sentences ϕ and ψ such that $\phi > \psi$, we can learn which semantic properties are preferred or dispreferred for the purposes of Manner: If both ϕ and ψ are acceptable, then ϕ must have some preferred semantic property that counterbalances its higher complexity. Further, I argued that given a sufficiently weak precondition for Manner-based competition, such trade-offs between structural complexity and certain preferred semantic properties can provide a principled account for cross-linguistic markedness asymmetries that are usually attributed to cartography or lexical semantic universals.

Here, I only discussed one application of this reasoning in detail—the syntactic asymmetry between *all*-QPs and definite plurals. But we seem to find analogous imprecision/complexity tradeoffs elsewhere in semantics: Bare conditionals and *would*-conditionals exhibit imprecision and homogeneity-like gaps, which can be removed by adding an overt modal or situation quantifier (38) (von Fintel 1997; Križ 2015 a.o.). Similarly, so-called summative singular predicates exhibit homogeneity and imprecision (Löbner 2000; Križ 2015; Paillé 2022 a.o.), both of which are removed by overt modifiers such as *completely* or *partly* (39).

(38) a. *They play soccer when the sun shines.*
b. *They **always** play soccer when the sun shines.*

(39) a. *The shirt is red.*
b. *The shirt is **completely** red.*

Both of these asymmetries are expected on the present account, although their cross-linguistic stability beyond European languages still needs to be established. In contrast, a syntactic approach to the *all*/definite asymmetry or an approach based on a lexical universal constraining possible determiner meanings would not immediately extend to these other constructions.

Besides the cross-linguistic predictions, another aspect that requires further study is how the present account compares empirically to related proposals such as the Rational Speech Act model in Spector (2017), which also encodes an imprecision/complexity trade-off. First, unlike my 'neo-Gricean' implementation, Spector's account makes quantitative predictions about

how the prior probabilities of different issues might affect our choice between precise and imprecise alternatives. Second, the RSA approach models complexity in terms of a numerical cost for each utterance, whereas Katzir's $\leq$-relation is not a total ordering. In principle, different predictions might therefore result in case two structures are incomparable with respect to $\leq$. Comparing these two proposals might shed light on the broader issue on how 'modular' and quantitative a model of our pragmatic preferences should be.

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Language	**universal quantifier**	**definite**	**containment**
Basque	N *guzti-ak* 'N all-D.PL'	N-*ak* 'N-D.PL'	⊐
	N *den-ak* 'N all-D.PL'	N-*ak* 'N-D.PL'	⊐
	N *oro-k* 'N all-ERG'	N-*ek* 'N-D.PL.ERG'	≡
	N-*ek oro-k* 'N-D.PL.ERG all-ERG'	N-*ek* 'N-D.PL.ERG'	⊐
Dan-Gwɛɛtaa (South Mande)[a]	N gbə̀ 'N all'	N-dɯ̀ 'N-DEF.PL'	≡
	N-dɯ̀ gbə̀ 'N-DEF.PL all'	N-dɯ̀ 'N-DEF.PL'	⊐
German	*alle* N.PL 'all N.PL'	*die* N.PL 'the N.PL'	≡
Modern Greek	*oli* DEF.PL N.PL 'all the N.PL'	DEF.PL N.PL	⊐
Modern Hebrew	*kol ha*-N.PL 'all DEF-N.PL'	*ha*-N.PL 'DEF-N.PL'	⊐
Imbabura Quichua	(*shuj*) *tukuy(-lla)* N-*kuna* '(one) all(-LIM) N-PL'[b]	*chay/kay* N-*kuna* 'DEF.DIST/DEF.PROX N-PL'	≡
Italian	*tutti* DEF.PL N.PL	DEF.PL N.PL	⊐
Malagasy	*ny* N *rehetra* 'DET N *all*'[c]	*ny* N 'DET N'	⊐
Persian (Farsi)	*hame=ye* N=*(h)â* 'all=EZ N=DEF.PL'[d]	N=*(h)â* 'N=DEF.PL'	⊐
Western Armenian[e]	*amen* N 'all N'	N-PL-ə	≡
	polor N-PL-ə 'all the N'	N-PL-ə	⊐
	amen N-PL-ə 'all the N'[f]	N-PL-ə	⊐
Wolof	N NCL.PL-*i/a* NCL.PL-*epp* 'all the N'[g]	N NCL.PL-*i/a*	⊐
	N NCL.PL-*epp* 'all the N'	N NCL.PL-*i/a*	≡

[a] Judging by the description, the determiner-less form might be generic. Vydrin (2017) suggests -dɯ̀ adds 'distributivity' but seems to mean maximality, as it is compatible with collective predicates.
[b] LIM = so-called 'limitative' marker that has various other uses including 'only'
[c] Nouns are said to be number-neutral throughout the language.
[d] EZ = *ezafe* (linking affix)
[e] Unlike with the other languages discussed in Keenan and Paperno (2012), it is not conclusively shown that the quantifiers glossed as 'all' (rather than 'every') are not distributive.
[f] said to be 'dispreferred' relative to the *polor* strategy
[g] acceptable only for some speakers

Table 3: Examples of 'all'-type quantifiers (i.e. universal quantifiers that are not obligatorily distributive) and plural definites from Keenan and Paperno (2012) and Paperno and Keenan (2017). In the last column, ⊐ means the *all*-QP formally contains the definite, and ≡ means neither form contains the other.

ϕ	ψ	imprecision	presupposition	complexity prediction
non-presuppositional INDEF	DEF	$\phi \blacktriangleleft_c \psi$	$\phi \triangleright_c \psi$	no prediction
presuppositional INDEF	DEF	$\phi \blacktriangleleft_c \psi$	$\phi \equiv_c \psi$	$\phi >_c \psi$

Table 4: Presuppositions interfere with the imprecision/complexity interaction