Contextual domain restriction and the definite determiner*

Urtzi Etxeberria and Anastasia Giannakidou

1. The debate: context and the domains of quantifiers

One of the most fruitful ideas in formal semantics has been the thesis that quantifier phrases (QPs) denote generalized quantifiers (GQs; Montague 1974, Barwise & Cooper 1981, Zwarts 1986, Westerståhl 1985, Partee 1987, Keenan 1987, 1996, Keenan & Westerståhl 1997, among many others). GQ theory initiated an exciting research agenda in the ‘80s, and the decades that followed featured extensive studies of quantificational structures, with attention to the internal structure of QPs, their use in discourse, and their scopal properties. For many years the focus of inquiry was on English, but soon enough crosslinguistic research made obvious a spectacular variation (see e.g. the

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papers in Bach et al. 1995, Mathewson 2008, Giannakidou and Rathert 2009) in the means and patterns of quantification across languages, suggesting that some fine tuning, or perhaps more radical modifications, of the classical theory are necessary.

Classical GQ theory posits that in order to form a QP, quantificational determiners (Q-dets) combine with a nominal (NP) argument of type \( et \), a first order predicate, to form a GQ. In a language like English, the syntax of a QP like every woman translates as follows:

\[
\begin{align*}
(1) \quad & \text{a. } [[\text{every woman}]] = \lambda P. \forall x. \text{woman} (x) \rightarrow P(x) \\
& \text{b. } [[\text{every}]] = \lambda P. \lambda Q. \forall x. P(x) \rightarrow Q(x) \\
& \text{c. } \text{QP} \\
& \langle \langle e, t \rangle, t \rangle \\
& \text{NP} \\
& \langle \langle e, t \rangle, \langle \langle e, t \rangle, t \rangle \rangle \\
& \langle e, t \rangle \\
& \text{every woman : } \lambda x. \text{woman} (x)
\end{align*}
\]

The Q-det every combines first with the NP argument woman, and this is what we have come to think of as the standard QP-internal syntax. The NP argument provides the domain of the quantifier, and the determiner expresses a relation between this set and the set denoted by the VP. Quantifiers like every woman, most women are known as ‘strong’ (Milsark 1977), and, simplifying somewhat (see McNally for more refined data), their distinctive feature is that they cannot occur in the so-called existential there construction, illustrated below:

\[
\begin{align*}
(2) \quad & \text{a. } \# \text{There are most women in the garden.} \\
& \text{b. } \# \text{There is } \{\text{every/each}\} \text{ woman in the garden.} \\
& \text{c. } \# \text{There is the woman in the garden.} \\
& \text{d. } \text{There are } \{\text{three/some/few/several}\} \text{ women in the garden.}
\end{align*}
\]

Notice that definite NPs (DPs) pattern with strong quantifiers in this respect. By contrast, quantifiers like three women, some women, several women (‘weak’ in Milsark’s terminology) occur happily in this structure, as indicated. The question of what accounts for the empirical difference we observe in existential structures is still open, but, for the purposes of this paper, it is
important to note that weak quantifiers typically assert existence, rather than presuppose it. This is a point to which we return.

It has also long been noted that the domain of strong quantifiers is usually restricted. Much contemporary work agrees that we need to encode contextual restriction in the grammar somehow, but opinions vary as to whether contextual restriction is part of the syntax-semantics (Partee 1987, von Fintel 1994, Stanley & Szabó 2000, Stanley 2002, Martí 2003, Matthewson 2001, Giannakidou 2004), or not (Recanati 1996, 2004, 2007, and others in the strong contextualism tradition). In the syntax-semantics tradition, it is assumed that the domains of Q-dets are contextually restricted by covert domain variables at LF. These variables are usually free, but they can also be bound, and they can be either atomic, e.g. $C$, or complex of the form $f(x)$, corresponding to selection functions (Stanley 2002, Martí 2003):

\[
\text{(3) In the dinner party we organized last night, every student had a great time.}
\]

\[
\text{(4) $\forall x \ [\text{student}]$ had a great time.}
\]

In these examples, the nominal argument of $\forall$, $\text{student}$, is not the set of students in the universe, but the set of students in the dinner party we organized last night. This is achieved by positing the domain variable $C$, which will refer to a contextually salient property, in this particular case the property of being in the dinner party we organized last night. This property then will intersect with the property $\text{student}$, and the product will be the (desired) set of students in the dinner party we organized last night. In the complex version $f(x)$, the domain consists of a free function variable and an argumental variable of type $e$ (that can be bound). Relative to a context $c$, $f$ maps $e$ to $et$, i.e. an object to a set, producing intersecting semantics. So, $[\text{student}_{f(x)}]$ in the example above will be interpreted as:

\[
\text{(5) } [\text{student}_{f(x)}] = [\text{student}] \cap \{x : x \in c(f(c(i)))\} \quad \text{(Stanley 2002: (9))}
\]

This set is, then, the nominal argument of the Q-det ‘every’. Stanley (2002) further argues that the domain variable is, syntactically, part of the nominal argument, and not of the Q-det itself.
Recently, evidence has been presented that the Q-det itself can be domain restricted (Giannakidou 2004, Etxeberria 2005, 2008, 2009). In the present paper we want to build on this literature, and advance the claim that we must allow for both syntactic options in grammar, i.e. NP, as well as Q-det restriction. Semantically, both syntaxes will end up intersecting C with the NP argument, but the difference will be that some Q-dets will require this intersecting semantics, whereas others will not. Contextual domain restriction, we further argue, can be overtly done via a definite determiner D, an idea that builds on an earlier proposal by Westerståhl (1984) that the definite article supplies a context set. Contextual domain restriction in this analysis is a presupposition contributed by the typical vehicle of presuppositions, the definite determiner. This conclusion can be cast independently of how we treat presuppositions, e.g. as preconditions on updates of contexts or information states (Heim 1983), or within van der Sandt’s (1992) conception of them as propositions whose place in discourse is underdetermined by syntax—though it seems to favor, we think, Heim’s approach.

The main data that support our claim comes from languages as diverse typologically as Greek, Basque, and Salish. The upshot of the discussion will be that (a) we have indeed evidence for the ‘explicit strategy’ (von Fintel 1998) of contextual domain restriction, and (b) being contextually restricted is often an inherent property of the Q-det.

The discussion proceeds as follows. We start in section 2 with Matthewson’s data from Salish which prompted Giannakidou’s (2004) proposal that D crosslinguistically performs the function of contextually restricting the domain of Q-dets. In section 3, we simplify Giannakidou’s GQ analysis by defining the domain restricting function of D as a type-preserving (i.e. modifier) function D_{DR}. D can thus apply to the NP without altering the type of the NP argument (et): this is the case of Salish. We show further that the modifier function D_{DR} can also affect the Q-det itself, using data from Greek, Basque, and SS. Q-dets that have undergone D_{DR} are shown to be presuppositional. We also maintain that D_{DR} can only apply once, which means that we cannot have simultaneously composition of D with the Q-det and D with the NP. This prediction is borne out in both Basque and Greek. In section 4 we discuss how the domain restricting function correlates with the weak-strong distinction: only strong Q-dets can be restricted via D in Basque, and we
explain this by arguing, following Etxeberria (2005, 2008, 2009), that weak Q-dets are not Q-dets (et, ett), but number functions.

2. Background: D and the structure of QP

Here we present some data from St’át’ímcets Salish (SS) that motivated Matthewson to suggest a syntactic modification to the standard GQ theory, namely that the Q-det combines with an e (instead of et) type argument. We then present empirical problems with this idea, and give the reanalysis of these data proposed in Giannakidou (2004) within GQ theory. Giannakidou builds on Westerståhl (1984) who claimed that the definite article provides a context set, and we will ground our theory based on this idea. Importantly, it is not crucial for us that the D be morphologically definite (the Salish D isn’t), but that it performs functions associated with semantic definiteness, i.e. saliency and familiarity. For reasons of space we cannot expand on the relation between semantic and morphological definiteness in the present article, but see Etxeberria and Giannakidou 2009 for very detailed discussion, and Gillon 2006, 2009 for more facts of Salish supporting the idea we will argue for, i.e. that D associates with domain restriction.

2.1. St’át’ímcets (SS) data (Matthewson 2001)

In SS, quantifiers in argumental phrases must always appear with a D modifying their NP.¹

(6) a. Léxlex [tátem i smelhmúlhats-a].
    intelligent [all D.pl woman(pl)-D]
  ‘All of the women are intelligent.’

b. * léxlex [tátem smelhmúlhats]

¹ The SS definite determiner consists of two discontinuous parts, a proclitic (ti for singulars; i for plurals), which encodes deictic and number information, and an enclitic ...a which attaches to the first lexical element in the phrase. See Matthewson (1998) for details.
intelligent [all woman(pl)]

(7) a. Úm’-en-lhkan [zi7zeg’ i sk’wemk’úk’wm’it-a] [ku kándi].
give-tr-1sg.subj [each D.pl child(pl)-D] [D candy]
‘I gave each of the children candy.’
b. * Úm’-en-lhkan [zi7zeg’ sk’wemk’úk’wm’it] [ku kándi].
give-tr-1sg.subj [each child(pl)] [D candy]

Matthewson (2001), suggests a new syntax for the QP: first, D combines
with the NP predicate to create a DP (type e); then, the created e object
becomes the argument of Q-det which is now of type ⟨e, ⟨⟨e, t⟩⟩, t⟩. This
combination yields a GQ of the usual type ⟨⟨e, t⟩⟩, t⟩.

(8) a. [Q-detP tákem i smelhmúlhats-a]
[all D.pl woman (pl)-D]
b. QP ⟨⟨e, t⟩⟩, t⟩
Q-det ⟨⟨e, ⟨⟨e, t⟩⟩⟩, t⟩⟩
takem
D ⟨⟨e, t⟩⟩, e⟩
i
smelhmúlhats

D in Matthewson’s account is, crucially, the regular et,e (iota, maximalizing)
function:

(9) [\{smelhmúlhats (pl.)\} = [\{*\} (\{smúlhats (sg.)\})] ‘women’
(10) [\{X \ldots a_k\}^g = \lambda f \in D_{et} (g(k)) (f)] (Matthewson 2001: (18))

The index of the determiner specifies which choice function will be used; g is
an assignment function, from indices to choice functions, thus g(k) is a choice
function of type et,e. If the DP is plural, a pluralization operator * is posited
with standard semantics: it takes an one-place predicate of individuals f and
returns all the plural individuals composed of members of the extension of f.
(11) \( [[*]] \) is a function from \( D_{et} \) into \( D_{et} \) such that, for any \( f \in D_{et}, x: D_c: \[*f\](x)=1 \iff \lnot f(x) = 1 \land \exists y \exists z [x = y+z \land \lnot \exists y [*(f)] (y)=1 \land \lnot \exists z [*(f)] (z) =1]\]
(Matthewson 2001: (17))

Hence, in this system, D functions as the more familiar definite plural (though, technically, it is a choice function in Matthewson’s analysis). This analysis does convey an intuition that the DP argument refers to a discourse salient set—which is similar to saying that the NP set is contextually restricted, the property we want to capitalize on.\(^\text{2}\) Syntactically, however, the set becomes an individual, and this leads to the modification to the classical GQ theory. According to Matthewson, this pattern is universal, and not subject to crosslinguistic variation.

We review next the empirical problems with this claim, recycling from discussions in Giannakidou (2004), Etxeberria (2005, 2008, 2009).

2.2. Problems with Matthewson’s syntax

2.2.1. Q-dets do not take DP arguments

One of the predictions of Matthewson’s proposal (in (8b)) is that Q-dets should be able to combine with definites crosslinguistically. However, this prediction is not borne out.\(^\text{3}\)

English:

(12)  
a. * every the boy  
b. * most the boys  
c. * many the boys  
d. * three the boys  
         f. all the boys  
g. only the boys

\(^\text{2}\) Others too, have made the claim that SS DP are always linked to the here and now of current discourse (Demirdache 1997), a property that may also be used, we think, to explain why SS DPs have the peculiar property of always taking the widest scope (Matthewson 1998, 1999). We will not discuss this ultrawide scope property here, but we should note that if the SS D is a definite such a behavior is expected.

\(^\text{3}\) Many other languages show the same behaviour, e.g. Dutch or Catalan.
Spanish:
(13)  a. * cada los chicos  
   lit.: ‘each the boys’  
   f. todos los chicos  
   ‘all the boys’
 b. * la mayoria los chicos  
   lit.: ‘the most the boys’  
   g. sólo los chicos  
   ‘only the boys’
 c. * muchos los chicos  
   lit.: ‘many the boys’
 d. * tres los chicos  
   lit.: ‘three the boys’

Greek:
(14)  a. * kathé to aghori  
   lit.: ‘every the boy’  
   d. ola ta aghoria  
   ‘all the boys’
 b. * merika ta aghoria  
   lit.: ‘several the boys’  
   e. mono ta aghoria  
   ‘only the boys’
 c. * tria ta aghoria  
   lit.: ‘three the boys’

Note that the grammatical examples in (12-14) -which would fit in the configuration in (8b)- are formed exclusively with all and only, elements that have been argued not to be quantifiers (see Brisson 2003 for all; von Fintel 1997 for only). Observe that many of the ungrammatical constructions in the examples above become automatically grammatical as soon as the partitive of is introduced (e.g. most of the boys, many of the boys, three of the boys).

2.2.2. Partitive ‘of’ has semantic import

If Q-dets combine directly with entity-denoting elements of type e, of in partitive constructions such as many of the girls must be argued to be semantically vacuous—pace Ladusaw (1982), where of ensures that the Q-det receives an ⟨e, t⟩ type element as input. According to Matthewson (2001) indeed, the partitive preposition of is only employed for case reasons.

(15)  {Many/Some} of the banks are about to file for bankruptcy.
Apart from losing the neat semantic explanation for why we need an *of*-element in languages like English, Romance, Greek and the other discussed above, the case account faces empirical problems. Notice that *of* is optional in some constructions, and this should not be so if *of* was there only for case only.

(16) a. all (of) the boys  
b. half (of) the boys  
c. both (of) the boys

Zulu (cf. Adams 2005) also provides evidence that it is undesirable to maintain that *of* is there just for case reasons. In the following grammatical sentences the counterpart of *of* is optional and its presence/absence has semantic import. In case the only role of the partitive preposition *of* is to assign case to the NP, what case would it be assigning in (17b) that need not be assigned in (17a)? Note that the quantifier and the NP are the same in both examples.

(17) a. Aba-fana aba-ningi ba-ya-dla.  
   cl2-boy   cl2-many cl2-pres-eat  
   ‘Many boys are eating.’  
b. Aba-ningi b-aba-fana ba-ya-dla.  
   cl2-many  cl2part-cl2-boy cl2-pres-eat  
   ‘Many of the boys are eating.’

According to Matthewson (2001), the fact that SS (a language that lacks the partitive *of* element) lacks also overt case marking supports the claim that *of* (e.g. in English, Spanish, etc.) is there only for case. Zulu, just like SS, lacks overt case marking but, *pace* Matthewson’s assumption, still has a partitive as shown in (17b). In other words, if partitive *of* were just inserted for case reasons, we would not expect to see it in a language where case is not marked overtly.

2.2.3. Q-det and D can vary their positions
Matthewson’s analysis predicts that DPs are complements to Q-dets: \([Q\text{-det} [DP]]\). However, languages show evidence for both \([Q\text{-det} [DP]]\) and \([D [Q\text{-det}]]\) constructions showing that not always is an \(e\) type DP complement to the Q-det.

Although the majority of the SS quantifiers combine with a DP argument (18a-b), Matthewson also presents some data that does not fit her own quantificational structure, see (19a-b) – both with strong quantifiers:

(18) a. tákem i smelhmúl hats-a
    all D.pl woman(pl)-D
b. zi7zeg’ i sk’wemk’úk’wm’it-a
    each D.pl child(pl)-D

(19) a. i tákem-a smúl hats
    D.pl all-D woman
b. i zi7zeg’-a sk’wemk’úk’wm’it
    D.pl each-D child(pl)

Examples where the Q-det appears under D can also be found in Greek:

(20) a. oli i fitites
    all D.pl students
b. o kathe fititis
    D.sg each student

Basque (a head final language) also provides evidence for the existence of these two structures: Strong Q-dets (see section 3.1), and not their nominal arguments, are composed directly with the D (pace Matthewson 2001).

(21) a. mutil guzti-ak
    boy all-D.pl
    Lit.: ‘boy all the(pl)’
b. mutil bakoitz-a
    boy each-D.sg
    Lit.: ‘boy each the(sg)’
We conclude that there is not much motivation to adopt the structure in (8b) in languages beyond SS. If we do, we make many wrong predictions. On the other hand, adopting the new QP syntax just for SS would be undesirable, if it turns out that we can explain the SS within the basic structure of GQ theory. Giannakidou (2004) suggested that we can do exactly this.

2.3. Reanalysis of SS data: Giannakidou (2004)

Giannakidou, building on Westerståhl 1984, takes the data from SS to suggest that in order for a quantifier to combine with a nominal argument, this must be first contextually restricted. Thus, in SS the D will supply the contextual variable C without creating an individual, yielding a generalized quantifier with a contextually specified set as its generator.

\[(22)\]
\[
\text{DP } \langle \langle e, t \rangle, t \rangle
\]
\[
\text{D } \langle \langle e, t \rangle, \langle \langle e, t \rangle, t \rangle \rangle \quad \text{NP } \langle e, t \rangle
\]

\[(23)\]
\[
[[X... a]] = \lambda P \lambda Q \{x: C(x)=1 \& P(x) =1\} \subseteq \{x: Q(x)=1\}
\]

\[(24)\]
\[
[[\text{ti smúl hats-a}]] = \lambda P \{x: C(x)=1 \& \text{woman } (x) =1\} \subseteq \{x: P(x)=1\}
\]

‘D woman’

Notice the difference here with Matthewson (2001) who treats the DP as a choice function. In Giannakidou’s analysis we have the standard GQ denotation expected of a definite, only the domain argument is now intersected with some property C.\(^4\)

\(^4\) Cf. Matthewson (2005) where it is argued that the reanalysis of SS data offered by Giannakidou does not account for the facts since Giannakidou (2004)’s analysis predicts that DPs in St’át’imcets are definite, and according to Matthewson they are not. Cf. Giannakidou (2004) and Matthewson (2005) for discussion. Cf. also fn.2.
Once we get the combination in (22), Partee (1987)’s type-shifting operator BE shifts the GQ of type \( e, t \) to the predicative type \( e, t \) for the Q-det to be able to combine with it.\(^5\)

\[
(25) \quad \text{BE: } \langle e, t \rangle, t \rightarrow \langle e, t \rangle: \lambda P_{et} [\lambda x [\{x\} \in P]]
\]

If we assume, along with Partee (1987), Chierchia (1998), and others, that type shifters are syntactic elements, it follows that BE will be covert in this language. The result will be:

\[
(26) \quad \text{Q-detP } \langle e, t \rangle, t \\
\quad \text{Q-det } \langle e, t \rangle, \langle e, t \rangle, t \quad \text{PP } \langle e, t \rangle \\
\quad \text{D } \langle e, t \rangle, \langle e, t \rangle, t \quad \text{NP } \langle e, t \rangle
\]

This result, Giannakidou argues, is consistent with the fact that there are no overt partitives in SS.\(^6\) It also renders SS QPs partitive like structures. Since

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\(^5\) Matthewson (to appear-b) argues against the possibility of having the covert type-shifter BE in SS because, it is claimed, there is no language-internal evidence for it; assuming that BE exists in the language would make incorrect predictions, e.g. that main predicates could have Ds on them, which they cannot. However, claiming that BE doesn't apply in SS would be a strange gap in the language. The type shifting approach (including the modifications by Chierchia in terms of covert versus overt type shifters) would allow BE and block it only if there is an overt element doing what BE does. The question to answer then is: do we have evidence that perhaps D, or something else, does this in SS? This is our perspective here; cf. §3.

\(^6\) Lisa Matthewson (p.c.) mentions that in SS there is a preposition that may perform (along side other functions; there are only four prepositions in this language) the function that a designated preposition (of) or a case-marker assumes in other languages. However, this preposition is not required (as of is in English, or de ‘of’ in Spanish). The examples that are cited in the literature as SS partitives (see Matthewson 1998, 2001) resort to the familiar structures ‘D weak NP’. Hence, it seems safe to continue to
overt type-shifters block covert shift (Chierchia 1998), the prediction is that languages with overt partitive prepositions -of- or partitive case (English, Greek, Spanish, Basque, etc.) block the covert shift. What we saw in the previous section, namely that in these languages DP does not combine directly with Q-det, as well as the contrast between these languages and SS, are thus readily explained.

The important insight here is that in order to capture contextual restriction syntactically, we need not revise our standard assumptions about the syntactic types of the arguments within the QP. In this light, then, the SS data tell us that we need to refine the syntax of QP so that we can capture the systematicity of overt contextual domain restriction in natural languages.

3. New proposal: Domain restricting D as a modifier function

3.1. Two ways of domain restricting via D: on the NP, or the Q-det

We will now preserve Giannakidou’s insight, but propose a somewhat simpler analysis, where D functions not as an individual or GQ forming function, but as a modifier: a function that preserves the type of its argument, and modifies it by supplying the contextual restriction C. When D modifies the NP argument, we have the following:

\[ \text{[[D}_\text{DR}]=\lambda P_e \lambda x P(x) \cap C(x) \]

The D in SS exhibits this case. It is a type-preserving function, yielding a contextually salient set of women as the domain of takem ‘all’.

\[ \text{[[i... a] =} \lambda P_e \lambda x P(x) \cap C(x) \]

Salish D can perform this function and applies directly to the nominal to restrict it; but the English, Greek and Basque D, along with the other European

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assume that SS lacks a partitive of element (and a partitive structure) of the English, Romance, Greek, Basque type.
languages mentioned earlier, won’t be able to restrict the NP—when D is fed an NP it functions referentially in these languages, hence the need for the partitive preposition to give back the right input (et) for composition with Q.

It is important to stress that our definition of the modifier $D_{DR}$ says essentially that the two important semantic functions of definiteness—familiarity/saliency, and reference—can be dissociated, and that a D element will have the ability, in some cases, to contribute just the former, without necessary functioning as an iota. (Because familiarity and saliency are a presupposition, we cannot have $D_{DR}$ with an element encoding reference to a novel set). The distinctive feature of SS, additionally, is that in this language, the domain argument is always contextualized syntactically via $D_{DR}$.

Crucially, D also appears to be syntactically attached to the Q, as we mentioned earlier and repeat here:

    a. i tákem-a smúlhats (Matthewson 2001: 151, fn.5)
        D.pl all-D woman
        ‘all of the women’
    b. i zi7zeg’-a sk’wemk’úk’wm’it (Matthewson 1999: 41c)
        D.pl each-D child(pl)
        ‘each of the children’

(30) Greek (Giannakidou 2004):
    a. o kathe fititis
        D.sg every student
        ‘each student’
    b. kathe fititis; *kathe o fititis
        every student

(31) Basque (Etxeberria 2005, 2009):
    a. mutil guzti-ak
        boy all-D.pl
        ‘all of the boys’
    b. *mutil guzti; *mutil-ak guzti
In these structures, we are arguing that D functions as a modifier of the Q-det, yielding a Q-det with a contextually restricted domain:

\[ [D_{\text{DR}}] = \lambda Z_{\text{et,ett}} \lambda P_{\text{et}} \lambda Q_{\text{et}} Z (P \cap C)(Q) \]; where \( Z \) is the relation denoted by Q-det.

We argued elsewhere that D attaches syntactically to the Q-det (Giannakidou 2004, Etxeberria 2005, for more detailed arguments see Etxeberria and Giannakidou 2009), so the result is the following structure:

(33)  
  a. \([Q_D o D + \text{kathe Q-Det} [NP \text{fititis}]]\)  
  b. o kathet fititis = [kathet (C)] (student) ‘each student’

(34)  
\[
\begin{array}{c}
\text{QP} \\
\text{Q-det} \\
\text{NP} \\
\text{\(D\)} \\
\text{\(Q\)-det} \\
\text{fititis ‘student’} \\
| \\
| \\
\text{\(o\)} \\
\text{kathet} \\
\text{the every}
\end{array}
\]

a. Basque: ikasle guzti-ak = (ikasle) [guzti (C)]  
Greek: o kathete fititis = [(C) kathete] (fititis)  
SS: i zi7zeg’a sk’wemk’uk’wm’it = [(C) zi7zeg’] (NP)

b. \([Q\text{-det}] = \lambda P \lambda Q . \forall x P(x) \rightarrow Q(x)\)  
c. \([D_{\text{DR}}] = \lambda Z_{\text{et,ett}} \lambda P_{\text{et}} \lambda Q_{\text{et}} Z (P \cap C)(Q); Z \) the relation denoted by Q-det  
d. \([o \text{kathete}] = \lambda P \lambda Q . \forall x (P(x) \cap C(x)) \rightarrow Q(x)\)

In the next section, we compare the product of this application ‘o kathet fititis’ to ‘each student’ in English and see that the result is similar in terms of presupposition: they both require non-empty domains (and both QPs are strongly distributive, a fact that we gloss over here). Our hypothesis, then, will be that a possible composition of each would involve a structure parallel to the Greek and Basque that we propose here: [D-every], only with each, D is null.
We are thus suggesting a generalization that all inherently D\textsubscript{DR}-ed Qs have undergone a process of D modification that supplies C, but we cannot examine this further in this paper due to space.

As a concluding note, we would like to emphasize that the domain restricting function of D–D\textsubscript{DR}– is proposed here as an additional meaning that the definite determiner can have in a given language. We are not suggesting that D\textsubscript{DR} replaces the reference iota function, or the use of D as for kind reference (generic use). We are merely suggesting that D can also function as a modifier, and in this case it contributes only familiarity, i.e. the context set C, and not reference (i.e. iota).

In Salish, D can function as D\textsubscript{DR} with both NP and D; in Basque and Greek only with the Q-det; in English the D\textsubscript{DR} use is not possible for D. One must then ask the question of what determines this variation, and this question amounts to asking why the lexical properties of D in the a given language L are the way they are in L. This is indeed a fascinating question worth exploring in the future, and the D\textsubscript{DR} function we are suggesting here provides an additional dimension to examine. Interestingly, elements that are not morphologically D, e.g. Chinese dou, as argued recently in Cheng (2009), can take up the D\textsubscript{DR} function, and in this perspective the relation between D\textsubscript{DR} and definiteness marking becomes more complex. See Etxeberria and Giannakidou 2009 for more typological discussion.

3.2. The Q-det created via D is presuppositional

Determiners that have undergone D\textsubscript{DR} are presuppositional and veridical (two closely related notions, if not the same):

(35) Presuppositionality of quantificational determiners
A determiner δ is presuppositional iff for all A, B \subseteq D, if A = \emptyset then,
\langle A, B \rangle \notin \text{Dom}(\delta).
(based on Heim and Kratzer 1998:163)

(36) (Non)veridicality of quantificational determiners (Giannakidou 1999)
A determiner/quantifier δ is veridical iff it holds that:
\llbracket \delta \text{ NP VP} \rrbracket = 1 \rightarrow \exists x \text{ NP (x)}; \text{ otherwise, } \delta \text{ is nonveridical.}
Presuppositional and veridical determiners presuppose a nonempty domain, i.e. they come with a presupposition of existence. The definite article, in its referential use, is a well-known vehicle of this presupposition.\(^7\) Related to presuppositionality and veridicality is also the discussion of “existential commitment” in Horn (1997). Though all, every, both, the, and each generally appear to be associated with non-empty domains, only with the latter two is the nonempty domain a pre-condition for felicitous use. With every and all, it may not even be an entailment: we see below that we can negate the non-emptiness of the domain without contradiction (the data are drawn from Giannakidou 1998):

(37) Every faculty member that lives in the neighborhood got invited to the party; which means zero, since no faculty member lives in this neighborhood!

(38) All faculty members that live in the neighborhood got invited to the party; which means zero, since no faculty member lives in this neighborhood!

Each and both, on the other hand, come out as contradictory in this case. We illustrate below with Greek o kathe ‘each’ and ke i dhio ‘both’, literally “and the two”. Notice that i in ke i dhio is the plural of the definite article, indicating that ke i dhio has also undergone D\(_R\):

(39) O kathe fitites ap’ aftin tin gitonia irthe sto parti.
    # Diladi kanenas dhen irthe, afu den iparxun fitites edo giro.
    Each student in this neighborhood came to the party; # so no students came, since there are not students in this neighborhood!

(40) Ki i dhio fitites a’aftin ti gitonia irthan sto parti;

---

\(^7\) Whether or not the domain is nonempty has been shown to be crucial in NPI-licensing: veridical determiners do not allow NPIs to be licensed in their restriction (Giannakidou 1998, 1999, 2006). We will not focus on this property here, though.
In Basque, the same situation obtains, and again, we find -a(k), the definite D, with all the strong quantifiers (data from Etxeberri 2009):

(41) a. Akats guzti-ak/gehien-ak aurkitzen badituzu, sari bat mistake all-D.pl.abs/most-D.pl.abs find if-aux. reward one emango dizut. give aux
   # Baina gerta liteke bat-ere akats-ik ez egotea. but happen aux one-too mistake-part no be-nom
   ‘If you find all of the/most of the mistakes, I’ll give you a reward.
   # But there may be no mistakes at all.’

b. Ikasle bakoitz-ak liburu bat irakurtzen badu, sari bat student each-D.erg book a read if-aux reward one emango diot. give aux
   # Baina ikasle-rik ez dagoenez, ez dut sari-rik emango. but student-part no since no aux reward-part give
   ‘If each student reads a book, I’ll give (each student) a reward. # But since there are no students, I’ll give no reward’

We see here, then, a consistent pattern of complex Q-dets, where D appears to be a constituent with the Q-det, and the Q-det as a whole requires a context that contains a nonempty domain for it. Such determiners can be called presuppositional. Another label that has been used in the literature is D(iscourse)-linked (Pesetsky 1987), a term capturing the fact that the created quantifier phrases are ‘linked’ to a particular discourse salient set. In our

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8 See Etxeberria (2005, 2007) for a possible analysis of the Basque D.
9 Bakoitz is additionally distributive, hence grammatical only if there is a Share element (other than the event variable) in the structure over which to distribute (see Etxeberria 2002a, 2008).
analysis, presuppositionality and D-linking follow simply from the fact that D has applied and provided C, the context set.

D₁Rₐₜₜ Qs, naturally, cannot be used in contexts that do not warrant existence or salience. Therefore, they cannot be used to refer to kinds, a fact known for *each* since Beghelli and Stowell (1997):

(42)   a. *Kathe monokeros* exi ena kerato.
       Every unicorn has one horn.
   b. # *O kathe* monokeros exi ena kerato.
       Each unicorn has one horn.
   c. # *Adarbakar bakoitz-a-k* adar bat dauka.
       unicorn each-D.sg-erg horn one has
       Good: only as a claim about a specific set of unicorns, e.g. in an illustration that is present physically at the time of conversation.

(We’ve included objects to ensure that distributivity with the distributive quantifiers is satisfied). A D₁Rₐₜₜ Q cannot be used to refer to a kind because kind reference is not tied to a context, and cannot even be about non-actual individuals, as with the unicorns above. Kind reference is thus *unrestricted*, and *o kathe*, *bakoitz*, and *each*, as we see, cannot be used in this way. However, in characterizing sentences they are fine:

(43)   a. Greek: Sto programma mas, *o kathe fititis* prepi na epileksi dio mathimata simasiologias.
   c. English: In our program, *each student* must choose two semantics classes.

What is crucial is the restriction ‘in our program’, which renders the example not a predication of a kind, but a characterizing sentence that expresses a generalization about a particular set of students *in our program* (see Chierchia 1998, and earlier discussions in Carlson’s 1977 seminal work on why such restricted sets can never evolve into kinds). *O kathe* ‘D.sg each’, *bakoitz* ‘each-D.sg’, and *each* can be used in this way, and this is consistent with our proposal that their quantification must be about a salient set for felicitous use.
3.3. D-restriction happens only once

When contextualisation happens at the Q-det level, the addition of another definite results in ungrammaticality (cf. Giannakidou 2004, Etxeberria 2005, 2009), an ungrammaticality that could be explained in terms of type mismatch, since the Q-det would receive an e type argument rather than \((e, t)\), as predicted by the standard analysis of GQ. Although we only offer Basque examples, this restriction is also observed in Greek (see Giannakidou 2004), in SS (see Matthewson 2009), and in Chinese (see Cheng 2009).

(44) Basque:
   a. * ikasle-ak guzti-ak
      student-D.pl all-D.pl
      ‘The all the students’
   b. * ikasle-a bakoitz-a
      student-D.sg each-D.sg
      ‘The each the student’

The overt partitive form is also excluded as shown in (44) below. Now, if we assume Ladusaw’s account of partitives where they provide elements of type \((e, t)\), the ungrammaticality is unexpected because in this case the partitive does not produce type mismatch, as was the case in the examples in (43). In other words, the partitive *ikasleetatik* (lit.: student the.pl of) would yield the correct argument (an \((e, t)\) type predicative argument) for the quantifier to quantify over; but still, (44) is out.

(45) a. * ikasle-eta-tik guzti-ak
   student-D.pl-abl all-D.pl
   ‘the all of the students’
   d. * ikasle-eta-tik bakoitz-a
      student-D.pl-abl each-D.sg
      ‘the each of the students’
Hence, contextually restricting more than once does not yield a type mismatch. Now, we know from section 3.1 that partitives behave as contextual restrictors in languages where D_{DR} cannot apply directly to the NP argument, e.g. Basque, English, Greek, etc. Thus, in (44) we have double contextual restriction yielding ungrammaticality. The reason these sentences are ungrammatical is (as predicted by our analysis) that domain restriction is already fulfilled by means of the D that composes with the strong Q-dets. Additional contextual restriction is redundant: what would it mean to contextually restrict more than once? Not much, we think.

Unlike adjectival or other modification that adds a different description with each application and narrows down the NP domain in an informative way, domain restriction with the same description—C—does not reduce the domain further, nor does it have any other discourse effect. Notice that modifying a noun with the same adjective is also redundant, unless a different meaning is created:

(46) an expensive expensive car

In (45) only one of the adjectives is interpreted as a restrictor. The other is interpreted as a degree modifier like ‘very’, yielding a meaning: a very expensive car. Hence reduplication of identical modifiers is generally prohibited in the usual case too, and the shift to some other meaning is triggered as a way to avoid redundancy. It is then only normal to expect redundancy with contextual restriction; but here we have ungrammaticality because there can be no other lexical shift for D, e.g. no degree meaning like ‘very’, in contrast with gradable adjectives like ‘expensive’ in (45).

We thus claim that when D_{DR} acts as a modifier (cf. §3.1), it cannot apply more than once; for more data from Basque illustrating the interaction of D with partitive case and how it is consistent with this generalization see Etxeberria (2005, 2008, 2009).^{10}

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^{10} We put aside definite reduplication (or polydefinite) cases since these involve two DPs (Alexiadou and Wilder 1998, Campos and Stavrou 2004, Kolliakou 2004), which agree in case:

(i) o kokinos o tixos (Greek)
    the red.nom the wall.nom
3.4. D in fraction expressions: *not* $D_{DR}$

In fraction expressions like the ones in (46) we find what could be a Q-det accompanied by a D and its NP argument accompanied by a partitive. Such cases are found in many languages:

(47) Basque:
      student-D.pl.gen half-D.sg/third-D.sg/majority late arrive aux
      ‘Half/One third/the majority of the students arrived late.’

   Spanish:
   b. La mitad de los estudiantes llegó tarde.
      D.sg half of the students arrived late
      ‘Half of the students arrived late.’

   French:
   c. La moitié des élèves est arrivée en retard.
      D.sg half of-D.pl students be arrived late
      ‘Half of the students arrived late.’

   Greek:
   d. I pliopsifia ton fititon psifise yper.
      D.sg majority the.gen students.gen voted in favor
      ‘The majority of the students voted in favor.’

   English:
   e. The majority of the students voted in favor.

‘the wall that is red”

Such phrases have an underlying structure [DP plus DP], and one of the DPs is thought to correspond semantically and syntactically to a relative clause (see especially Alexiadou and Wilder), or to express a predication relation towards the other DP (Campos and Stavrou), e.g. in the example above. It should be clear, then, that this is a different phenomenon. Similar examples in Malagasy (discussed in Keenan 2008), we think, also manifest cases of definite reduplication, which should not be confused with domain restriction via D. We will have to leave discussion of such cases for a future occasion.
Are these cases of Q-det via D restriction followed by a partitive, or are they to be analysed as something else? We think that they are actually instances of something else.

The D that combines with the fraction expression does not function as a domain restrictor D\textsubscript{DR}; it seems more reasonable to treat it as the iota function and creating an individual. This is so because fraction expressions (at least in the languages we are considering) are not determiners (Q-dets), a prerequisite for applying D\textsubscript{DR}, but NPs. The D with the fraction expression is inserted for syntactic reasons to turn the NP into an argument, since bare nouns in Basque, French, Greek, or Spanish—particularly singulars, as in English—are not allowed (cf. Artiagoitia 1998, 2002; Etxeberria 2005, 2007 for Basque; Bosque 1996 for Spanish; Kleiber 1990, Bosveld de-Smet 1998 for French; Carlson 1977, Chierchia 1998 among many others). Note that, when we eliminate the D that appears beside the fraction expression from (47) the sentences become ungrammatical:

\begin{align}
\text{(48)} & \quad \text{Basque:} \\
& a. * \text{Ikasle-en erdi/heren/gehiengo berandu etorri da} \\
& \quad \text{student-D.pl.gen half/third/majority late arrive aux} \\
& \text{Spanish:} \\
& b. * \text{Mitad de los estudiantes llegaron tarde} \\
& \quad \text{half of D.pl students arrived late} \\
& \text{French:} \\
& c. * \text{Moitié des élèves est arrivée en retard} \\
& \quad \text{half of-D.pl students be arrive late} \\
& \text{Greek:} \\
& d. * \text{Pliopsifia ton ffiton psifise yper.} \\
& \quad \text{majority the.gen. students.gen voted in favor} \\
& \text{English:} \\
& e. * \text{Majority of the students voted in favor}
\end{align}

Notice also the impossibility of the English bare singular —majority—in an argument position. Similar examples from Spanish (as well as other Romance languages, e.g. Catalan, French; although we only provide Spanish examples) are shown below with \textit{la mayorìa} ‘most’, where, as in Greek \textit{d} above, a
quantifying word combines with a D, and its argument NP is necessarily followed by a partitive.

(49) La mayoría de los estudiantes suspendieron el examen.
    the.sg majority of D.pl students failed the exam
    ‘Lit.: The most of the students failed the exam.’

Again, what seems to be going on in Spanish is that *mayoría*, like *pliopsifia* in Greek, is not a Q-det but a noun, and that the first D in *la mayoría de los NP* ‘the majority of the NP’ is required in order to turn the NP into an argument (cf. Etxeberria 2009).

Evidence in favor of the fact that fraction expressions —as well as the Spanish counterpart of *most*— are nominal expressions (and not Q-dets) comes from the following fact: these elements can combine with numerals, e.g. one, two, etc., in opposition to what happens with real Q-dets.

(50) a. Basque: ikasleen heren bat
        student-D.pl.gen third one
b. Spanish: un tercio de los estudiantes
        one third of D.pl students
    una (gran) mayoría de los estudiantes
    one (great) majority of D.pl students
c. French: une moitié des élèves
        one half of D.pl students
d. English: one half of the students

Thus, from what we’ve seen in this subsection, fraction expressions such as *half*, *third*, *majority*, etc. are to be considered nouns or NPs and not Q-dets. It follows then that what appeared to be double domain restriction is not really that.

At this point we will summarize our main conclusions. First, D can contextually restrict Q-dets as well as their domains—the NPs they combine with—, and both options must be allowed (see also Martí 2003). When the D_{DR} applies to Q-det, the created quantifiers are referential, i.e. they come with a nonempty discourse salient domain. These D_{DR}-ed determiners were all shown
to be strong. Now we ask the question: can a weak determiner be restricted via \(D_{DR}\)?

### 4. Contextual restriction via D and the weak-strong distinction

In this section we discuss how the domain restricting function \(D_{DR}\) correlates with the weak-strong distinction. In Basque, there is a clear and very significant asymmetry between strong and weak quantifiers: while the former *must* appear with the D—which plays the role of the domain restrictor—, as shown by the examples in (50-51), the latter do not combine with D (52-53).

\[(51)\]
\begin{align*}
a. & \quad [\text{Ikasle } \text{guzti-ak}] \quad \text{berandu etorri ziren.} \\
& \quad [\text{student all-D.pl.abs}] \quad \text{late come aux.past.pl} \\
& \quad \text{‘All of the students came late.’} \\
b. & \quad *[\text{Ikasle guzti}] \quad \text{berandu etorri ziren.}
\end{align*}

\[(52)\]
\begin{align*}
a. & \quad [\text{Ume bakoitz-ak}] \quad \text{goxoki bat jan zuen.} \\
& \quad [\text{child each-D.sg.erg}] \quad \text{candy one eat aux.past.sg} \\
& \quad \text{‘Each student ate a candy.’} \\
b. & \quad *[\text{Ume bakoitz}] \quad \text{goxoki bat jan zuen.}
\end{align*}

\[(53)\]
\begin{align*}
a. & \quad [\text{Zenbait politikari}] \quad \text{berandu iritsi ziren.} \\
& \quad [\text{some politician}] \quad \text{late arrive aux.pl.past} \\
& \quad \text{‘Some politicians arrived late.’} \\
b. & \quad *[\text{Zenbait-ak politikari}] \quad \text{berandu iritsi ziren.} \\
c. & \quad *[\text{Zenbait politikari-ak}] \quad \text{berandu iritsi ziren.}
\end{align*}

\[(54)\]
\begin{align*}
a. & \quad [\text{Politikari asko}] \quad \text{berandu iritsi ziren.} \\
& \quad [\text{politician many}] \quad \text{late arrive aux.pl.past} \\
& \quad \text{‘Many politicians arrived late.’} \\
b. & \quad *[\text{Politikari-ak asko}] \quad \text{berandu iritsi ziren.} \\
c. & \quad *[\text{Politikari asko-ak}] \quad \text{berandu iritsi ziren.}
\end{align*}

It appears that only strong Q-dets can be contextually restricted via D in Basque. Hence, Basque can be said to show in the overt syntax (cf. Etxeberria 2005, 2009) that weak quantifiers are not contextually restricted—a claim often
made in the literature for weak quantifiers (von Fintel 1998, Partee 1988). Weak quantifiers have been argued to be non-presuppositional in their cardinal reading, and ‘presuppositional’—thus, we take it, domain restricted—only in their proportional reading which is the reading that surfaces with the partitive. Notice that in this reading they are unacceptable in existential structures:

(55) a. * There are some of the boys in the yard.
    b. There are some boys in the yard.
    c. * There are the boys in the yard.

As we see, the non-partitive *some, though possibly referring to a specific set of boys, is allowed in the there sentence whose typical function is to assert existence. The partitive version of *some, however, is excluded just like the definite *the boys. What matters for our purposes right now is that weak determiners are not inherently domain restricted, and that as pure cardinals they can be used to refer to discourse novel sets.

Weak determiners have often been treated in the literature as “adjectival”. In these analyses, they are not considered (real) determiners of type $\langle e, t \rangle$ (cf. Milsark 1979, Partee 1988, Kamp & Reyle 1993, van Geenhoven 1998, Landman 2002). Link (1984) analyzes cardinals as adjectives, see also Kamp and Reyle (1993), Partee (1987) and others; in Greek, weak Q-dets are argued to be adjectival in Giannakidou and Merchant (1997) and Stavrou and Terzi 2009; Etxeberria makes the case for Basque (2005, 2008, 2009). We will follow here Etxeberria (2005, 2008, 2009), and suggest that weak quantifiers are cardinality predicates (number functions) which are generated in the predicative type $\langle e, t \rangle$. Note that in opposition to strong quantifiers, weak ones are grammatical in predicative position as exemplified in (55), vs. (56).

(56) Gonbidatu-ak [ikasle asko/batzuk/gutxi] ziren.
    guest-D.pl student many/some/few be.pl
    ‘The guests were many/some/few students.’

    Guest-D.pl [student all-D.pl/all-D.pl/each-D.sg] be.pl/be.sg
    * ‘The guests were all of the students/all of the students/each student.’
The combination of a weak quantifier like *asko* ‘many’ with an NP predicate like *ikasle* ‘student’ (which following standard assumptions is also of type \(<e,t>\)) will be carried out through intersection (cf. Landman 2002), yielding an element of type \(<e,t>\) as a result that allows them to appear in predicative positions.

Syntactically, since weak quantifiers are considered cardinality predicates, we argue that their base generating position is Number Phrase position.

\[
\text{(58) QP} \\
\text{Q-det NumP} \\
\text{Num} \quad \text{NP} \\
\emptyset \quad \{\text{weak quantifiers} + \text{NP}\}
\]

If this analysis is correct, the reason why weak determiners cannot be contextually restricted through D\(_{DR}\) is because an \(<e,t>\) element is not of the appropriate input for D\(_{DR}\), which needs a determiner. Recall that, with the exception of SS, D\(_{DR}\) cannot apply directly to the NP (e.g. in Basque, Greek, English, and other European languages we are considering). For this use we use the partitive construction. In SS, on the other hand, weak quantifiers can be contextually restricted by D\(_{DR}\)-ing the NP argument, as expected.

\[
\text{(59) cw7it i smelhmúlhats-a qwatsáts} \quad \text{(Matthewson 1998: p.292)}
\text{many D.pl woman(pl)-D left}
\text{‘Many (of the) women left’}
\]

Matthewson (1998: 284) states that: “weak quantifiers receive only a proportional, never a cardinal, reading in SS”, and this is captured neatly in our analysis.

Finally, we want to clarify that structures like the ones below are not relevant to the discussion of whether a weak determiner can be restricted or not:

\[
\text{(60) a. [The [three students]] that came to the party were completely stoned}
\]
b. [The [many/few students]] that came to the party were stoned

The structures in (59) are not QPs, but DPs. The D, as the brackets in (59) show, will not compose with the weak quantifier, but with the constituent *three students*. Then, the role the D plays in these cases is not that of D<sub>DR</sub>, but that of the *iota*, i.e. it creates an individual of type *e*. In Etxeberria and Giannakidou 2009 (section 3.2) we compare these structures to our [D-Q NP] structure, and point out concrete asymmetries between the two syntactically and semantically.

We conclude then, that weak determiners cannot be modified via D<sub>DR</sub> because they are not strictly speaking determiners, but predicates; and in the languages we are studying (Basque Greek) D<sub>DR</sub> does not apply directly to a predicate. In Salish, on the other hand, it does, and as expected we find sequences of D with these.

Conceptually, also, it is easy to understand why an indefinite determiner will not be compatible with D<sub>DR</sub>. The main function of the indefinite NP is to assert existence; indefinite NPs are *novel* in the sense of Heim 1982. Definites and contextually restricted quantifiers, on the other hand, *presuppose* existence and are familiar. As such, the combination of a weak indefinite and D<sub>DR</sub> is bound to be express contradictory properties with respect to existence, and this renders it impossible.

5. Conclusion

The main lessons to be drawn from this work are the following. First, the need to contextually restrict the domain of quantifiers is syntactically more real than one would have expected had the phenomenon been primarily pragmatic. We put forth a theory where contextual domain restriction is encoded syntactically in the definite determiner D, which is the element responsible for supplying a contextual property C. A key component in this theory is that D functions as a modifier, and that, in this function, D<sub>DR</sub> can modify the Q-det itself. This modification results in an inherently contextually restricted quantifier that is presuppositional and referential, and can thus be used only in contexts where its existential presupposition is satisfied, i.e. only when a discourse salient set is available.
An implication of our analysis was that weak determiners cannot be modified by D\textsubscript{DR} because these are not Q-dets but rather cardinality predicates (thus modifiers themselves; see also Ionin and Matushansky 2006), or number phrases (as we argued following Etxeberria for Basque). In our system we thus predict that only a strong Q-det can be modified by D\textsubscript{DR}, because only a strong determiner is of the appropriate syntactic type (a true determiner) to be modified by such a function. This means that only strong determiners can be inherently presuppositional (in agreement with earlier observations in the literature, see for a summary Reuland and ter Meulen 1984). With weak determiners, domain restriction is bound to happen on the noun phrase, again via D—either directly, as in Salish, or by means of D plus of/case as in the partitive structure in European languages. Indefinite determiners themselves are incompatible with D\textsubscript{DR} because they are vehicles of novelty (in the sense of Heim 1982).

Here is an interesting final question: are we predicting that weak determiners will never be able to associate with some salient set? Are we saying that it is impossible to find a weak determiner that sometimes, or perhaps even frequently, associates with a discourse salient set? We consider this question in Etxeberria and Giannakidou (2009)—in response to a recent proposal by Martí (2008)—and we suggest that weak NPs and indefinites can also refer to non-novel sets, but only when they are used specifically. In the specific use, the indefinite is employed by a speaker to refer to a particular entity that she has in mind (we call this targeted speaker reference in our work), and this is a felicity condition on the use of indefinite, not a presupposition, as is the case with D\textsubscript{DR}. This important distinction draws from Ionin’s (2006) conception of the relation between specificity and definiteness; but space prevents us, unfortunately, from expanding on this idea in the present paper.

In the end, we are arguing for the position that the Q-det is the place where conditions on the use of variables must be stated (resonating with, among others, Farkas 2002, Giannakidou 2004, Matthewson 1998, 2001, Martí 2008) and that D is instrumental in creating presuppositional determiners by supplying domain restriction. (Recall our speculation earlier that each may also contain an abstract D). This idea will have much to learn from crosslinguistic semantic work, and is bound to enrich standard generalized quantifier theory and philosophical analysis with the subtlety and refinement it needs in order to
capture the richness observed in quantificational structures across languages.

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