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The way the definite determiner affects quantifiers in Basque (and beyond)

Urtzi Etxeberria¹

Abstract

Based on Basque data (and in line with Etxeberria & Giannakidou 2010, to appear), this paper argues that the domain for quantifiers in certain languages is restricted overtly by a definite determiner (D). This strategy of domain restriction via D—D_{DR}—happens by applying D_{DR} to the nominal argument, but D_{DR} can also apply to the Q-det itself, in which case it forms a constituent with it. In both cases, D_{DR} is a type preserving function, i.e. a modifier, and supplies the contextual C variable. This analysis provides support for the program that domain restriction is syntactically realized, but an important refinement is proposed: domain restriction can affect the Q-det itself (*pace* Stanley 2002), and in fact quite systematically in certain languages. The Q-det that is affected by D_{DR} is typically a *strong* one. So-called *weak* quantifiers cannot be contextually restricted by D_{DR}. Crucially in Basque, D only appears with strong quantifiers.

1 Introduction

The use of the so-called Basque “definite article” goes beyond its simple use as a definiteness marker. A quote from Trask (2003: 119) is very suitable to give a start to the paper:

The label ‘definite article’ is misleading, since this article is of a much broader use than the English definite article. (Trask 2003: 119)

Trask compares the use of the Basque “definite article” to the use of the English definite determiner, but we could use this same quote if the languages compared were Spanish or French. And yes, Trask is right because the use of the Basque definite article is much more extended than the use of the definite determiner of the languages we just mentioned. For example, it appears in contexts where other languages would make use of determinerless nouns, e.g. predicative constructions.^{2,3} Furthermore, if we stick to what Trask says, we could be led to think that the Basque “definite article” is not really “definite”. I have argued elsewhere (cf. Etxeberria 2005, 2007, 2010, to appear) that the Basque morpheme [-a], despite the various interpretations that it forces and the different functions that it plays, is always a definite determiner –from here onwards I’ll refer to it as definite D. Based on Etxeberria & Giannakidou (2010), this paper comes to argue for an additional function that the definite D can have as a quantificational domain restrictor in a given language, e.g. Basque.

Thus, this paper will mainly focus on quantificational expressions in Basque and on how the definite D affects them. In fact, the property of the Basque definite D that I am going to concentrate on in this paper is that the Basque definite D must necessarily combine with some quantifiers (so-called strong quantifiers) as the example in (1) shows, as opposed to what happens with quantifiers such as those in (2), so-called weak ones.

- (1) a. mutil guzti-ak
boy all-D.pl
'all of the boys'
- b. *mutil guzti; *mutil-ak guzti
- (2) a. mutil asko
boy many
'many boys'
- b. *mutil-ak asko; *mutil asko-ak

Before I move on to present a description of Basque quantification, let me briefly make clear what this paper will be arguing for: considering that the domain of (strong) quantifiers is contextually restricted and that we need to encode contextual restriction in the grammar somehow (in the syntax/semantics (Partee 1987, von Stechow 1994, Stanley & Szabo 2000, Stanley 2002, Martí 2003, Matthewson 2001, Giannakidou 2004), or not (Recanati 1996, 2004, 2007, and others in the *strong contextualism* tradition)), the most important contribution of this paper (in line with Giannakidou 2004, Etxeberria 2005, 2009, Etxeberria & Giannakidou 2010, to appear) is the proposal that the domain for quantifiers is restricted overtly by a definite D in certain languages, an idea that builds on an earlier proposal by Westerstål (1984) that the definite article supplies a context set. This strategy of domain restriction via the definite D–D_{DR}—happens by applying D_{DR} to the nominal argument, but D_{DR} can also apply to the quantificational determiner (Q-det) itself, in which case it forms a constituent with it. In both cases, D_{DR} is a type preserving function, i.e. a modifier, and supplies the contextual C variable. We build here on data and earlier insights from Matthewson (2001), Giannakidou (2004), and Etxeberria (2005, 2008, 2009), Etxeberria & Giannakidou (2010, to appear).

This analysis provides support for the program that domain restriction is syntactically realized, but an important refinement is proposed: domain restriction can affect the Q-det itself (*pace* Stanley 2002), and in fact quite systematically in certain languages. The Q-det that is affected by D_{DR} is typically a *strong* one. So-called *weak* quantifiers cannot be contextually restricted by D_{DR}, it is argued, because they are not of the appropriate input for its application.

The discussion proceeds as follows: In section 2, some very interesting differences between so-called strong and weak quantificational expressions in Basque are presented. Section 3 briefly presents the standard analysis of Generalized Quantifier Theory as well as Matthewson (2001)'s modification to the standard GQ theory (based on St'át'imcets); this paper then briefly presents some empirical problems with this idea. Section 4 presents a reanalysis of these data within GQ theory building on Giannakidou (2004), Etxeberria (2005) and Etxeberria & Giannakidou (2010, to appear), where D provides the contextual variable C by defining the domain restricting function of D as a type-preserving (i.e. modifier) function D_{DR}. D_{DR} can apply to the NP *without* altering its type (*et*), as in St'át'imcets; but D_{DR} can also affect the Q itself, and we illustrate this using mainly Basque (and Greek) data. It is also maintained that D_{DR} can only apply once, which means that it is not possible to have simultaneous composition of D with the Q, and D with the NP when D behaves as D_{DR}. Section 5 concentrates on Basque partitive constructions, which show how these are also contextually restricted by restricting the nominal expression (which is the reason why in Basque D doesn't apply directly in the nominal to restrict it, as is argued to be the case for St'át'imcets). Section 6 discusses how D_{DR} correlates with the weak-strong distinction. It appears that only strong Qs can be contextually restricted via D, and this is

explained by arguing, following earlier literature, that weak Qs are not Qs (*et,ett*), but adjectives or cardinality predicates. Section 7 presents the conclusions of the paper.

2 Quantification in Basque: strong vs. weak quantifiers

I will start by focusing on three crucial properties of (Basque) quantifiers: (i) the possibility of co-occurrence with the Basque definite D, (ii) the ability to appear in existential sentences, and (iii) the possibility of being presuppositional.

2.1 Co-occurrence with the definite D

One crucial difference between Basque nominal quantificational expressions is that some of them must necessarily appear with the definite D [-a/-ak], as we can see in the examples (3) and (4). Note that the definite D must combine with the Q-det if the construction is going to be grammatical, not with the nominal expression (cf. §4).

- (3) a. [Ikasle **guzti-ak**] berandu etorri ziren.
[student all-D.pl.ABS] late come AUX.pl
'all (of) the students came late.'
b. *[Ikasle **guzti**] berandu etorri ziren.
c. *[Ikasle-**ak guzti**] berandu etorri ziren.
- (4) a. [Ikasle **bakoitz-ak**] goxoki bat jan zuen.
[student each-D.sg.ERG] candy one eat AUX.sg
'each student ate a candy.'
b. *[Ikasle **bakoitz**] goxoki bat jan zuen.
c. *[Ikasle-**ak bakoitz**] goxoki bat jan zuen.

Some other Basque quantifiers, on the other hand, do not appear with the definite D no matter whether the determiner is placed on the nominal expression or on the Q-det.

- (5) a. [**Zenbait** politikari] berandu iritsi ziren.
[some politician] late arrive AUX.pl
'some politicians arrived late.'
b. *[**Zenbait** politikari-**ak**] berandu iritsi ziren.
c. *[**Zenbait-ak** politikari] berandu iritsi ziren.
- (6) a. [Politikari **asko**] berandu iritsi ziren.
[politician many] late arrive AUX.pl
'many politicians arrived late.'
b. *[Politikari **asko-ak**] berandu iritsi ziren.
c. *[Politikari-**ak asko**] berandu iritsi ziren.

2.2 Existential sentences

Those quantifiers that must necessarily appear with the definite D are not accepted in existential sentences as exemplified in (7a), as opposed to what happens in the sentences in (7b)—cf. Etxeberria (to appear) for a presentation of the behavior of Basque existential sentences.

- (7) a. *Badira koadro **guzti-ak/bakoitz-a** erakusketa honetan.
 yes-be.pl painting all-D.pl/each-D.sg exhibition this-in
 ‘*There are all of the paintings/each painting at this exhibition.’
 b. Badira koadro **batzuk/asko** erakusketa honetan.
 yes-be.pl painting some/many exhibition this-in
 ‘There are some/many paintings at this exhibition.’

2.3 Presuppositionality

Those quantifiers that appear with the definite D are presuppositional in that they presuppose the set denoted by the NP to be a non-empty salient domain. In fact, in the sentences in (8), the set of *akats* ‘mistake’ (or *ikasle* ‘student’ in (8b)) is presupposed to be a non-empty domain.

- (8) a. Akats **guzti-ak** aurkitzen badituzu, sari bat emango dizut.
 mistake all-D.pl.ABS find if-AUX. reward one give AUX
 ‘If you find all of the mistakes, I’ll give you a reward.’
 b. Ikasle **bakoitz-ak** liburu bat irakurtzen badu, sari bat emango diot.⁴
 student each-D.ERG book a read if-AUX reward one give AUX
 ‘If each student reads a book, I’ll give (each student) a reward.’

In opposition to what happens with those quantifiers that appear with the definite D, the ones that do not take [-a/-ak] do not presuppose that the set denoted by the NP (*akats* ‘mistake’) is a non-empty domain.

- (9) a. Akats **asko** aurkitzen badituzu, sari bat emango dizut.
 mistake many find if-AUX. reward one give AUX.
 ‘If you find many mistakes, I’ll give you a reward.’
 b. Akats **batzuk** aurkitzen badituzu, sari bat emango dizut.
 mistake some find if-AUX. reward one give AUX.
 ‘If you find some mistakes, I’ll give you a candy.’

In fact continuations that would question the non-emptiness of the domain are fine with *asko* ‘many’, *batzuk* ‘some’, etc. as shown in (9’) while they trigger a contradiction with those quantifiers that can appear with the definite determiner as the example in (8’) clearly shows.⁵

- (8’) Akats **guzti-ak** aurkitzen badituzu, sari bat emango dizut.
 mistake all-D.pl.ABS find if-AUX. reward one 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 mistakes, I’ll give you a reward. #But there may be no mistakes at all’
 (9’) Akats **asko** aurkitzen badituzu, sari bat emango dizut.

mistake many find if-AUX. reward one give AUX.
 Baina gerta liteke bat-ere akats-ik ez egotea.
 but happen AUX one-too mistake-PART no be-nom
 ‘If you find many mistakes, I’ll give you a reward. But there may be no mistakes at all’

Thus, observing these properties, Basque quantifiers can be classified as follows (cf. Etxeberria 2002b, 2005):

- (10) a. Strong quantifiers: *guzti* ‘all’, *den* ‘all’, *gehien* ‘most’, *bakoitz* ‘each’.⁶
 b. Weak quantifiers: *batzuk* ‘some’, *zenbait* ‘some’, *hainbat* ‘some’, *asko* ‘many’, *gutxi* ‘few’, *ugari* ‘abundant’, numerals, *numeral N baino gehiago* ‘more than numeral N’, *numeral N baino gutxiago* ‘less than numeral N’, etc.

Following a crosslinguistic pattern, the Basque weak quantifiers in (10) can also obtain a proportional reading. On this reading they must appear with both D and the overt version of the partitive [-tik] ‘of’.

- (11) a. [Ikasle-**eta-tik gutxi**] berandu iritsi ziren.
 [student-D.pl-ABL few] late arrive AUX.pl
 ‘Few of the students arrived late.’
 b. [Ikasle-**eta-tik asko**] berandu iritsi ziren.
 [student-D.pl-ABL many] late arrive AUX.pl
 ‘Many of the students arrived late.’
 c. [Ikasle-**eta-tik batzuk**] berandu iritsi ziren.
 [student-D.pl-ABL some] late arrive AUX.pl
 ‘Some of the students arrived late.’

These partitive quantifiers are necessarily proportional and the partitive *ikasleetatik* (lit.: student the.pl of) in (11) denotes the set of contextually relevant *students* (cf. Ladusaw 1982).

Furthermore, note that these partitive constructions evidence the same behavior as lexically strong quantifiers when it comes to existential sentences, where they cause ungrammaticality.

- (12) a. *Badira zientzilari-**eta-tik zenbait** laborategi honetan.
 yes-be.pl scientist-D.pl-ABL some laboratory this-in
 ‘*There are some of the scientists at this laboratory.’
 b. *Badira zientzilari-**eta-tik asko** laborategi honetan.
 yes-be.pl scientist-D.pl-ABL many laboratory this-in
 ‘*There are many of the scientists at this laboratory.’

They also behave as strong quantifiers when it comes to being presuppositional, since they presuppose the set denoted by the NP they appear with to be a non-empty domain, (13).

- (13) a. Akats-**eta-tik zenbait** aurkitzen badituzu, 5 euro irabaziko dituzu.
 mistake-D.pl-ABL some find if-AUX. euro win AUX.
 ‘If you find some of the mistakes, you’ll win 5 euros.’

- b. Akats-eta-tik asko aurkitzen badituzu, 5 euro irabaziko dituzu.
 mistake-D.pl-ABL many find if-AUX. euro win AUX.
 ‘If you find many of the mistakes, you’ll win 5 euros.’

As was the case with strong Q-dets (cf. examples (8-8’)), continuations that would question the non-emptiness of the domain denoted by the NP trigger a contradiction with partitives.

- (13’) Akats-eta-tik zenbait aurkitzen badituzu, 5 euro irabaziko dituzu.
 mistake-D.pl-ABL some find if-AUX. euro win AUX.
 #Baina gerta liteke bat-ere akats-ik ez egotea.
 but happen AUX one-too mistake-PART no be-NOM
 ‘If you find some of the mistakes, you’ll win 5 euros. # But there may be no mistakes at all’

Now that Basque nominal quantificational expressions have been classified, the next section concentrates on observing how the Basque nominal quantificational system contributes to the general theory of quantification.

3 Background: is Generalized Quantifier Theory correct?

Classical GQ theory posits that in order to form a QP, Q-dets combine with a nominal 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 in (14).

- (14) a. $[[\text{every woman}]] = \lambda P. \forall x. \text{woman}(x) \rightarrow P(x)$
 b. $[[\text{every}]] = \lambda P. \lambda Q. \forall x. P(x) \rightarrow Q(x)$
 c.
- QP

$\langle\langle e, t \rangle, t\rangle$

Q-det

$\langle\langle e, t \rangle, \langle\langle e, t \rangle, t\rangle\rangle$

every

NP

$\langle e, t \rangle$

woman : $\lambda x. \text{woman}(x)$

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.

Despite the wide acceptance this analysis has had in the formal semantics tradition, there are languages that seem to lack the standard construction exemplified in (14). Here we present some data from St’át’imcets Salish 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 briefly present some empirical problems with this idea (cf. Giannakidou 2004, Etxeberria 2005 for more empirical problems), and reanalyze these data within GQ theory building on Giannakidou (2004), Etxeberria (2005) and Etxeberria & Giannakidou (2010, to appear).

3.1 Quantifiers and D in St'át'imcets (Matthewson 1998, 2001)

In St'át'imcets, quantifiers (equivalents to *every*, *each*, *few*, *many*, etc.) in argumental phrases must always appear with a D modifying their NP.⁷

- (15) a. Léllex [tákem i smelhmúlhats-a].
intelligent [all D.pl woman(pl)-D]
'All of the women are intelligent.'
b. *léllex [tákem smelhmúlhats]
intelligent [all woman(pl)]
- (16) 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,ett*. This combination yields a GQ of the usual type *ett*.

- (17) a. [Q-detP tákem i smelhmúlhats-a]
[all D.pl woman (pl)-D]
- b.
- ```

 graph TD
 QP["QP <<e, t>, t>"] --- Qdet["Q-det <e, <<e, t>, t>>"]
 QP --- DP["DP e"]
 Qdet --- takem["takem"]
 DP --- D["D <<e, t>, e>"]
 DP --- NP["NP <e, t>"]
 D --- i["i"]
 NP --- smelhmulhats["smelhmúlhats"]

```

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

- (18)  $\llbracket \text{smelhmúlhats (pl.)} \rrbracket = \llbracket * \rrbracket (\llbracket \text{smúlhats (sg.)} \rrbracket)$  'women'  
(19)  $\llbracket X \dots a_k \rrbracket^g = \lambda f \in D_{et} (g(k)) (f)$  (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*.

- (20)  $\llbracket * \rrbracket$  is a function from  $D_{et}$  into  $D_{et}$  such that, for any  $f \in D_{et}$ ,  $x \in D_e$ :  $\llbracket *f \rrbracket (x) = 1$  iff  $\llbracket f(x) \rrbracket \neq 1 \wedge \exists y \exists z [x = y+z \wedge \llbracket *f \rrbracket (y) = 1 \wedge \llbracket *f \rrbracket (z) = 1]$   
(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. Syntactically, however, this set becomes an individual, and this leads to the modification to the classical GQ theory.

We will not insist on the St'át'imcets data,<sup>8</sup> but rather on the syntactic aspects of Matthewson's proposal, namely (a) that the domain of Q becomes an individual, and (b) that the Q thus combines with an individual and not a set. These are proposed as a strong hypothesis—the strategy employed in *all* languages. Giannakidou (2004) and Etxeberria (2005) point out empirical problems with this assumption that we summarize quickly next.

### 3.2 Problems with the assumption that the domain of Q is e

The obvious prediction of Matthewson's proposal is that Qs should be able to combine with DPs crosslinguistically. However, this prediction is not borne out. We illustrate below with English, Greek and Spanish, but non-compatibility of Q with DP generally seems to characterize languages that possess a distinction between DP and QP.<sup>9</sup>

English:

- |         |                 |                  |
|---------|-----------------|------------------|
| (21) a. | *every the boy  | f. all the boys  |
| b.      | *most the boys  | g. only the boys |
| c.      | *many the boys  |                  |
| d.      | *three the boys |                  |

Spanish:

- |         |                        |                     |
|---------|------------------------|---------------------|
| (22) a. | *cada los chicos       | f. todos los chicos |
|         | lit.: 'each the boys'  | 'all the boys'      |
| b.      | *la mayoría los chicos | g. sólo los chicos  |
|         | lit.: 'most the boys'  | 'only the boys'     |
| c.      | *muchos los chicos     |                     |
|         | lit.: 'many the boys'  |                     |
| d.      | *tres los chicos       |                     |
|         | lit.: 'three the boys' |                     |

Greek:

- |         |                          |                    |
|---------|--------------------------|--------------------|
| (23) a. | *kathe to aghori         | d. ola ta aghoria  |
|         | lit.: 'every the boy'    | 'all the boys'     |
| b.      | *merika ta aghoria       | e. mono ta aghoria |
|         | lit.: 'several the boys' | 'only the boys'    |
| c.      | *tria ta aghoria         |                    |
|         | lit.: 'three the boys'   |                    |

Here we see that Q cannot combine with the DP. The grammatical examples—which would fit Matthewson's structure—are formed with *all* and *only*, elements that have been argued *not* to be Qs, and which can have alternative analyses as adverbial modifiers of DPs (see Brisson 1998, 2003 for *all*, von Stechow 1997 for *only*). Many of the ungrammatical examples above become

A second problem has to do exactly with the analysis of the partitive: if Qs combine directly with elements of type *e*, partitive *of* must be argued to be semantically vacuous—*pace* Ladusaw (1982), where *of* ensures that the Q receives an *et* input. According to Matthewson, indeed the partitive preposition *of* is only employed for case. But in giving up Ladusaw (1982), we lose the neat semantic explanation for why we need an *of*-element in languages that employ it; for more discussion see Giannakidou 2004, Etxeberria 2005, 2008, 2009.

(24) a. i      tákem-a smúl hats  
         D.pl all-D woman  
      b. i      zí7zeg'-a sk'wemk'úk'wm'it  
         D.pl each-D child(pl)

(Matthewson 2001: fn.5) ≠ (15a)  
(Matthewson 1999: (41c)) ≠ (16a)

(25) a. o kathe fititis (Giannakidou 2004: (32b))  
D.sg each student  
b. \*kathe o fititis

(26) a. mutil guzti-**ak**  
 boy all-D.pl  
 b. \*mutil guzti; \*mutil-ak guzti

This is evidence enough to conclude that there is not much motivation to adopt the structure in (17b) in languages beyond St'át'imcets. If we do, we make many wrong predictions. But adopting the new QP syntax just for St'át'imcets is an undesirable result if it turns out that we can explain the SS within the basic structure of GQ theory. Giannakidou (2004) suggested that this is exactly what can be done. Building on Westerståhl (1984), Giannakidou takes the data from SS to suggest that in order for a quantifier to combine with a nominal argument, this must first be contextually restricted. Thus, in St'át'imcets the D will embody saliency and supply the contextual variable C. Giannakidou's proposal will not be presented in this paper; rather, I'll

present the proposal put forward in Ettxberria & Giannakidou (2010, to appear), which preserves Giannakidou’s (2004) insight.

#### 4 Ettxberria & Giannakidou (2010): Domain restricting D as a modifier function

##### 4.1 D can restrict the domain in two ways: on the NP, or on the Q-det

Ettxberria & Giannakidou (2010) preserve Giannakidou’s (2004) 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:

$$(28) \quad [[D_{DR}]] = \lambda P_{et} \lambda x P(x) \cap C(x)$$

The example in (28) shows a type-preserving function, yielding a contextually salient set of whatever the NP denotes as the domain of the Q-det; D in St’át’imcets is representative of this option. St’át’imcets D can perform this function by applying directly to the nominal, thus restricting it; but the Basque D—along with Greek, English and the other European languages we mentioned earlier—won’t be able to perform this function on the NP, hence the need for the partitive preposition to give back the right input (*et*) for composition with Q-det. A similar result could be achieved by using Chung and Ladusaw’s (2003) *Restrict* operation.

$$(29) \quad \text{Contextual Restrict}([\lambda x NP(x)], C) = \lambda x NP(x) \wedge C(x) \quad (\text{Giannakidou 2004: (31)})$$

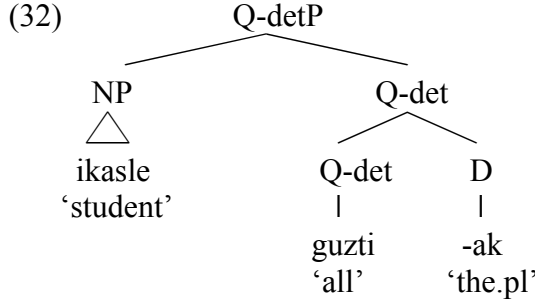
However,  $D_{DR}$  does not apply only to NPs—it can also apply to the Q-det itself (for which a mere *Restrict* would not suffice, which is why we propose a different formalization). In this case, D appears to be syntactically attached to the Q-det (I only provide the Basque example in (30), cf. the previous section for examples from Greek and St’át’imcets):

- (30) Basque (Ettxberria 2005, 2009):
- a. mutil guzti-**ak**  
boy all-D.pl  
‘all of the boys’
  - b. \*mutil guzti; \*mutil-**ak** guzti

In these structures, we argue that D functions as a modifier of the Q-det, yielding a Q-det with a contextually restricted domain:

$$(31) \quad [[D_{DR}]] = \lambda Z_{et, ett} \lambda P_{et} \lambda Q_{et} Z(P \cap C)(Q); \text{ where } Z \text{ is the relation denoted by Q-det}$$

D attaches syntactically to Q-det (Giannakidou 2004, Ettxberria 2005, 2008, to appear, Ettxberria & Giannakidou 2010, to appear), so the result is the following structure:



- a. Basque: *ikasle guzti-ak* = (*ikasle*) [*guzti* (C)]
- b.  $[[Q\text{-det}]] = \lambda P \lambda Q . \forall x P(x) \rightarrow Q(x)$
- c.  $[[DDR]] = \lambda Z_{et,ett} \lambda P \text{ et } \lambda Q \text{ et } Z(P \cap C)(Q)$ ;  $Z$  the relation denoted by  $Q\text{-det}$
- d.  $[[D Q\text{-det}]] = \lambda P \lambda Q . \forall x (P(x) \cap C(x)) \rightarrow Q(x)$

The result is again that of restricting the first argument of  $Z$  (i.e.  $Q\text{-det}$ ), the  $NP$ : so, as it is expressed in (32c), if  $Z = \lambda P \lambda Q . \forall x P(x) \rightarrow Q(x)$ , then after  $D$  application we get (32d) which contains a  $C$ -restricted  $P$  domain (compare 32b with 32d) (cf. Etxeberria & Giannakidou 2010, to appear). It is important to note that  $D_{DR}$ -ing a  $Q\text{-det}$  results in a determiner that will come with a requirement (in terms of presupposition, cf. §2.1.3; cf. also Etxeberria & Giannakidou 2010, to appear, for extensive discussion on this) that there be a non-empty domain for it to quantify over.

As a concluding note, it is important to emphasize that the domain restricting function of  $D -D_{DR}-$  is proposed here as an additional meaning that the definite  $D$  can have in a given language. We are not suggesting that  $D_{DR}$  replaces the reference iota function, or the use of  $D$  for kind reference (generic use). We are merely suggesting that  $D$  can also function as a modifier, and in this case it contributes *saliency* (or *familiarity*), i.e. the context set  $C$ , in isolation of uniqueness—which would remain the domain of iota/maximalization.<sup>10</sup>

Note also that the composition of  $D$  with  $Q$  proposed in (32) is a novel mode of composition for  $D$ , hence it is important to provide arguments for it. Importantly, the application of  $D_{DR}$ , as it is described here, is not necessarily a syntactic process—we could think of it as a lexical modification of  $Q$ , cf. Etxeberria & Giannakidou 2010. If it is lexical, then it makes sense to expect that the product will be a  $QP$ , and not a  $DP$ , as will be shown in §4.2; cf. also Etxeberria & Giannakidou (2010).

Next, I show that the operation  $D_{DR}$  can only apply once.

#### 4.2 *D-restriction can only happen once, and creates QPs, not DPs*

When contextualization happens at the  $Q\text{-det}$  level, the addition of another definite results in ungrammaticality (cf. Giannakidou 2004, Etxeberria 2005, 2009, Etxeberria & Giannakidou 2009, in prep), an ungrammaticality that could be explained in terms of type mismatch, since the  $Q\text{-det}$  would receive an  $e$  type argument rather than  $et$ , as predicted by the standard analysis of  $GQ$ . Although we make our here arguments with Basque data, this restriction is also observed in Greek (see Giannakidou 2004, Etxeberria & Giannakidou 2010), St'át'imcets (see Matthewson 2009), and Chinese (see Cheng 2009).

- (33) 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 below. Under Ladusaw’s (1982) account where partitives provide elements of type *et*, the ungrammaticality is unexpected because here the partitive does not produce type mismatch. In other words, the partitive *ikasleetatik* (lit.: student the.pl of) would yield the correct predicative argument (type *et*) for the Q to quantify over; but still, (34) is out.

- (34) a. \*ikasle-eta-tik guzti-ak  
student-D.pl-ABL all-D.pl  
‘the all of the students’
- b. \*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 4.1 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 our bad examples we have what could look like double contextual restriction. Why is this option excluded? We see two reasons. First, in Greek, where definite reduplication is pervasive, D spreading with  $D_{DR}$  is excluded (\**o kathe o fititis* lit.: the each the student; cf. Etxeberria & Giannakidou 2010). The reason for this is that definite reduplication requires two definites, and  $D_{DR}$ -ed Qs are simply not DPs.<sup>11</sup> In Basque, definite reduplication is disallowed (for reasons that need not concern us here), so it cannot be an option to begin with. Hence the “double” domain restriction via  $D_{DR}$  is ruled out on what could be thought of as morpho-syntactic grounds.

But there is also a pragmatic reason: 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,  $D_{DR}$  gives *the same description*—*C*—and does not reduce the domain further, nor does it have any other discourse effect. Notice that modifying a noun with the same adjective may also be redundant, but it also creates a different effect:

- (35) an expensive expensive car

In (35) only one of the adjectives is interpreted as a restrictor. The other is interpreted as a degree modifier like ‘very’, yielding the 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.<sup>12,13</sup>

Now, The idea behind our proposal that D in Basque Qs (and their equivalents) functions as a Q-modifier rather than a regular iota, is that, in this position—i.e. preceding Q in Greek; or following it in Basque—D is fed the wrong type of argument: a Q-denotation rather than the

expected NP. This is going to be a fatal error in languages like English, a type mismatch; but in Greek and Basque the structure is saved by shifting from *iota* to  $D_{DR}$ . This is reflected in our analysis with the syntax of a modifier adjoined to the constituent it modifies, in this case the Q.

One could ask, however, how do we know that Basque strong Qs do not create DPs? These are certainly attested structures in Basque (as well as in many other languages, e.g. English, Spanish, Greek, etc.)

- (36) [Festara etorri ziren hiru ikasle-ak] erabat mozkortuta zegoen.  
 [to the party came AUX.pl three student]D.pl completely drunk were  
 ‘[The [three students that came to the party]] were completely drunk.’

These structures are DPs, as indicated in the brackets, and are interpreted like regular definite descriptions: the denotation of *three students* will be a familiar and unique set of three students. The output of these structures is then of type *e*, as in (37), and not a GQ, which is the output of the  $D_{DR}$  structure as we argued:

- (37)
- 
- ```

graph TD
  DP_e[DP e] --- D_et_e[D et,e]
  DP_e --- NP_et[NP et]
  D_et_e --- the[the]
  NP_et --- three[three]
  NP_et --- students[students]
  three --- triangle[△]
  
```

Here D takes an NP with an adjectival numeral in it and turns it into a referential expression. Now, what are the arguments that our D_{DR} structure is not a DP of this kind? Here, in order to show that D_{DR} structures are not DPs, we will entertain two possible analyses for Basque strong quantifiers, which will be shown to be incorrect.¹⁴

4.2.1 First incorrect alternative analysis: Strong Q-dets create DPs

The first of these alternative analyses could be to assume that instead of a Quantifier Phrase (as we argued in (32)), what lexically strong Basque quantifiers create are DPs with the structure in (38).

- (38)
-
- ```

graph TD
 DP --- QP
 DP --- D_ak[D -ak]
 QP --- NP
 QP --- Q
 NP --- ikasle["ikasle 'student'"]
 Q --- guzti["guzti 'all'"]

```

Let us assume, just for the sake of argument, that the structure in (38) is the correct one. If this was the case, it should be possible to conjoin two QPs, that is, two [NP+Q] sequences in (38), under the same single D in the same way that it is possible to conjoin two NPs or two Adjectival Phrases (AdjP) under the same D as shown in (39-40).

NP conjunction

- (39) [DP [NP Mutiko] eta [NP neskato]-ak] dantzaz ari dira.  
 [ boy and girl]-D.pl.ABS dancing prog. AUX.pl  
 ‘The boys and girls are dancing.’

AdjP conjunction

- (40) Martxel-ek [DP [AdjP txakur haundi] eta [AdjP sator txiki]-ak] ikusi ditu.  
 Martxel-ERG [ dog big and mole small]-D.pl.ABS see AUX.pl  
 ‘Martxel has seen the big dogs and small moles.’

But contrary to what this alternative analysis predicts, conjoining two strong Q-dets under the same definite D is completely rejected and the result is ungrammatical.

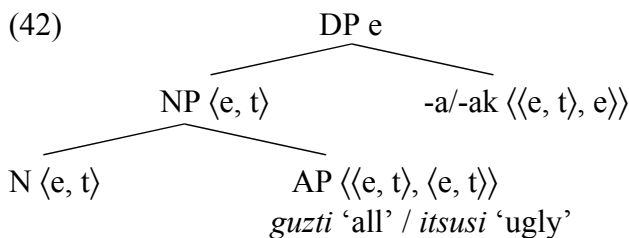
- (41) a. \*[DP [QP Ikasle gehien] eta [QP irakasle guzti]-ak] goiz iritsi ziren.  
 student most and teacher all-D.pl.ABS early arrive AUX.pl  
 ‘Most of the students and all of the teachers arrived early (intended).’  
 b. \*[DP [QP Neska bakoitz] eta [QP mutil guzti]-ek] sari bat irabazi zuten.  
 girl each and boy all-D.pl.ERG prize one win AUX.pl  
 ‘Each girl and all of the boys won a prize (intended).’

So, what these sentences indicate is that (i) lexically strong Basque Q-dets create Q-detPs and not DPs headed by the definite D, and (ii) the definite D is behaving as a contextual domain restrictor that combines with the Q-det, contextually restricting the quantificational domain.

#### 4.2.2. Second incorrect alternative analysis: Strong Q-dets are adjectives

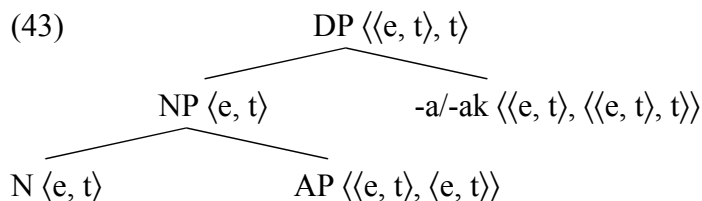
A second tentative analysis would be to treat lexically strong Basque Q-dets as adjectives; in fact, some authors do still maintain that what I treat here as strong Q-dets are not Qs but simple adjectives. Following this line of reasoning Trask (2003: 106) claims that “certain words with quantifier-like meanings are strictly adjectives, including *guzti-guzi* ‘all’, *bakoitz* ‘each’, *gehien* ‘most’...”

However, the implementation of such a claim in terms of type theory would give us something along the following lines.



In (42) the common noun of type *et* combines with the adjective (standardly assumed to be) of type *et,et* to create another one place predicate of type *et* which combined with the article [-a/-ak] would give an individual of type *e* as a result. The reason why I say that [-a/-ak] creates an individual of type *e* is because I assume, following standard assumptions, that the definite D, when applied to an NP gives an individual *e* (either maximal, if the NP is plural; or unique if the NP is singular). See Link (1983); cf. Etxeberria (2005, 2007, 2010, in prep) for Basque.

One of the problems that this analysis would have to face is that it is already an established fact that Basque strong quantifiers create GQs, i.e. sets of sets of type *ett* (cf. Etxeberria 2004, Etxeberria 2005 for evidence). If that is the case, and if we continue assuming that lexically strong Basque quantifiers are ‘strictly adjectives’, the definite D would have to be the element that forces the whole phrase to be a GQ and it would thus have to be of type *et,ett* as example (43) shows, rather than *et,e*.<sup>15</sup>



In the compositional structure introduced in (43) the combination of the common noun and the adjective yields a one-place predicate of type *et* (just as in (42)). However, if we have a model composed of four boys like the one defined in (44), the combination of *mutil* ‘boy’ and *gehien* ‘most’ does not denote a single set of type *et* (pace example (43)),

(44)  $M = \{a, b, c, d\}$

but rather, it would denote a set of sets as described in (45).

(45)  $\text{mutil gehien} = \{\{a, b, c\}, \{a, b, d\}, \{a, c, d\}, \{b, c, d\}, \{a, b, c, d\}\}$

A second problem that this analysis would have to face is that lexically strong Basque Q-dets do not behave the way simple adjectives do. Adjectives can interchange their position without yielding an ungrammatical result (example (46) is taken from Euskaltzaindia (1993: 119)).<sup>16</sup>

- (46) a. Herri txiki polit-a.  
village small nice-D.sg  
‘The small nice village’  
b. Herri polit txiki-a.  
village nice small-D.sg  
‘The nice small village’

A lexically strong Q-det on the other hand cannot change positions with an adjective as example (47) shows.

- (47) a. Herri txiki guzti-ak.  
village small all-D.pl  
‘All (of) the small villages.’  
b. \*Herri guzti txiki-ak  
village all small-D.pl



It could be argued that the lexically strong Q-dets are *degree* adjectives (a concept that is quite close to quantification) since in Basque these adjectives must always appear last in the adjectival string. A simple way to express degree in Basque is by means of the process of reduplication.

- (48) a. Ur      bero zikin-zikina.  
           water hot    dirty-dirty  
           'Dirty-dirty hot water.'  
       b. \*Ur      zikin-zikin beroa  
           water dirty-dirty hot
- (49) a. Ur      zikin bero-beroa.  
           water dirty    hot-hot  
           'Hot-hot dirty water.'  
       b. \*Ur      bero-bero zikina.  
           water hot-hot    dirty

But if we assume that lexically strong Q-dets are degree quantifiers due to the fact that they must always occupy the last position in the adjectival string, what would they be degrees of? In a sentence like *ikasle guztiak berandu etorri dira* 'all (of) the students came late' the quantifier *guzti* does not measure the degree of being student. Moreover, (50) is not ungrammatical, contra prediction.

- (50) Ur      zikin-zikin guzti-a  
           water    dirty-dirty    all-D.sg  
           'All the dirty-dirty water.'

Further evidence against the claim that these elements are adjectives comes from their impossibility to appear in positions where adjectives are allowed, e.g. predicative positions (see Higginbotham 1987).

- (51) a. Lapurr-ak azkarr-ak    ziren.  
           thief-D.pl smart-D.pl be.pl  
           'The thieves were smart.'  
       b. \*Lapurr-ak **guzti-ak/den-ak/bakoitz-a** ziren/zen.  
           thief-D.pl all-D.pl/all-D.pl/each-D.sg    be.pl/be.sg  
           'The thieves were all/all/each.'

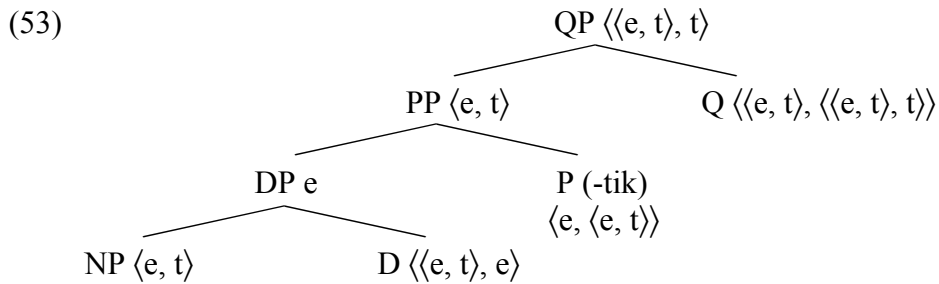
So far then, evidence has been provided for the domain restrictor appearing with Q-det; the next section concentrates on partitive constructions, which show how these are contextually restricted by restricting the nominal expression (which is the reason why in Basque D doesn't apply directly in the nominal to restrict it, as is argued to be the case for St'át'imcets).

## 5      Partitives: Strongly interpreted weak quantifiers

Contrary to what happens with strong Q-dets, the strongly interpreted weak quantifiers must appear with partitive forms to be interpreted proportionally (and hence to be presuppositional and contextually restricted). As is the case in English, Greek or Spanish, Basque nominal restriction needs the presence of the D plus the partitive [-tik] ‘of’.

- (52) a. [Ikasle-eta-tik **gutxi**] berandu iritsi ziren. (=11a)  
 [student-D.pl-ABL few] late arrive AUX.pl  
 ‘Few of the students arrived late.’  
 b. [Ikasle-eta-tik **asko**] berandu iritsi ziren. (=11b)  
 [student-D.pl-ABL many] late arrive AUX.pl  
 ‘Many of the students arrived late.’  
 c. [Ikasle-eta-tik **batzuk**] berandu iritsi ziren. (=11c)  
 [student-D.pl-ABL some] late arrive AUX.pl  
 ‘Some of the students arrived late.’

In Basque, the overt partitive form [-etatik] (which necessarily forms strong quantifiers) is composed of the D [-a] that is not visible due to assimilation with the plural marker [-eta] (the usual plural marker is [-k]),<sup>17</sup> and the ablative marker [-tik].<sup>18</sup> Thus, the composition of a partitive quantifier will be the one in (53) where the partitive [-etatik] is taken to be providing the nominal contextual domain restriction. First, the combination of the NP and the D creates an object of type *e* which is taken as an argument by the Basque partitive suffix [-tik] and to return an element of type *et* so that the quantifier takes the proper type argument. From this last combination, we get a GQ of the usual type *ett*.



As evidence for the fact that D is actually included in the partitive form [-etatik] note that in Basque, case is marked by means of suffixes and it is possible to distinguish between the indefinite and the definite paradigms morphologically (*etxe* means ‘house’).

(54)

|          | Indefinite         | definite sg.    | definite pl.               |
|----------|--------------------|-----------------|----------------------------|
| Ergative | <i>etxe-k</i>      | <i>etxe-ak</i>  | <i>etxe-ek</i>             |
| Ablative | <i>etxe-ta-tik</i> | <i>etxe-tik</i> | <b><i>etxe-eta-tik</i></b> |

It is known that partitive constructions like the ones we are considering denote the set of all contextually relevant houses (in this case) and we are arguing that for such constructions the definite D is necessary. Now, in principle it would seem possible to create a partitive construction with the indeterminate form of the ablative, but as the example in (55a) shows, this is completely impossible.

- (55) a. \*etxe-ta-tik asko  
           house-pl-ABL many  
       b. etxe-eta-tik asko  
           house-D.pl-ABL many

Thus, [-eta] must be taken as a portmanteau morpheme that marks both number and definiteness features in a single morpheme.<sup>19</sup>

As was the case with lexically strong Basque Q-dets, and as predicted by the fact that the quantifiers we are considering in this section are also contextually restricted (by means of the overt partitive construction), additional definites will not be allowed.<sup>20</sup>

- (56) a. \*Ikasle-eta-tik asko-**ak**  
           student-D.pl-ABL many-D  
           ‘The many of the students’  
       b. \*Ikasle-eta-tik gutxi-**ak**  
           student-D.pl-ABL few-D  
           ‘The few of the students’  
       c. \*Ikasle-eta-tik zenbait-**ak**  
           student-D.pl-ABL some-D  
           ‘The some of the students’

Note also the difference between St’át’imcets quantifiers and Basque partitives (and partitives in general). Recall furthermore that St’át’imcets does not possess overt partitive forms and that Salish D applies directly to the nominal domain to restrict it; but Basque D (as well as other European languages) won’t be able to restrict the NP directly—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 a quantifier, as the examples in (57) clearly show. In fact, D<sub>DR</sub> emerges only when D modifies Q in these languages; thus, it is only possible with a Q type *et,ett* (cf. §4.1).

- (57) a. \*Ikasle-**ak** ∅ asko.  
           student-D.pl many  
           ‘Many the students’  
       b. \*Ikasle-**ak** ∅ gutxi.  
           student-D.pl few  
           ‘Few the students’  
       c. \*Ikasle-**ak** ∅ zenbait.  
           student-D.pl some  
           ‘Some the students’

Thus, it seems correct to conclude that (i) D<sub>DR</sub> cannot apply directly to the nominal argument in Basque (or Greek), as is the case in other languages (e.g. St’át’imcets), and that as a result the partitive construction is needed,<sup>21</sup> (ii) contextual restriction happens only once: when domain restriction happens on the Q-det partitive forms (that restrict the nominal expression) are

not allowed and vice versa, and (iii) the standard analysis of GQ (with the innovation proposed in this paper, following Etxeberria & Giannakidou 2010) is correct (*pace* Matthewson 2001).

## 6 Contextual domain restriction and the strong-weak distinction

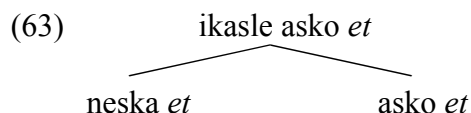
Thus far we have argued that natural language quantifiers must be contextually restricted and have shown that this restriction is realised overtly by means of the definite D in some languages, e.g. Basque, Greek, St'át'imcets. Now, recall from section 2 that Basque weak quantifiers do not appear with D (as opposed to strong ones that must necessarily appear with it) as exemplified in (58-59) (repeated from (5-6)).

- (58) a. [Zenbait politikari] berandu iritsi ziren.  
[some politician] late arrive AUX.pl.past  
'Some politicians arrived late.'  
b. \*[Zenbait-ak politikari] berandu iritsi ziren.  
c. \*[Zenbait politikari-ak] berandu iritsi ziren.
- (59) a. [Politikari asko] berandu iritsi ziren.  
[politician many] late arrive AUX.pl.past  
'Many politicians arrived late.'  
b. \*[Politikari-ak asko] berandu iritsi ziren.  
c. \*[Politikari asko-ak] berandu iritsi ziren.

Weak Qs have often been treated in the literature as “adjectival”, and therefore are not considered (real) Qs of type *et,ett* (cf. Milsark 1979, Link 1984, Partee 1988, Kamp & Reyle 1993, Krifka 1999, van Geenhoven 1998, Landman 2002). Link (1984), for example, analyzes cardinals as adjectives, a common idea in the references above. Ionin and Matushansky (2006) furthermore argue that weak numerals, at least, are modifiers. Greek weak Qs are argued to be adjectival as a class in Giannakidou and Merchant (1997), Stavrou and Terzi (2009); and Etxeberria (2005, 2008, 2009) suggests that weak Qs in Basque are cardinality predicates (number functions) which are generated as the predicative type *et*. Support for the adjectival (or cardinality predicate) analysis comes from the fact that unlike strong quantifiers, weak ones are grammatical in predicative positions as exemplified in (60), vs. (61), (62).

- (60) Gonbidatu-ak [ikasle asko/batzuk/gutxi] ziren.  
guest-D.pl student many/some/few be.pl  
'The guests were many/some/few students.'
- (61) \*Gonbidatu-ak [ikasle guzti-ak/den-ak/bakoitz-a] ziren/zen.  
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.'
- (62) \*Gonbidatuak [ikasle-eta-tik asko/batzuk/gutxi] ziren.  
guest-D.pl [student-D.pl-abl many/some/few] be.pl  
'The guests were many of the students/some of the students/few of the students.'

The combination of a cardinal-weak quantifier like *asko* ‘many’ with an NP predicate like *neska* (which following standard assumptions is also of type *et*) will be carried out through intersection (cf. Landman 2002), yielding an element of type *et* as a result. This is the way they are interpreted when in predicative position (60) and their structure will be the one in (63) (to be specified below).



Furthermore, the reason why weak quantifiers do not appear with D is due to the fact they are syntactically base generated in Number Phrase, below the DP projection.<sup>22</sup> It is precisely this property (together with the fact that they are contextually unrestricted) that prevents weak-cardinal quantifiers from appearing with Ds.

But this cannot be the whole story since numerals (which are also weak quantifiers) can be combined with D, in opposition to the rest of Basque weak quantifiers (cf. Etxeberria 2005, 2008, to appear).

- (64) Bost langile-ek            mailuak            erabili zituzten.  
       five worker-D.pl.ERG hammer-D.pl.ABS use    AUX.pl  
       ‘The five workers used (the) hammers.’

The difference between pure cardinal words (numerals) and the rest of (Basque) weak quantifiers is semantic in nature: while the former can be definite and referential due to the fact that they are specified for number, the latter cannot. When we utter something like *bost langile* ‘five workers’ we are speaking about a set of five workers (not twenty three) and when we want to refer to them as a plural specific/referential set we make use of the D (i.e. the denotation of *the five workers* will be a unique set of five workers). The output of these structures is then of type *e*, and not a GQ, which is the output of the  $D_{DR}$  structure as we argued in §4.2, cf. example (37).

On the other hand, the other weak Qs cannot make reference to a specific set the way numerals can, since their exact number is clearly unspecified (as asserted already in Milsark 1977), hence the impossibility of combining with D (cf. Etxeberria 2005, 2008, to appear for extensive discussion on this). The only construction where these unspecified weak Qs allow D (plus the partitive preposition) is the partitive construction where their interpretation is the proportional one and their behaviour is parallel to that of strong Qs (cf. section 2.1.3)

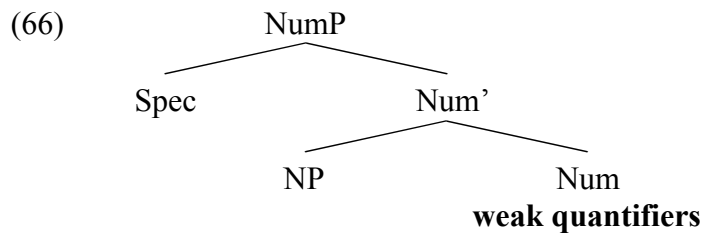
Note that there is a correlation between (i) the impossibility of D with weak quantifiers (except for numerals) and (ii) the possibility of using the partitive. The question that remains is why it is that the latter (the use of the partitive) is only allowed for weak quantifiers in Basque and in languages in general, where partitivity seems to be the only means to D-restrict weak quantifiers. The reason why weak Qs cannot be contextually restricted via  $D_{DR}$  is because an *et* element is not of the appropriate input for  $D_{DR}$  in Basque (and in Greek); in this case D can only function as a regular iota.  $D_{DR}$  emerges only when D modifies Q in languages such as Basque or Greek, it can thus be possible only with a Q type *et,ett*. In St’át’imcets, on the other hand, where  $D_{DR}$  can indeed apply to NP as we argued (cf. Matthewson 2001), weak Qs can indeed be  $D_{DR}$ -ed directly in the NP argument.

- (65) cw7it i smelhmúlhats-a qwatsáts  
 many D.pl woman(pl)-D left  
 ‘Many (of the) women left’

(Matthewson 1998: p.292)

In conclusion, weak Qs cannot be modified via  $D_{DR}$  because they are not strictly speaking Qs, but predicates; and in the languages we are studying (Basque, Greek)  $D_{DR}$  does not apply directly to a predicate. Furthermore, Matthewson (1998: 284) states that: “weak quantifiers receive only a proportional, never a cardinal, reading in SS”, and this is neatly captured by what is being proposed in this paper (cf. also Etxeberria & Giannakidou 2010).

Thus, following what we expressed in (63), the syntactic structure of a weak-cardinal expression in predicative position is the one in (66). This structure is of predicative type *et*.<sup>23</sup>



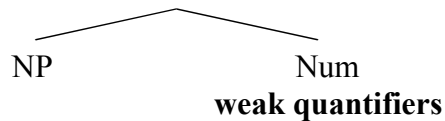
As is known, the predicative interpretation is not the only interpretation that cardinal weak quantifiers (without overt partitives) may get as they can also appear in argument position. In this position *et* type objects are not allowed and either an entity type *e* element or a quantificational type *ett* element is needed. When in argument position, weak cardinal quantifiers can get a cardinal or a proportional interpretation, as the example (67) illustrates (cf. Partee 1988).

- (67) Ume asko-k txirrindu-ak ekarri zituzten.  
 child many-ERG bike-D.pl bring AUX.pl  
 ‘Many children brought bikes.’  
 → cardinal: many in number  
 → proportional: many (of the) students

In order to get the cardinal interpretation we will make use of a silent existential quantifier. This existential quantifier ( $\exists$ ) will be of quantificational type *et,ett*, and in combination with *ikasle asko* (which is of type *et*; see ex. (63)), it will create a GQ of the usual type *ett* that then can combine with the VP to give a truth value. This implicit existential quantifier will be placed in Q-det and the logical form that we will get for a subject of a sentence like (67) will be (68).

- (68) a. [ [  $\exists x$  [ *ikasle(x)* & *asko(x)* ] ] ]  
 b.
- 
- ```

  graph TD
    Q_detP[Q-detP] --> Spec1[Spec]
    Q_detP --> Q_det_prime[Q-det']
    Q_det_prime --> NumP
    Q_det_prime --> Q_det[Q-det]
    NumP --> Spec2[Spec]
    NumP --> Num_prime[Num']
    Q_det --- Q_det_label["Ø: ∃"]
  
```



Therefore, in argument position the cardinal interpretation of indefinite noun phrases is derived from predicative interpretations through a type-lifting process by means of the silent existential quantifier (see Landman 2002). This operation takes a set of individuals x and maps it onto a generalized quantifier, that is, the set of all sets that have a non-empty intersection with x .

For the proportional reading on the other hand, I adopt Büring (1996), where the covert partitive phenomenon is approached from a pragmatic point of view. In contrast to the Semantic (Ambiguity) Approach (cf. Partee 1988, Diesing 1992, de Hoop 1992), where the cardinal and the proportional readings are claimed to be fixed from the lexicon, Büring argues that weak quantifiers are not ambiguous: their proportional (and therefore presuppositional) interpretation depends on the Topic/Focus/Background Structure (TFBS) and consequently there is no need to postulate a covert partitive structure when no overt partitive is overt.

Thus, following Büring (1996), I assume that sentences of the kind in (69a) involve two accents, the first of which is not a focus accent, but a contrastive topic accent.^{24,25} Such a sentence triggers the reconstruction of a particular set of potential contexts; the ones obtained by substituting the weak quantifier in subject position *batzuk* ‘some’ in (69a) for its contextually relevant alternatives given in (69b).

- (69) a. *Ikasle [BATZUK]_T [ARDO-A]_F edan zuten.*
 student some.ERG wine-D.ABS drink AUX.
 ‘SOME students drank WINE.’
 b. What did some students drink? What did all of the students drink? What did
 five students drink? What did few students drink? What did many students
 drink?

No matter which of the previous contexts might have been the actual Discourse-Topic, all of the alternatives in (69b) give rise to elements which are able to occupy a topic position, and as a consequence the existence of a group of students is presupposed. Thus, it is possible to know upon hearing (69a) –even in a discourse initial context– that it requires a discourse context that has to do with students. The partitive interpretation of *ikasle batzuk* in (69a) results from the fact that the noun, but not the weak quantifier, is part of the background, that is to say, the partitive/presuppositional reading emerges as a result of the contexts required by the sentence.

As evidence in favour of this proposal, note that Basque weak quantifiers in non-topic/focus position can only obtain weak cardinal readings.

- (70) *Martxel-ek irakurri ditu komiki asko.*
 Martxel-ERG read AUX comic many
 ‘Martxel has read many comics.’
 ✓ cardinal: many in number
 * proportional: many (of the) comics

In (70), the subject appears in (preverbal) focus position and *komiki asko* ‘many comics’ is part of the *theme* (cf. Vallduví 1993 and references therein); hence, it is part of neither the topic nor the focus of the sentence, and no proportional interpretation is allowed.

This subsection has given evidence for the fact that weak-cardinal Qs must be contextually unrestricted. This property is something that Basque shows in the overt syntax since in opposition to strong Q-dets weak ones cannot appear with D_{DR} .

7 Conclusions

The main lessons to be drawn from this work are the following. First, the need to contextually restrict the domain of Qs is syntactically more real than one would have expected had the phenomenon been primarily pragmatic. In Basque, in particular, the definite D is used as domain restrictor (cf. Etxeberria 2005, 2008, 2009, Etxeberria & Giannakidou 2010, to appear). In this use, D is a modifier supplying a context set C, and can systematically apply to the Q itself. In Basque (cf. Etxeberria & Giannakidou 2010 for a crosslinguistic application) D_{DR} arises when D is found in a syntactic position where it is forced to take a (strong) quantifier as its argument, and thus cannot function as a regular iota. D_{DR} produces quantificational determiners that can only be used to quantify over salient non-empty domains. Furthermore, it is important to emphasize that the domain restricting function of D is proposed here as an additional meaning that the definite D can have in a given language. We are not suggesting that D_{DR} replaces the reference iota function, or the use of D for kind reference (generic use).

Second, the Q-det that is affected by D_{DR} is typically a *strong* one. So-called *weak* quantifiers cannot be contextually restricted by D_{DR} , it is argued, because they are not of the appropriate input for its application: weak quantifiers have been argued to be cardinality predicates and be base generated as predicative type *et* semantically (cf. a.o. Milsark 1979, Link 1984, Partee 1988, Kamp & Reyle 1993, Krifka 1999, van Geenhoven 1998, Landman 2002), and in the functional projection NumP syntactically. Crucially in Basque, D only appears with strong quantifiers.

Finally, concerning the proportional partitive interpretation of weak quantifiers when there is no overt partitive ‘*of the*’, I have adopted Büring (1996), where the covert partitive phenomenon is approached from a pragmatic point of view, that is, the proportional interpretation of weak quantifiers depends on the Topic/Focus/Background Structure. Therefore, this reading will not be due to the presence of a covert partitive construction (*pace* Partee 1988).

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- ² The reader is referred to Artiagoitia (this volume) for an extensive presentation of the use of the Basque D as well as of a presentation of the different analyses proposed in the literature to explain its behavior.
- ³ In these cases D plays the role of the participle or of individual-level predication. The reader is referred to Zabala (1993, 2003), Artiagoitia (1997, this volume), Eguren (2006, this volume), Matushansky (2005), Etxeberria (in prep) for possible analyses.
- ⁴ Due to its inherent distributive properties, *bakoitz* is grammatical only in those situations where there is an element deeper in the structure over which to distribute (see Etxeberria 2002, to appear, in prep).
- ⁵ For more on the presuppositional properties of Q-dets that combine with the definite D, the reader is referred to Etxeberria & Giannakidou (2010, to appear).
- ⁶ There is an element that the Basque linguistics literature has analyzed as a universal quantifier: *oro* ‘all’ (cf. Euskaltzaindia 1993, Artiagoitia 2003). See Etxeberria (2005, 2008) for a different analysis, where *oro* is treated as ambiguous between a real quantificational interpretation and a reading where it functions as an exhaustive DP modifier (à la Brisson 1998, 2003). This element will not be treated in this paper.
- ⁷ The St’át’imcets definite D 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.
- ⁸ The reader is referred to Etxeberria & Giannakidou (to appear) where it is argued that the St’át’imcets D is like a demonstrative (cf. also Matthewson 2008). Hence, Etxeberria & Giannakidou’s new claim that St’át’imcets D performs D_{DR} is totally consistent with their theory that D_{DR} is another manifestation of definiteness (*pace* Matthewson 1999, 2001, 2008).
- ⁹ In Hungarian *every NP* can be expressed in two ways.
- (i) a. minden diák
every student

-
- b. az összes diák
the all student
- c. *összes az diák
all the student

The relevant example for us is (ib) where D combines with Q, and not with its nominal argument, as shown by (ic), just as in Basque or Greek. Thanks to Aniko Liptak for helping us with Hungarian data.

¹⁰ Cf. Etxeberria & Giannakidou (2010, to appear) for more arguments in favor of this analysis and against the idea that D could function as an *iota* operator when combined with quantifiers, and not as a modifier.

¹¹ The reader is referred to Etxeberria & Giannakidou (2010) for extensive discussion on this.

¹² The example in (35) could also be interpreted as ‘an expensive car among a certain set of expensive cars’, which is a slightly different interpretation than ‘a very expensive car’. However, in this second interpretation, we would not be talking about the same adjective (*expensive* in this case) restricting the same NP twice; rather the second *expensive* would be restricting the AP *expensive car*.

¹³ Martí (2009) has argued against the idea that domain restriction cannot apply but once. Martí defends that Spanish plural indefinite *algunos* ‘some’ differs from Spanish plural indefinite *unos* ‘some’ in that only the former is contextually restricted by means of what Martí claims to be a contextual domain restrictor: *alg-* (absent with *unos*). Since *algunos* can also appear in partitive constructions (e.g. *algunos de los estudiantes* ‘some of the students’) and since we’re arguing that partitives also introduce contextual domain restriction, *algunos* would appear to be contextually restricted twice inside partitives: by *alg-* (on the Q-det) and by the partitive (on the nominal expression).

For problems with this proposal, the reader is referred to Etxeberria & Giannakidou (2010) where we present empirical problems with this claim—a number of asymmetries between the claimed restricted indefinites and our D_{DR}-ed quantifiers, as well as unrestricted uses of the alleged weak indefinites—and conclude that we are not dealing with domain restriction in these cases, but with a *specificity* felicity condition (in line with Ionin 2006; cf. Etxeberria & Giannakidou 2010). The presupposition of D_{DR} relies on the common ground, but the felicity condition relies on just the speaker’s intentions.

¹⁴ Cf. Etxeberria & Giannakidou (2010, to appear) for some crosslinguistic morphosyntactic motivation of why these constructions are not DPs.

¹⁵ This could of course be the case if we would have assumed Russell (1905)’s treatment of definites. Yet intuitively the DP is thought of as a referring expression, as is widely accepted (cf. Frege 1892 and Strawson 1950; for a recent overview see Elbourne 2007). As a referring expression, it seems more natural to allow the DP to denote in the type *e*, an individual (singular, or plural depending on the number), at least as a primary assignment, and lift it to the GQ type only if necessary (within a type shifting system like Partee 1987).

¹⁶ Euskaltzaindia (1993:119): “What happens when we want to put more than one adjective beside a noun? What order do they follow? [...] it seems as though the speaker puts the adjective she believes to be more important beside the noun” [Translation UE]

¹⁷ See Azkarate & Altuna (2001) for a historical analysis of the plural marker [-eta]. See also Manterola (2006).

¹⁸ See Eguzkitza (1997).

¹⁹ Cf. Etxeberria (2005) for an extended explanation of these facts.

²⁰ One interesting case is the Spanish counterpart of *most* which happens to be necessarily partitive but quite unexpectedly (since contextual restriction is defended to happen only once; cf. section 4.2) it also needs a D at the beginning. This property makes *la mayoría de DP* different from the rest of Spanish strong quantifiers (i.e. *cada chico* ‘each boy’, *todo chico* ‘every boy’, *muchos de los chicos* ‘many of the boys’).

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

Something similar seems to be happening with Greek *i perissoteri* (Giannakidou 2004: 13) “which exhibits the D QP order while at the same time optionally allowing a definite argument”. Giannakidou solves the problem of Greek *i perissoteri* by appealing to definite reduplication. However, this solution does not seem to be applicable to Spanish since the first D does not depend on the second (internal to the partitive) D and it might well be the case that they are different (see ex. (i)). Furthermore, Ds are not reduplicated in Spanish. What seems to be going on in Spanish is that *mayoría* is not a quantifier but a noun, and that the first D in *la mayoría de los NP* is only there for syntactic reasons since bare nouns (particularly singular ones) are not allowed in Spanish (cf. Bosque 1996). Cf. Etxeberria & Giannakidou (2009, in prep) for extensive discussion on this and fraction expressions such as *la mitad de los NP* ‘D half of the NP’ that we find in many languages.

²¹ One of the reasons why strong Q-dets and partitives show a different behaviour (in that the former restrict the Q-det while the latter restricts the noun by means of a partitive structure) may be due to the fact that Basque strong quantifiers historically derive from adjectives (cf. Trask 2003: 128) and adjectives in Basque do necessarily appear with *-a/-ak*. Nowadays, lexically strong quantifiers do not behave like adjectives and denote GQs (see §4.2.1 and 4.2.2; see also Etxeberria 2004, 2005). Thanks to Joseba Lakarra for discussion on this point.

²² Cf. Etxeberria 2005 for a detailed analysis.

²³ Note that I am assuming a head final structure for Basque. The Spec position will always be to the left. See among others Ortiz de Urbina (1989), Laka (1990), Elordieta (2001), and Artiagoitia (2000).

Ortiz de Urbina (1989) and Laka (1990) claim that left periphery projections (focus, negation, wh head, etc.) are head initial; this differentiation creates an asymmetry in Basque syntax.

On the other hand, Haddican (2001, 2004, 2005) suggests, following Kayne (1994), that Basque is always head initial.

²⁴ Note that focus phrases in Basque must appear in the immediately preverbal position, which produces a change in the basic SOV Basque word order (cf. a.o. Eguzkitza 1986, Ortiz de Urbina 1983, 1989, 1999, Uriagereka 1999, Arregi 2003, Irurtzun 2006).

(i) a. *[Peru-k]_F baloi-a zulu du.
Peru-ERG ball-D.sg-ABS burst AUX.sg
‘Peru has burst the ball.’
b. Baloi-a [Peruk]_F zulu du.
c. [Peruk]_F zulu du baloi-a.

²⁵ See Elordieta & Irurtzun (2010) for a different perspective on whether this is a topic or a focus accent.