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Urtzi Etxeberria, Ricardo Etxepare

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Measures and Counting in Basque[*]

Urtzi Etxeberria (IKER-CNRS) & Ricardo Etxepare (IKER-CNRS)

1. The phenomenon

It has been noted (see Rotaetxe 1979; Txillardegi 1977, 1978; EGLU 1985; Etxepare, 2000) that so called 'vague' weak quantifiers in Basque only optionally agree in number with the inflected verb (2a-d), unlike other plurality denoting nominal expressions in Basque, which trigger obligatory agreement in number (1):

(1)   Ikasleak   ikusi ditut/*dut
        student-D-pl seen I-have.pl/I-have.sg
        'I have seen (the) students'

(2)   a. Bezero   asko etortzen   da/dira halako egunetan
           customer many come-hab is/are   such   days-in
           'Many customers come in such days'
        b. Bezero   gehiegik   eskatu du/dute   arrain zopa
           customer too-many-erg asked aux-sg/aux-pl fish soup
           'Too many customers asked for fish soup'
        c. Ikasle gutxi ikusi dut/ditut   gaur
           student few seen aux.sg/aux.pl today
           'I've seen few students today'
        d. Gure bezero   ugari   aurkitu dut/ditut   beste denda horretan
           our customer big-number found aux-sg/aux-pl other shop   that-in
           'I found a big number of our customers in that shop'

The notion of what we mean by 'vague' weak quantifier can be intuitively grasped by means of the following contrast:

(3)   a. Mila   ikasle   etorri dira/*da
           thousand student come aux-pl/aux-sg
           'One thousand students came'
        b. Milaka   ikasle   etorri dira/da
           thousand-suffix student come aux-pl/sg
           'Thousands and thousands of students came'

Whereas (3a), which involves a definite quantity, triggers plural agreement in the inflected verb, (3b), which involves a non definite quantity (equivalent to *thousands of* in English), only optionally triggers agreement. Cardinal quantifiers, in the varieties we focus on here, always trigger plural agreement. Vague quantificational expressions constructed out of them, on the other hand, may not. Other vague quantificational expressions which give rise to the

same alternation are *NP-pila bat* 'a lot', *NP-franko* 'quite many NP', and idiomatic *hamaika* "countless":[1]

(4)   a. Ikasle   pila bat ikusi dugu/ditugu
           student lot   a   seen aux-sg/aux-pl
           'We have seen a lot of students'
        b. Ikasle   franko   ikusi dut/ditut
           student quite-many seen aux-sg/aux-pl
           'I have seen quite many students'
        c. Hamaika ikasle   ikusi dut/ditut
           eleven   student seen aux-sg/aux-pl
           'I have seen countless students'

This phenomenon is general in the Basque area, with some interesting dialectal variation that we will not be able to address here (see Etxeberria and Etxepare, forthcoming). The present paper offers a preliminary analysis of the phenomenon. We claim that non-agreeing quantificational expressions are not counting expressions, but measure phrases. Measures constitute the other quantificational domain in Basque that presents an agreement alternation in number:[2]

(5)   Hiru litro ardo edan du/ditu
        three litter wine drunk aux-sg/aux-pl
        'He/she drank three litters of wine'

We may wonder at this point what the agreement alternation is: is it an alternation between plural number features and singular ones? Or is the singular agreement form just a default, selected in the absence of any number feature? It is not easy to answer to this query in the context of the inflected forms directly. However, if we move to other syntactic contexts, the answer seems to favor the conclusion that third singular agreement, in the context of vague quantifiers in Basque, is just a default, with no correspondence with actual number features. One such context is provided by secondary predication, which requires agreement in number (see Artiagoitia, 1994). (6) gives an illustrative example with a Small Clause complement:

(6)   Ikasleak nekatu(*ak) antzeman ditut
        students tired-pl   found   aux.pl
        'I found the students tired'

(6) contains a Small Clause predicate *nekatuak* 'tired' which obligatorily agrees in number with the subject *ikasleak* 'students'. Now consider the contrast in (7):

(7)   a. Ikasle asko nekatuak antzeman ditut
           student many tired.pl   found   aux-pl
           'We found many students tired'
        b. * Ikasle asko nekatua antzeman dugu
             student many tired.sg found   aux-sg
           'We found many students tired'

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[1]   In its non-idiomatic reading, *hamaika* means "eleven".
[2]   For measure expressions and their syntax in Basque, see recently Goenaga (2008).

Whereas a vague quantifier that agrees in plural with the inflected verb licenses a secondary predicate with a plural suffix -*k* on it, a vague quantifier that does not agree in plural can not license singular agreement in the secondary predicate either. The conclusion seems to be that agreement in singular with the quantifiers that do not agree in plural is impossible, and that therefore, the relevant quantifier forms must lack number features, either plural or singular.[3] That the problem is in number agreement and not, say, in the ability of non-agreeing quantifiers to license a secondary predication is shown by the following fact: if we allow for a secondary predicate that does not have number, secondary predication with vague quantifiers becomes possible. One relevant configuration involves the so-called partitive suffix, which does not agree in number in Basque. The partitive suffix may follow a secondary predicate in Basque under certain semantic conditions (see Etxepare, 2003; Zabala, 1993, 2003). When the partitive suffix substitutes for the determiner+number suffix, secondary predication with vague quantifiers becomes possible (8):

(8)   Ikasle asko nekaturik dago
        student many tired-part is-loc
        'Many students are tired'

The paper is organized as follows: in section 2 we spell out the main claims of our paper. Section 3 presents the received analysis concerning the agreement alternation in Basque. Section 4 provides arguments against this view. Section 5 shows that non-agreeing quantifiers must be interpreted distributively. This imposes certain restrictions in the class of predicates they can co-occur with. Section 6 presents some further cases of predicate selectivity. Section 7 discusses the nature of the quantifiers involved in the agreement alternation. It is shown that the relevant quantifiers are so-called degree-quantifiers (Doetjes, 1997): quantifiers which combine with any syntactic constituent as long as it can be interpreted cumulatively. Section 8 suggests some cross-linguistic analogues of the Basque alternation. Section 9 discusses the semantic basis of predicate sensitivity. Section 10 proposes a syntactic structure for non-agreeing quantifiers. Section 11 presents the conclusions of this paper.

2. The hypotheses

The main hypotheses we defend in this paper are the following: first, we will argue that non-agreeing quantifiers are conceptually measures. Basque shows that measures head their own functional projection in the expanded structure of the Noun Phrase. This functional projection is placed in between the Classifier Phrase, where division occurs, and the Number Phrase, where counting occurs (following Borer, 2005). We also show that certain referential properties, such as the possibility of establishing a discourse variable, and the potential for the enumeration of individuals crucially require the projection of the counting number head. Besides projecting a dedicated functional structure, we also show that non-agreeing quantifiers are sensitive to the nature of the predicates they associate to. Measure Phrases seem to measure both individuals and events/states, as long as the latter denote non-trivial part-whole structures. The predicate sensitivity of measuring quantifiers, we claim, has two sources: one is the monotonicity constraint proposed by Schwarzschild (2002) as holding of measure functions universally; the other one is a homomorphism relation (Krifka, 1989; Filip, 1996; Nakanishi, 2004, 2007) which maps the denotation of a noun phrase into the

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[3]   Despite the fact that non-agreeing quantifiers lack number features and show no agreement with the predicate (i.e. the inflected verb shows default third person singular agreement), we will continue using 'Aux-sg' in the glosses for ease of exposition.

denotation of the predicate. The predicate sensitivity of non-agreeing quantifiers can thus be viewed as the result of this mapping relation.

3. The received view: Non-agreeing cases as masses.

The descriptive grammar of the Academy of the Basque Language (1985: 223-224) assimilates the absence of number agreement with weak quantifiers to the absence of number in mass terms. Take for instance the contrast in (9):

(9)   a. Haragi asko jaten du
          meat   much eat-hab aux.sg
          'He eats a lot of meat'
     b. Haragi asko jaten ditu
          meat   many eat-hab aux.pl
          'He eats many types of meat'

The presence of number agreement in (9b) triggers a count interpretation of the mass term *haragi* 'meat', which comes to denote a set of individualized meat types. The grammar of the Academy suggests that the absence of number agreement with count terms has the opposite effect: it converts count terms into mass terms. The grammar comments on the following sentences in (10):

(10)   a. Liburu asko erosi   dut
          book   many bought aux-sg
          'I bought many books'
     b. Liburu asko erosi   ditut
          book   many bought aux-pl
          'I bought many books'

According to the Academy's grammar, (10a) and (10b) do not have the same interpretation: whereas "in the first case we consider a mass of books; in the other case we consider one book and then another one, and another one, and so on" (1985: 223). Inmediately, the grammar presents a case that wants to be clearer:

(11)   a. Harri asko bota   dute
          stone much thrown aux-sg
          'They threw a lot of stone'
     b. Harri asko bota   dituzte
          stone many thrown aux-pl
          'They threw many stones'

In (11a) *harri* 'stone' is taken to be non-count, as a big quantity of stone. In (11b) it refers to a big quantity of stones (as a count term). The Academy's grammar does not go beyond the intuition above. Although we will not pursue this line of analysis, we share the intuition that (11b) offers more opportunities for an individualized treatment of the stone than (11a). For instance, (11b) would be more appropriate to describe a situation where demonstrators attack the police by throwing stones to them. This implies the existence of individualized pieces of stone, and a multiplicity of stone-throwing events. (11a) on the other hand, would be more appropriate to describe the loads of stone being thrown during some roadworks. Slightly adapting the Academy's proposal for the argument's sake, we could say that number

morphology coerces masses into counts (12), whereas absence of number morphology coerces counts into masses (13):

(12) a. Ardoa   edan dut   (mass)
          wine-D drunk aux
          'I drank wine'
      b. Ardoak   edan ditut   (plural count)
          wine-D-pl drunk aux-pl
          'I drank wines'

(13) a. Ikasle asko ikusi ditut   (plural count)
          student many seen aux-pl
          'I have seen many students'
      b. Ikasle asko ikusi dut   (mass)
          student many seen aux
          'I have seen much student'

4. On the purported mass properties of non-agreeing quantifiers

It can be shown however that non-agreeing quantifiers are not mass terms. As a starting point, we consider Pelletier's well known thought experiment (1975) to characterize mass terms. He proposes the existence of two imaginary machines, that he calls the Universal Grinder and the Universal Objectifier. For the Universal Grinder, we are to imagine a device which can grind anything, no matter how big or small. Into one end of the device "is inserted an object of which some count expression is true, and from the other end spews forth the finely-ground matter of which it is composed. So a hat is entered into the grinder and after a few minutes there is hat all over the floor" (from Pelletier and Schubert, 1989:342). This is so despite the fact that we could also have said that there is felt all over the floor, using a mass expression. Examples of this type "show that many count expressions can be seen to already have within them a mass sense or a mass use" (ibidem, 343). Taking the word *sagar* 'apple' as our putative count term, we could take (14) to involve the mass coming out of the Universal Grinder:

(14)   Entsaladak   sagar pixkat dauka
       salad-D-erg apple bit   has
       'The salad has a bit of apple in it'

Take however something like (15), with a non agreeing vague quantifier:

(15)   Ikasle asko ikusi dut   gaurko batzarrean
       student many seen I-have today's meeting-D-in
       'I have seen a lot of students in today's meeting'

The sentence in (15), with a non agreeing quantifier, does not involve a mass term, in Pelletier's sense: what I have seen in (15) is not scattered pieces of student, but a number of students, all of them of a piece. True, the force of this argument against a mass-approach to non-agreeing quantifiers depends on the force of Pelletier's metaphor to characterize mass terms as a whole. We know that in this sense, the metaphor is not comprehensive enough. Other mass terms appear to reflect objects that we would better locate in the entering side of the machine. This is the case of mass terms like *furniture* or *crockery* (Chierchia, 1998):

ground-up furniture and furniture do not mean the same, despite the mass status of the term. In any case, even with simple ambiguous nouns such as *apple*, the mass-approach falls short of accounting for the range of interpretations that non-agreeing cases have. Consider a sentence like (16):

(16)   Plater honetan sagar asko ikusten dut
       dish   this-in apple many see   aux-sg
       'I see a lot of apple in this dish' or
       'I see a lot of apples in this dish'

As shown by the translations, non-agreeing quantifiers can be interpreted in two ways: either as mass terms, referring to a quantity of apple, or as referring to a plural set of (whole) apples. In other words: the sentence in (16) can be interpreted as making reference to, say, a dish containing a set of piled-up entire apples. The mass-approach has nothing to say about this second interpretation.
Other properties distinguishing mass terms from non-agreeing cases lead us to reject the mass aproach to non-agreeing quantifiers. Lonning (1987) shows that masses cannot entertain a predication relation with non-homogeneous predicates. Homogeneous predicates are those that are both cumulative and divisive. The examples in (17) involve a non-homogeneous predicate (to weigh more than 300 kilos). Whereas mass quantifications can not be the subject of the non-homogeneous predicate (17a), non-agreeing quantifiers with a count noun can (17b).

(17)   a. * Ur   askok   300 kilo baino gehiago pisatzen   du
            water MANY 300 kilo than   more   weight-hab aux
          '* Much water weights more than 300 kilos'
       b. Zaldi askok   300 kilo baino gehiago pisatzen   du
          horse MANY 300 kilo than   more   weight-hab aux
          'Many horses weight more than 300 kilos'

Finally, we note that some of the quantifiers that give rise to the alternation just can not quantify over mass terms. This is the case of *zenbait* 'some' and *hainbat* 'a sizeable quantity'. (18) shows that even the non-agreeing cases do not support a mass interpretation:

(18)   a. Zenbait ardo edan dugu
          some   wine drunk aux-sg
             * 'We drank some wine'
             √ 'We drank some wines'
       b. Hainbat haragi ekarri   dugu
          some   meat   brought aux-sg
             * 'We brought some meat'
             √ 'We brought some meats'

Zenbait and *hainbat*, on the other hand, show properties that distinguish them from the vague quantifiers described in (2)-(4), and will not be included in this paper. They are discussed in Etxeberria and Etxepare (forthcoming).

5. The distributive character of the non-agreeing quantifiers

One of the characterizing properties of non-agreeing quantifiers (and which further distinguishes them from mass terms) is their distributive nature (Etxepare, 2000). They can only be interpreted distributively, and this sets certain restrictions in the kind of predicate they can attach to.

5.1. Collective and distributive readings

Consider for instance the contrast between (19) and (20):[4]

(19)   Azkenean gazte askok   altxatu behar izan zuten   harria
        finally   young many-erg lifted   must have aux-pl   stone-D
        'Finally, many youngsters had to lift the stone'
                √ collective
                √ distributive

(20)   Azkenean gazte askok   altxatu behar izan zuen   harria
        finally   young MANY-erg lift   must have aux-sg stone-D
        'Finally, many youngsters had to lift the stone'
                ∗ collective
                √ distributive

(19) involves an agreeing vague quantifier. This yields two possible readings for the predicate: a distributive one, where each of the youngsters lifts the stone, and a collective one, where the entire set of youngsters lifts the stone. (19) also allows intermediate readings, where the set of youngsters divides in small groups to lift the stone. The range of distributive readings in (19) is typical of count plural entities (see Krifka, 1992). Unlike (19), (20) only allows a strict distributive reading, where youngsters individually lift the stone, and several stone-liftings (as many as there are youngsters) occur.

5.2. Collective predicates

Non-agreeing quantifiers are incompatible with collective predicates (predicates that do not allow event distribution). The examples in (21)-(24) all contain a predicate that does not naturally allow atomic distribution (distribution down to the atomic entities making up a plurality). Whereas agreeing quantifiers can be combined with those predicates (a), non-agreeing ones cannot (b):

(21)   a. Ikasle   ohi askok   festa horretan topo egin zuten
            student ex many-erg party that-in   meet done aux-pl
            'Many ex students met at that party'
        b. ∗ Ikasle   ohi askok   festa horretan topo egin zuen
              student ex MANY-erg party that-in   meet done aux-sg
            'Many ex students met at that party'

(22)   a. Lantegian, langile asko batzartu dira
            factory-in   worker many met   are
            'At the factory, many workers had a meeting'

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[4]   From here on, we will use capital letter (e.g. MANY) in the glosses to refer to non-agreeing quantifiers.

b. ?* Lantegian, langile asko   batzartu da
    factory-in worker MANY met   is
    'At the factory many workers had a meeting'

(23)   a. Mozio hori, zinegotzi   askok   adostu zuten
       motion that councilmen many-erg agreed aux-pl
       'That motion, many councilmen reached an agreement on it'
      b. * Mozio hori, zinegotzi   askok   adostu zuen
        motion that councilman MANY-erg agreed aux-sg
       'That motion, many councilmen reached an agreement on it'

(24)   a. Jonek   liburu asko ordenatu ditu
       Jon-erg book   many arranged aux-pl
       'Jon arranged many books'
      b. ?? Jonek liburu asko   ordenatu du
        Jon-erg book MANY arranged aux-sg
       'Jon arranged many books'

Having a meeting, reaching an agreement or arranging books in a certain order denote relations that require more than one individual and give rise to collective readings. Predicates that denote such a relation are incompatible with non-agreeing quantifiers.

5.3. Once-only Predicates

Consider (25):

(25)   a. Polizi   askok   kolpatu dute   manifestaria
       policemen many-erg beat   aux-pl demonstrator-D
       'Many policemen have beaten the demonstrator'
      b. Polizi   askok   kolpatu du   manifestaria
       policemen many-erg beat   aux-sg demonstrator-D
       'Many policemen have beaten the demonstrator'

A predicate like *manifestaria kolpatu* 'beat the demonstrator' does not, unfortunately, make reference to a unique event: it is something that can happen more than once, even with the same demonstrator (leaving aside fatal events). In this context both the agreeing and the non-agreeing quantifier are possible. Now take (26a). It contains the predicate *putrea hil* 'kill the vulture'. This is something that can only occur once, if the same vulture is involved. Let us call this type of predicate 'once-only predicate'. Once-only predicates can not combine with non-agreeing quantifiers, as shown in (26b). The reason must be the same that precludes the occurrence of non-agreeing quantifiers with collective predicates. Although once-only predicates are not collective, they don't license a distributive relation, by definition. But non-agreeing quantifiers must be interpreted distributively.

(26)   a. Baserritar askok   hil zuten putrea
       farmer   many-erg kill aux-pl vulture-D
       'Many farmers killed the vulture'
      b. * Baserritar askok   hil zuen   putrea
        farmer   MANY-erg kill aux-sg vulture-D
       'Many farmers killed the vulture'

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5.4. Reciprocals

Non-agreeing quantifiers, unlike agreeing ones, are incompatible with reciprocals:

(27)   a. Ikasle askok   elkarren/bata bestearen   antz handia dute
          student many-erg each other-gen/one another-gen look big   aux.pl
          'Many students look like each other/one another'
       b. * Ikasle askok elkarren/bata bestearen   antz handia du
            student many   each other-gen/one another-gen look big   aux.sg
            'Many students look like each other/one another'

(28)   a. Irakasle   askok   elkar/bata bestea   iraintzen dute
          professor many-erg each other/one another insult   aux.pl
          'Many professors insult each other/one another'
       b. * Irakasle askok   elkar/bata bestea   iraintzen du
            professor many-erg each other/one another insult   aux.sg
            'Many professors insult each other/one another'

We adopt Heim, Lasnik & May's (1991) analysis of reciprocals: in their view, reciprocals are complex quantificational expressions containing a distributive quantifier. This distributive quantifier is overt in some languages (cf. English *each other*). But if reciprocals possess a tacit distributive operator themselves, then the incompatibility between non-agreeing quantifiers and reciprocals can be easily explained: the distributive operator requires a plural set to operate on, one that can be broken into individual atoms. But if non-agreeing quantifiers are themselves distributive, there is no plural set to operate on. The incompatibility between reciprocals and non-agreeing quantifiers is thus a subcase of 'vacuous quantification'. The effect is analogous to (29), with a strong distributive quantifier:

(29)   * Ikasle   bakoitzak elkar   ikusi du
          student each-erg   reciprocal seen aux.sg
          '* Each student has seen each other'

6. Copular Structures

Basque, like Spanish (Lujan, 1981; Schmitt, 1992; Fernández Leborans, 1999), distinguishes between a locative copula and a characterizing one (Etxepare, 2003). Intuitively, the locative copula *egon* ascribes a temporary property to the subject of predication (30b), whereas the characterizing copula *izan* introduces an inherent property of the subject (30a).

(30)   a. Jon oso   barregarria da
          Jon very funny-D   is
          'Jon is a very funny guy'
       b. Jon oso   barregarri dago (mozorro horrekin)
          Jon very funny   is-loc costume that-with
          'Jon is very funny (in that costume)'

Non-agreeing quantifiers cannot occur as subjects of a predicate introduced by the characterizing copula *izan* (31b):

(31) a. Ikasle asko altuak/azkarrak/argiak dira
        student many tall/intelligent/smart   are
        'Many students are tall/intelligent/smart'
      b. * Ikasle asko   altua/azkarra/argia   da
           student MANY tall/intelligent/smart is
        'Many students are tall/intelligent/smart'

They are unproblematic as the subjects of a predicate introduced by the locative copula *egon*. The predicate may be bare or be followed by a partitive suffix in such cases:

(32) a. Ikasle asko gaixo(rik) daude egunotan
        student many sick.part   are   these-days
        'Many a student is sick these days'
      b. Ikasle asko   gaixo(rik) dago egunotan
        student MANY sick.part   is   these-days
        'Many students are sick these days'

The difference between the two cases can be defined as one between Stage-level and Individual Level predications (Carlson, 1979; Kratzer, 1989, 1995). It thus seems that non-agreeing vague quantifiers are selective with regard to the kind of predicative context they are in: they can only occur with Stage-Level predicates.
Before we ellaborate on this distinction however, we must discard a trivial reason for this difference. Artiagoitia (1994) notes that Individual Level predicates in Basque must be headed by a Determiner (see Eguren, 2006, for an account). This Determiner invariably carries number features. Since we have seen that non-agreeing vague quantifiers do not possess any number feature, the reason for the ungrammaticality of (31b) could be trivial: the vague quantifier cannot check the number features of the predicate, and the derivation crashes. That the problem is not circumscribed to the presence of number features is shown by the following cases. The comparative suffix -*ago* directly attaches to the stem in Basque:

(33)   [Adjective handi] + ago   →   handiago
                 big   -er   bigger

In some varieties of Basque, the addition of the comparative suffix to the predicate makes the expression of number morphology optional:

(34)   Ikasleak azkarrago(ak) dira hemen
          students smarter.D.pl   are   here
          'Students are smarter here'

The two options in (34) could be interpreted in terms of the presence of number features: whereas the bare cases with only the comparative suffix lack number specification, the cases where number morphology shows up are cases with number specification. Interestingly, the bare forms, lacking number, also give bad results when they combine with a vague quantifier that does not agree in plural (35b):

(35) a. Ikasle asko azkarrago(ak) dira
        student many smarter.pl   are
        'Many students are smarter'
      b. * Ikasle asko   azkarrago(a) da

        student MANY smarter.sg   is
        'Many students are smarter'

It thus seems that the problem lies in the kind of predicative structure, rather than on the eventual occurrence of number features in it.

We must also discard another trivial explanation for the contrast in (31). Under a certain view of the difference between Stage-Level and Individual Level predicates, the difference is a matter of information structure (see e.g. Raposo and Uriagereka, 1995). This assimilates the Stage-Level/Individual-Level split to Kuroda's (1972) distinction between thetic and categorical judgements. Thetic judgements are predicated of an eventuality, whereas categorical judgements are predicated of a designated entity, a category. In an ellaborate proposal that translates this idea into syntactic configurations, Raposo and Uriagereka (1995) show that the subject of an Individual Level predicate is best analysed as a syntactic topic. Kuroda notes that subjects of categorical predicates in Japanese, as opposed to subjects of thetic predicates, are marked with the topic-marker -*wa*. A tentative approach to the contrast in (31) would capitalize on this view. Could it be that non-agreeing quantifiers make bad topics? Although we will see that non-agreeing quantifiers show certain restrictions in their ability to refer to specific entities (see section 10), they can certainly occur in topic position. Consider in this regard the sentence in (36):

(36)   Ikasle asko BERANDU etorri da gaur
        student many late   come is today
        'Many students came LATE today'

(36) shows a sentence with focus on the temporal adverbial *berandu* 'late'. Basque foci move to a preverbal focus position, and they require the adjacency of the verb plus auxiliary complex. This has been traditionally analysed as an instance of (residual) verb-second phenomenon (Ortiz de Urbina, 1989), where the focus moves to a designated focus position in the periphery of the clause and is followed by the movement of the verb. This movement leaves a temporal adverb such as *gaur* 'today' in a postverbal position. Whatever the right analysis for the syntax of focus in Basque (see Uriagereka, 1999; Elordieta, 2001; Arregi, 2003; Irurtzun, 2007; Etxepare and Uribe-Etxebarria, 2008), it is clear that descriptively, (36) constitutes a sentence with syntactic focus. The elements to the left of the focus are always interpreted as topics. And in (36), the topic position is occupied by the non-agreeing quantifier. The problem with (31b) therefore, cannot be due to the topic status of the subject in categorical judgments.

The non-agreeing quantifiers therefore seem to discriminate between Stage-Level and Individual-Level predicates. The latter can not combine with them. One important caveat to this conclusion is raised by the fact that not all individual-level predicates behave the same:

(37)   a. Sukaldari askok   ez daki   txokolatezko souffle onik egiten
           cook   MANY-erg neg know.sg chocolate   souffle good do-Nom-Loc
           'Many cooks do not know preparing a good chocolate soufflé'
        b. Ikasle askok   miresten du   kantari hori
           student MANY-erg admire   aux-sg singer that
           'Many students admire that singer'
        c. Gazte askok   maite du   zinema
           young MANY-erg love   aux-sg cinema
           'Many youngsters like movies'

Other bona-fide Individual-Level predicates, such as *know, admire* or *love,* do admit non-agreeing quantifiers as their subject of predication. Accordingly, there must be a difference between the predication introduced by a copula like *izan*, and verbs such as the ones above. In this paper, we will not ellaborate an original analysis of these differences (see Etxeberria and Etxepare, forthcoming). We will temporarily adopt Kratzer's hypothesis (1989, 1995) by claiming that simple Individual-Level predicates headed by the copula *izan* 'be' in Basque lack a situation variable.[5] Obviously, we must say something about the split in the set of Individual-Level predicates effected by non-agreeing quantifiers. See section 9 for this issue.

7. What do these Qs quantify over?

Non-agreeing quantifiers show certain restrictions with regard to the predicate they combine with. In abstract terms, we can talk of their 'predicate sensitivity'. Those constraints must at least include the impossibility of combining with (i) collective predicates (section 5.2); (ii) Once-only predicates (section 5.3); and (iii) predicates giving rise to categorical judgements (section 6).
The predicate sensitivity shown by those quantifiers indicates that their domain of quantification includes events, not only objects. We propose that an appropriate paraphrase for a sentence with a non-agreeing quantifier (38a) is something like (38b):

(38) a. Ikasle asko etorri da gaur
         student many come is today
         'Many students came today'
      b. Ikasle etorrera   asko egon da gaur
         student come-Nom many been is today
         'There has been a lot of student-coming today'

This view of the non-agreeing quantifiers approaches them to so called 'event-related readings' of weak quantifiers, as presented in Krifka (1990) and Doetjes and Honcoop (1997). We compare the basque structures with event-related readings in section 8.4.
Together with their vagueness, there is a further property that characterizes the quantifiers entering into the agreement alternation: they seem to operate across a large class of domains. The set of domains that the relevant quantifiers operate on includes plurals nouns, with and without agreement:

(39)   Plural agreement:
        a. Ikasle asko etorri dira gaur
           student many come are today
           'Many students came today'

        No agreement:
        b. Ikasle asko etorri da gaur
           student many come is today
           'Many students came today'

Mass nouns:

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[5]   This is against much of the recent thought on the Individual-Level/Stage-Level distinction. See Raposo and Uriagereka, 1995, Schmitt, 1996, Higginbotham and Ramchand, 1997, Maienborn, 2003, and Arche, 2006. We refer the reader to our forthcoming paper for a different analysis.

(40)   Jonek   garagardo asko edan du gaur
        Jon-erg beer   many drunk aux today
        'Jon drank a lot of beer today'

And it extends also to the verbal domain. Simple vague quantifiers like *asko* 'much/many', *gutxi* 'few/little', *ugari* 'abundant', *gehiegi* 'too much' can be used as adverbial quantifiers:

(41)   Jonek   asko   dantzatu du
        Jon-erg many   danced   aux.sg
        'Jon danced a lot'

In this sense, vague weak quantifiers in Basque correspond to what Doetjes (1997, 2001) calls "degree-quantifiers": Degree Quantifiers are insensitive to the categorial properties of the phrase they combine with, as far as the latter can be interpreted cumulatively. Cumulativity can be defined in the following terms:

(42)   Cumulativity (Krifka, 1998):
        $\forall X \subseteq UP[\text{CUMP}(X) \leftrightarrow \exists x,y[X(x) \wedge X(y) \wedge \neg x=y] \wedge \forall x,y[X(x) \wedge X(y) \rightarrow X(x \oplus y)]]$
        (*X* is cumulative iff there exist *y*, *x* with the property *X* (and *x* distinct from *y*) such that for all *x* and *y*, if *x*, *y* have the property *X*, then *X* is a property of the sum of *x* and *y*)

Doetjes (1997) argues that Degree Quantifiers measure their domain of quantification. In other words, that they are measures. We think that the following naturally applies to Basque non-agreeing quantifiers:

(43)   Non-agreeing Quantifiers in Basque are Measures

8. Cross-linguistic connections

The predicate sensitivity shown by non-agreeing quantifiers in Basque finds interesting correlates in other languages. Predicate sensitivity is, in those languages, also the result of a structural alternation that involves measuring quantifiers. We point out two cases here: split quantification as described by Nakanishi (2004, 2007); and so-called Quantification at a Distance (Obenauer, 1983; Doetjes, 1997).

8.1. Split quantification

An alternation analogous to the Basque one in meaning arises in Japanese, with what Nakanishi calls Measure Phrases (MPs). For Nakanishi (2004), Measure Phrases in Japanese are all weak quantifiers, including cardinals, and they can occur under two different configurations: the measuring element can show up close to the noun it measures, or it can show up detached from it (so-called split MPs) (Nakanishi, 2004, 2007). In (44a) and (45a), the measure quantifier and its nominal restriction are adjacent to each other, and occur inside the quantificational phrase. In (44b) and (45b), the nominal restriction occurs in the left periphery as a topic, and the measuring quantifier appears adjacent to the verbal predicate. Note however, that in (44b) the measuring quantifier is followed by a classifier. The presence and the shape of a classifier depend on the presence and the nature of the following noun. (43b) shows that the topicalized nominal in (44b) is somehow present inside the measure

phrase. For the present purposes, we can think of this presence as a copy of the topicalized noun.

(44)   a. [Gakusei san-nin]-ga   ie-ni   kaet-ta
          [student   three-CL]-nom home-to went
          'Three students went home'
       b. Gakusei-ga ie-ni   san-nin   kaet-ta
          student-nom home-to three-CL went
           'Three students went home'

(45)   a. [Mizu san-rittoru]-ga   tukue-nouede kobore-ta
          [water three-liter]-nom table-in   spilt
          'Three liters of water were spilt on the table'
       b. Mizu-ga   tukue-nouede san-rittoru kobore-ta
          water-nom   table-in   three-liter   spill-past

Non-split MPs and split MPs give rise to a certain number of asymmetries: whereas non-split cases can occur in any context, split cases shows certain restrictions with regard to the predicate. First, split measures cannot occur with once-only predicates:

(46)   a. [Gakusei san-nin]-ga   kinoo   Peter-o   korosi-ta
          [student   three-CL]-nom yesterday Peter-acc kill-past
          'Three students killed Peter yesterday'
       b. ?? Gakusei-ga kinoo   san-nin Peter-o   korosi-ta
           student-nom yesterday three-CL Peter-acc kill-past

(47)   a. [Gakusei san-nin]-ga   kinoo   Peter-o   tatai-ta
          [student   three-CL]-nom yesterday Peter-acc beat-past
          'Three students beat Peter yesterday'
       b. Gakusei-ga   kinoo   san-nin Peter-o   tatai-ta
          student-nom   yesterday three-CL Peter-acc beat-past

(46), as opposed to (47), contains a once-only predicate. In this context, the split MP is impossible. Split MPs, on the other hand, are possible in contexts like (47), which do not involve a once-only predicate.
Then, split MPs cannot occur as the subject of a categorical judgement (48b). But they can occur as the grammatical subject of a thetic one (49b):

(48)   a. Uti-no doobutuen-de-wa kaba-ga   mada san-too genki-dearu.
          our   zoo-in-top   hipopotamous-nom still three-CL healthy
          'In our zoo, three hypopotamous are still in healthy state'
       b. * Uti-no doobutuen-de-wa kaba-ga zannennakotoni san-too osu-dearu.
          our   zoo-in-top   hipo-nom unfortunately   three-CL male
          'In our zoo, unfortunately, three hypopotamous are male'

(49)   a. Uti-no doobutuen-de-wa [kaba san-too]-ga   mada   genki-dearu.
          our   zoo-in-top   hipo three-CL-nom still   healthy
       b. Uti-no doobutuen-de-wa [kaba san-too]-ga   zannennakotoni osu-dearu.
          Our   zoo-in-top   hipo three-CL-nom unfortunately   male

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And finally, split MPs go with distributive predicates but not with collective ones:

(50)   a. [Otokonoko san-nin]-ga   kinoo   isu-o   tukut-ta
        [guy   three-CL]-nom yesterday chair-acc do-past
        'Three guys made up chairs/a chair yesterday'
            √ collective
            √ distributive
        b. Otokonoko-ga kinoo   san-nin isu-o   tukut-ta
        guy-nom   yesterday three-CL chair-acc do-past
            * collective
            √ distributive

(51)   a. [Tomodati huta-ri]-ga   kyonen   kekkonsi-ta
        [friend   two-CL]-nom last-year   married
        'Two friends got married last year'
            √ collective = a single couple
            √ distributive = two couples
        b. Tomodati-ga kyonen   huta-ri kekkonsi-ta
        friend-nom   last-year two-CL marry-past
            * collective = a single couple
            √ distributive = two couples

Nakanishi observes the same meaning effects for split Quantifier Phrases in German, Greek and Catalan. He concludes that split quantifiers quantify over both individuals (denoted by their nominal restriction) and events (provided by their verbal argument).

8.2. Quantification at a Distance

Quantification at a Distance refers to a construction that contains a Degree Quantifier that can alternatively have both adverbial and adnominal properties (Obenauer 1983; Doetjes 1997).

(52)   Quantification at a Distance:
        a. Jean a   lu   beaucoup de livres
           Jean has read many   of books
           'Jean read a lot of books'
        b. Jean a   beaucoup lu   de livres
           Jean has many   read of books
           'Jean read a lot of books'
        c. * Jean a   lu   de livres
             Jean has read of books

(52a) is an ordinary sentence with a quantified object. (52b) is a construction that involves a split quantifier phrase. The Degree Quantifier *beaucoup* 'much/many' is in an adverbial position, to the left of the past participle. The form of the direct object *de livres* corresponds to the one we find in the context of an adnominally used Degree Quantifier, as in (52a). The use of *de NP* is excluded in the absence of the quantifier, as shown in (52c), suggesting that there is some relation between the Degree Quantifier and the *de NP* in Quantification at a Distance constructions.

As in the case of split Measure Phrases in Japanese Quantification at a Distance is predicate-sensitive. It is impossible with once-only predicates (example from Doetjes, 1997):

(53)   a. * En soulevant le   couvercle il a   beaucoup trouvé de pièces d'or
              lifting   the lid   he has a-lot   found of coins of-gold
        b. En soulevant le   couvercle il a   trouvé beaucoup de pièces d'or
              lifting   the lid   he has found a-lot   of coins of-gold
              'Lifting the lid he found a lot of gold coins'

It cannot occur with Individual-Level predicates (Doetjes, 1997), such as *worry*:

(54)   a. * La nouvelle a   beaucoup inquiété d'experts
              the news   has a-lot   worry   of-experts
        b. La nouvelle a   inquiété beaucoup d'experts
              the news   has worry   a-lot   of-experts
              'The news has worried many experts'

And it must have a distributive interpretation (Obenauer 1983: 83):

(55)   a. La délégué a   salué beaucoup de militants
              the delegate has salute a-lot   of militants
              'The delegate greeted many militants'
                    √ collective
                    √ distributive
        b. La délégué a   beaucoup salué de militants
              the delegate has a-lot   salute of militants
              'The delegate greeted many militants'
                    * collective
                    √ distributive
              'The delegate greeted many militants'

8.3. Differences between Split MPs / Quantification at a Distance and Basque Non-agreeing Quantifiers

Despite the common features of the Basque agreement alternation and the split quantification cases, the Basque non-agreeing quantifiers show important differences with regard to both split MPs and Quantification at a Distance. First, Basque non-agreeing quantifiers differ from Split-MP cases in that cardinal quantifiers in Basque do not show the same alternation: cardinals always agree in number in Basque (cf. (3) and (56) below).

(56)   Hiru lagun etorri dira/*da
        three friend come aux-pl/*aux-sg
        'Three friends came'

Then, non-agreeing quantifiers differ from Quantification at a Distance, which only affects incremental themes (Tenny 1994), in that the phenomenon extends to all arguments of the verb: transitive subjects (57a), indirect objects (57b) and objects (57c).

(57)   a. Azkenean gazte askok   altxatu behar izan zuen harria

finally   young many-erg   lift   must have aux stone-D
'Finally, many youngsters had to lift the stone'
b. Ugazabak langile askori   eskatu dio   aparteko orduak egiteko
boss-erg   worker many-dat ask   aux-sg extra   hours do
'The boss asked many workers to work overtime'
c. Mirenek   liburu asko ikusi du   liburutegian
Miren-erg book   many see   aux-sg library-in
'Miren has seen many books in the library'

Finally, non-agreeing quantifiers differ from both split MPs and Quantification at a Distance cases in that the quantifiers are not adjuncts (or adverbs), unlike the floated quantifiers in Split-MPs and Quantification at a Distance (see Doetjes 1998 or Nakanishi 2007 for arguments in this regard). The sequence [Noun Phrase+Non-agreeing Quantifier] behaves as a constituent for all purposes. Non-agreeing quantifier phrases show morphological Case, and they condition the selection of the appropriate auxiliary (which varies depending on the intransitive, transitive or ditransitive status of the VP). Syntactically, the sequence behaves as a constituent, and splitting its terms is not possible under any circumstance. (58) gives an illustrative example:

(58)   a. * Ikasle gaur asko etorri da
            student today many came aux-sg
        b. * Ikasle gaur etorri da   asko
            student today came aux-sg many

A 'floating' or adverbial approach to the Basque cases therefore does not seem appropriate. We explore the possibility that predicate sensitivity in Basque is the result of a semantic mapping process affecting Measure Phrases in any position (see section 9).

8.4. A note on event-related readings (Krifka 1990)

The predicate-sensitivity of non-agreeing quantifiers in Basque led us to conclude that their measure function applies not only to their nominal restriction, but also to the verbal predicate. That is, that non-agreeing quantifiers in Basque quantify over both individuals and events. (38a, b), repeated below, give an intuitive paraphrase of the meaning we have in mind:

(38)   a. Ikasle asko etorri da gaur
            student many come is today
            'Many students came today'
        b. Ikasle etorrera   asko egon da gaur
            student come-Nom many been is today
            'There has been a lot of student-coming today'

The paraphrase in (38b) is reminiscent of what Krifka has called event-related readings. Event-related readings are illustrated in (59), from Krifka (1990):

(59)   Four thousand ships passed through the lock last year

The sentence in (59) is ambiguous between two different readings: in the first one, the number of different ships that passed through the lock last year amounts to four thousand. In

the other reading, it is the number of passing events that amounts to four thousand. The latter reading is still true even if less than four thousand different ships did the passing, and this is the case if there are ships that have passed through the lock more than one time a year. It is natural to ask whether the Basque agreement alternation is related to the ambiguity above. The analogy would go in the following sense: we have shown that non-agreeing quantifiers are predicate-sensitive, and this follows if non-agreeing quantifiers quantify over events. We would therefore expect that event-related readings would correspond only to those cases where weak quantifiers do not agree in number with the verb. This is not the case: first, cardinal quantifiers do not enter the alternation (they always agree in plural). On the other hand, agreeing cardinal quantifiers give rise to event-related readings, as shown in (60)

(60) 4000 itsasontzi sartu **dira** aurten   kanalean
      4000 ship   got-into aux-pl this-year lock-in
      '4000 thousand different ships entered the lock today' or
      'There have been 4000 thousand events of ship-passing this year'

This is the case for the rest of the agreeing weak quantifiers: all of them allow event-related readings:

(61) Untzi asko sartu   dira   gaur kanalean
      ship   many got-into aux-pl today lock-in
      'Many ships got into the lock today' or
      'There have been many events of ship-passing through the lock today'

The ambiguity therefore targets in the same way agreeing and non-agreeing quantifiers, and cannot be linked to non-agreeing cases.
Summarizing: we have seen the properties of non-agreeing quantifiers in Basque and its crosslinguistic connections. We have also seen that there are some clear and important differences between the Basque cases and the crosslinguistic connections (e.g. Split MPs in Japanese or German, French Quantification at a Distance). In what follows, first, we provide a semantic basis of the predicate sensitivity shown by Basque non-agreeing quantifiers (§9); and second, we propose a new syntactic analysis for nominal expressions in general and for Basque non-agreeing quantifiers in particular (§10).

9. A semantic approach to predicate sensitivity

9.1. Monotonicity in the nominal domain

It is known that measures (in general) show some semantic restrictions on the nominal expression:

(62) a. three litres of wine
      b. * three degrees of wine

According to Schwarzschild (2002, 2006) the relation between measure functions -*volume* in (62a) and *temperature* in (62b)- and measured nouns is not uniform and in order to create grammatical structures the measure function must be monotonic with respect to the noun it combines with.

(63) a measure funtion μ is monotonic relative to domain I iff:

(i)   there are two individuals x, y in I such that x is a proper subpart of y, and
(ii) $\mu(x) < \mu(y)$

As expressed in (63), being monotonic for a measure function means that it tracks the part-whole structure of the denotation of the noun.[6] A common way to represent that nouns' denotations have part-whole structures is by means of a lattice structure (Link 1983).

(64) $x\cup_1 y\cup_1 z$

          $x\cup_1 y$ $x\cup_1 z$ $y\cup_1 z$

                  x   y   z
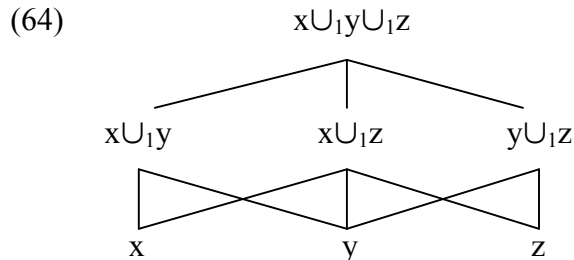
Now, Schwarzschild argues that if we assume this to be the structure of the denotation of a noun it is possible to explain the contrast in (62). The measure function Volume in (62a) is monotonic with respect to the noun *wine* because if a quantity of wine has a certain volume, then every proper subparts of it will have a lower volume, and superparts of it will have larger volumes. On the other hand, the measure function temperature in (62b) is non-monotonic with respect to the noun *wine* because if the wine has a certain temperature, it is not necessarily true that proper subparts of it will have a lower temperature and that superparts of it will have a higher temperature.

9.2. Monotonicity in the verbal domain

Basque non-agreeing quantifiers do not only show semantic restrictions on the nominal domain: as we have already seen they also show certain restrictions on the verbal domain, i.e. they are 'predicate sensitive'. Those constraints must at least include the impossibility of combining with (i) collective predicates (cf. section 5.2); (ii) Once-only predicates (cf. section 5.3); and (iii) predicates giving rise to categorical judgements (cf. section 6).

In order to account for these restrictions, we adopt the idea that predicates (as is the case for nouns) can also be represented by a part-whole structure (Nakanishi 2004, 2007). To do so, we assume that the denotation of a verb contains an event argument *e* (Davidson 1967) and that what a verb denotes can be expressed by a lattice of events, as in (63) (see Landman, 2000).

(63) $e_1\cup_E e_2\cup_E e_3$

          $e_1\cup_E e_2$ $e_1\cup_E e_3$ $e_2\cup_E e_3$

                  e_1 e_2 e_3

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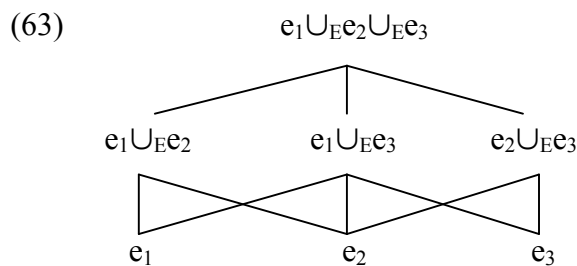
[6]   An alternative (and previous) formulation to the monotonicity constraint is the one proposed by Krifka (1989) where he argues that measure funtions must be extensive with respect to the noun. One of the requirements for extensivity is that the measure function be additive.
(i) μ is an extensive measure function for a given part structure iff:
        μ is additive: If $\neg x\otimes y$, then $\mu(x\oplus y) = \mu(x) + \mu(y)$
        [The sum of of the measure of non-overlapping elements is the measure of their sum]

Then, the measure function that applies to the VP will have to be monotonic with respect to the part-whole structure denoted by this VP.

(64)   a measure funtion μ is monotonic relative to domain E of events iff:
   (i)   there are two events e_1, e_2 in E such that e_1 is a proper subpart of e_2, and
   (ii) $μ(e_1) < μ(e_2)$

The monotonicity constraint in the verbal domain can explain why non-agreeing quantifiers can not combine with once-only predicates, with categorical predicates and with collective predicates (cf. sections 5, 6). Note that (i) once-only predicates do not denote part-whole structures since they make reference to a single event and something like *break the sand castle* will not have proper subparts of breaking the sand castle; (ii) categorical predicates, as opposed to thetic predicates, do not have an event variable, then these predicates will have no possibility to create a part-whole structure of events; (iii) collective predicates, as opposed to distributive ones, denote a single event, and again, there will be no part-whole structure of events. Now, if this is the case, non-agreeing quantifiers (being measure functions) will not be able to apply to these predicates in a monotonic fashion. This is the reason why non-agreeing quantifers will only be able to combine with predicates that denote a non-trivial part-whole structure. Basque agreeing weak quantifiers (which we argue not to be measure functions, see section 10) on the other hand can combine with any predicate because they show no restriction on the verbal domain and do not have to apply to predicates monotonically.

9.3. Homomorphism

As we just mentioned (cf. also section 7), non-agreeing quantifiers quantify over both nouns and verbs, but how can this property be explained? One possibility is to create a homomorphism function between individuals and events allowing measures to measure both. This homomorphism function is based on Krifka (1989), where he argues that temporal adverbials like *for an hour* in *John slept for an hour* can not directly measure the sleeping event because events have no measureable temporal extent. Instead, he argues that *for an hour* indirectly measures the sleeping event by measuring its run time, that is, he proposes a homomorphism function from events E to event run times T. What a homomorphism function does is preserve some structural relation defined on its domain in a similar relation defined in its range, as in $h(e_1 \cup_E e_2) = h(e_1) \cup_T h(e_2)$. Krifka claims that, given a measure function for run times and a homomorphism function from E to T, it is possible to build a derived measure function which will be used for a domain different from the original domain of application (i.e. a measure function that is for run times but is used to measure events). In (65), the measure function for events μ' is defined by μ and *h*: for all events, the amount of the event e measured by μ' in E equals the amount of *h*(e) measured by μ in T.

(65) $∀e [μ'(e) = μ(h(e))]$ (Krifka 1989: 97)

Nakanishi (2004, 2007) extends the homomorphism analisys proposed by Krifka for events to split-MP (cf. section 8.1). What we do here is somehow extend Nakanishi's analysis to Basque non-agreeing quantifiers which we argue are conceptually measures. Nakanishi argues that there is a homomorphism function from events in E denoted by the VP to individuals in I denoted by the NP. Then, given a measure function for individuals and a homomorphism function from E to I, it is possible to derive a measure function μ' for events.

If we take this proposal as correct, it would follow from here that Basque non-agreeing quantifiers could measure both individuals and events.

In (67), a measure function applies to individuals mapped from events by a homomorphism function h. Following (65), the derived measure function $\mu'(e)$ in (66) is equal to $\mu(h(e))$ in (67) (a measure function applying to individuals mapped from events). By mapping events to individuals and measuring the range of that mapping, Basque non-agreeing quantifiers will be able to measure at the same time individuals (since μ applies to the output of $h(e)$) and events (since the derived μ' applies to e). In this way, non-agreeing quantifiers indirectly measure events by measuring individuals.[7] This analysis captures the observation that a non-agreeing quantifier operates both on the VP denotation and on the denotation of the host NP, measuring individuals.

(66)   A measure function associated with non-agreeing quantifiers
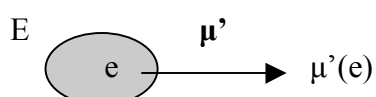
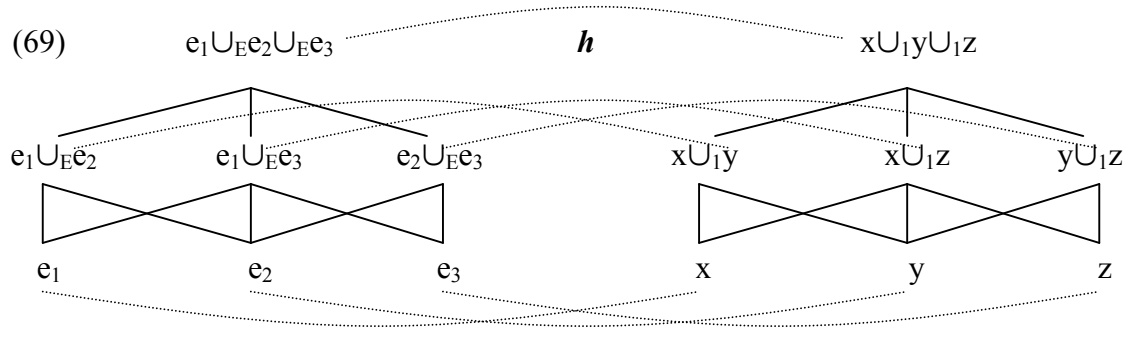(67)   A measure function associated with non-agreeing quantifiers
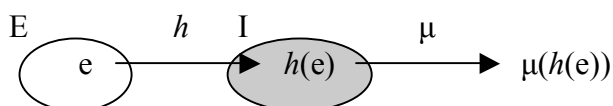
If this is correct, non-agreeing quantifiers will have to be monotonic relative, not to the part-whole structure of the VP only, but to the part-whole structure of a nominal domain mapped from a verbal domain. The incompatibility of non-agreeing quantifiers with once-only predicates and with categorical predicates can be explained as before: these predicates have no part-whole structure of events and as a consequence there will be no homomorphism function that can be applied to the domain of events. Now, we also know that non-agreeing quantifiers force distributive readings (see section 5).

(68)   Mutil askok   mahai bat egin zuen
        boy   MANY-erg table   one make aux.sg
        'Many boys made a table'
             * collective
             √ distributive

In order to obtain this distributive reading, let us suppose that a verb like *make a table* can be pluralized and can form a lattice of make-a-table events, if so, there can be a homomorphism from the event lattice to a lattice of boys (individuals) (cf. Nakanishi 2004, 2007). Note that a measure function can apply monotonically to the range of the homomorphism function, that

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[7]   The homomorphism function needs not be from events to individuals and could also be applied the other way around, that is, from individuals to events. This is actually what Filip (2006) does when analysing the Russian verbal prefix *na-* in its cumulative sense of approximately *a relatively large quantity (of)* and the attenuative/delimitative *po-*. It could be the case that the homomorphism function needed by Basque non-agreeing quantifiers in order to measure both individuals and events is implemented by homomorphically mapping the part-whole structure denoted by the NP to the part-whole structure denoted by the VP. Note in fact that non-agreeing quantifiers first apply to the NP they combine with and are not to be treated as adverbials (cf. section 8).

is, the lattice of boys, because the homomorphism function preserves the part-whole structure of the lattice of events.

(69) $\qquad e_1 \cup_E e_2 \cup_E e_3$ $\qquad\qquad\qquad\boldsymbol{h}$ $\qquad\qquad\qquad x \cup_1 y \cup_1 z$

$\qquad e_1 \cup_E e_2 \qquad e_1 \cup_E e_3 \qquad e_2 \cup_E e_3 \qquad\qquad x \cup_1 y \qquad x \cup_1 z \qquad y \cup_1 z$

$\qquad e_1 \qquad\qquad e_2 \qquad\qquad e_3 \qquad\qquad\qquad x \qquad\qquad y \qquad\qquad z$

Thus, in the distributive reading the non-agreeing quantifier in (68) measures events as *many* (assuming that $e_1 \cup_E e_2 \cup_E e_3$ are *many* events), and this is mapped into the individuals $x \cup_1 y \cup_1 z$. The individual $x \cup_1 y \cup_1 z$ consists of x, y, z, each of whom will be taken to be an agent of an atomic make-a-table event e_1, e_2, e_3.

On the other hand, the collective reading is ungrammatical due to the fact that there would only be a single make-a-table event e and the boys would also form a single agent. Then, there will be no possibility to apply a measure function monotonically because the single event will have no part-whole structure.

(70) $\qquad\qquad e$ $\qquad\qquad\qquad\qquad\qquad x \cup_1 y \cup_1 z$

9.4. Monotonicity on states

One of the restrictions shown by Basque non-agreeing quantifiers is that they cannot combine with Individual-Level predicates headed by the copula *izan* 'be' as the example in (71b) shows.

(71)   a. Ikasle asko altuak/argiak dira
           student many tall/smart   aux.pl
           'Many students are tall/smart'
       b. * Ikasle asko   altua/argia da
            student MANY tall/smart   aux.sg
            'Many students are tall/smart'

There is no problem with Stage-Level predicates (which are introduced by the locative copula *egon*) and both agreeing and non-agreeing Basque quantifiers are equally acceptable with them.

(72)   a. Ikasle asko gaiso(rik) daude   egunotan
           student many sick.part be.loc.pl day-these-in
           'Many students are sick these days'
       b. Ikasle asko   gaiso(rik) dago   egunotan
           student MANY sick.part   be.loc.sg day-these-in
           'Many students are sick these days'

As argued in section 6, the non-agreeing quantifiers therefore seem to discriminate between Stage-Level and Individual-Level predicates in that the latter can not combine with them.

However, other bona-fide Individual-Level predicates, such as *know, admire* or *love,* do admit non-agreeing quantifiers as their subject of predication, repeated from (37).

(73)   a. Sukaldari askok   ez daki   txokolatezko souffle onik egiten
          cook   MANY-erg neg know.sg chocolate   souffle good do-Nom-Loc
          'Many cooks do not know preparing a good chocolate soufflé'
       b. Ikasle askok   miresten du   kantari hori
          student MANY-erg admire   aux-sg singer that
          'Many students admire that singer'
       c. Gazte askok   maite du   zinema
          young MANY-erg love   aux-sg cinema
          'Many youngsters like movies'

We have argued in the previous section that Basque non-agreeing quantifiers quantify over both the nominal and the verbal domain and that in order to do so the part-whole structure denoted by the NP and the VP must be related by means of a homomorphism function (in order for the non-agreeing quantifier to apply monotonically). We have also argued that the reason why non-agreeing quantifiers do not combine with categorical predicates (headed by the copula *izan* 'be') is because they do not have an event argument from where a part-whole structure of events could be created. This is what makes them different from thetic predicates, which having an event argument can create a part-whole structure of events allowing their combination with non-agreeing quantifier.

Now, if categorical (and Individual Level) predicates have no event argument, they will be unable to create a part-whole event structure and as a consequence there will be no chance to create a homomorphism function between the part-whole structure of events and the part-whole structure denoted by the NP. This precludes measure functions from applying monotonically to categorical predicates. It follows from here that the sentences in (73) should be ungrammatical, but contra prediction they are good. This grammaticality can be explained, we think, assuming that these predicates, despite not having an event argument (i.e. they have no lattice of events), do have the possibility to create a lattice structure of some sort that allows a homomorphism function from the part-whole structure denoted by the IL predicate to the part-whole structure denoted by the NP.

But, what is the nature of the lattice structure that allows the homomorphism function with some Individual Level predicates? Adopting Kratzer's hypothesis (1989, 1995) that simple Individual-Level predicates headed by the copula *izan* 'be' in Basque lack a situation variable, we could argue that Individual Level predicates such as those in (73) have a *state* argument and that this argument permits the creation of a part-whole structure as expressed in (74). What this comes to mean is that while there appear to be minimal units of states of *knowing* (and their sums create bigger units $s_1 \cup_s s_2$, $s_1 \cup_s s_3$, $s_2 \cup_s s_3$, $s_1 \cup_s s_2 \cup_s s_3$) there are no minimal units of states (or events) of *being smart* (i.e. either you are smart or you are not).[8]

(74) $s_1 \cup_s s_2 \cup_s s_3$

 $s_1 \cup_s s_2$ $s_1 \cup_s s_3$ $s_2 \cup_s s_3$

---
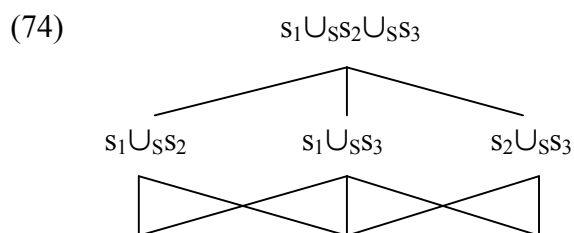
[8]   This goes against what Nakanishi (2007) proposes (cf. Nakanishi (2007, fn.13) because she does not accept but a lattice of events for IL predicates.

$$s_1 \qquad\qquad s_2 \qquad\qquad s_3$$

If IL predicates denote a lattice S of states, then it is possible to create a homomorphism relation between the lattice of states denoted by the VP and a lattice of individuals denoted by the NP where the individuals' lattice will be mapped from the states' lattice. As was the case with the homomorphism between events and individuals (see section 9.3), Basque non-agreeing quantifiers will be able to measure both individuals and states by measuring individuals mapped from states by a homomorphism function. In other words, non-agreeing quantifiers indirectly measure states by measuring individuals.

(75) a. A measure function associated with non-agreeing quantifiers

$$S \qquad\overset{\boldsymbol{\mu'}}{\underset{\displaystyle s}{\bigcirc}} \longrightarrow \mu'(s)$$
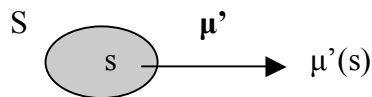
b. A measure function associated with non-agreeing quantifiers

$$E \qquad \underset{\displaystyle s}{\bigcirc} \overset{h}{\longrightarrow} \underset{\displaystyle h(s)}{\bigcirc} \overset{\mu}{\longrightarrow} \mu(h(s))$$
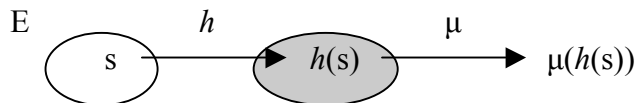
Since measure functions need to apply monotonically, non-agreeing quantifiers will have to be monotonic relative, not to the part-whole structure of the states denoted by VP only, but to the part-whole structure of a nominal domain mapped from a verbal domain.

10. Syntactic Structure

As we showed in section 7, the quantifiers entering into the agreement alternation seem to operate across a large class of domains. The set of domains that the relevant quantifiers operate on includes plurals nouns, with and without agreement:

(76) Plural agreement:
   a. Ikasle   asko   etorri dira gaur
      student many come are today
      'Many students came today'

   No agreement:
   b. Ikasle   asko   etorri da gaur
      student many come is today
      'Many students came today'

It also includes mass nouns:

(77) Jonek   garagardo asko edan du gaur
     Jon-erg beer   many drunk aux today
     'Jon drank a lot of beer today'

And it extends also to the verbal domain. They can be used as adverbial quantifiers:

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(78) Jonek   asko   dantzatu   du
      Jon-erg   many   danced   aux-sg
      'Jon danced a lot'

In the analysis that we propose next, we will leave this adverbial use apart and we will only concentrate on the nominal uses of these vague quantifiers.

Our analysis builds on Borer (2005) where it is argued that all nouns are unspecified for any properties (including the mass/count property) and that as a result of the absence of any grammatical specification and unless more syntactic structure is added, nouns denote masses (as the default case). In order to interact with the count system nouns' denotations need to be portioned-out. This portioning-out function is realized by means of a classifier, but classifiers, Borer argues, are not exclusive to languages like Chinese (which possess a complex classifier system) and can also be found in other languages. In English, for example, what accomplishes the portioning-out function will be the plural marker *-s*, which Borer takes to be playing exactly the same role as Chinese classifiers.

With all this in mind, the syntactic structure proposed by Borer for nominals is the one in (79): first we have a NP (which will be mass by default), above the NP we have the Classifier Phrase (ClP) where the portioning-out function takes place, dominating the ClP we have the Quantity Phrase or Number Phrase (NumP) which is responsible for the assignment of quantity to stuff (i.e. masses) or to divisions of it (i.e. where the counting occurs), and finally, above all, we have the DP projection.

(79)   a. [DP [NumberP [ClassifierP [NP]]]]

According to Borer, both ClP and NumP may be missing from the structure. When the ClP is absent, the noun is interpreted as mass. This is basically what we have in (79b) where we provide an example of the structure of a mass noun combined with a weak quantifier. So, we start with the NP *money*, since we want this NP be interpreted as a mass term, there will be no portioning-out function, that is, there will be no ClP present in the structure. Then, in order to quantify the stuff denoted by the NP *money* the NumP must be present and this is where the English quantifier *much* is placed. The same applies to the Chinese example *shenme qian* 'much money'.

(79)   b. Masses: [DP [NumberP much [~~ClassifierP~~ [NP money]]]]   (English)
                      [DP [NumberP shenme [~~ClassifierP~~ [NP qian]]]]   (Chinese)

In (79c) we have an example of a count term (combined with a weak quantifier); just because we want to interpret the noun as count, more structure than in (79b) will be needed. As was the case in (79b) with the noun *money*, we start with an NP *person* which is taken to be a mass term by default. However, in order to interact with the count system the NP needs to be portioned-out, i.e. we need a ClP present in the structure, and this portioning-out function is fulfilled by plural inflection *-s* in English. Once the stuff has been divided by the classifier, the portioned-out stuff can be counted, and this is exactly what the quantifiers *many* or *three* (and their Chinese counterparts) do in NumP position.

(79)   c. Counts: [DP [NumberP many/three [ClassifierP -s [NP person]]]]   (English)
                      [DP [NumberP san [ClassifierP ge [NP ren]]]]   (Chinese)

However, Borer's analysis faces some problem when we consider Basque data: it would make no difference between Basque agreeing and non-agreeing quantifiers and they would

both appear in NumP position (despite the clear and important differences existing between them). Furthermore, recall that among the Basque agreeing quantifiers we have numerals, and numerals always agree with the predicate in number as shown in (80), in opposition to what happens with vague quantifiers in Basque.

(80)   Hiru ikasle   berandu iritsi   dira/*da
        three student   late   arrive aux.pl/aux
        'Three students arrived late'

Thus, the same syntactic position, i.e. NumP, would be home for elements with very different properties: agreeing quantifiers, non-agreeing quantifiers and numerals.
We think, taking into account the differences between agreeing and non-agreeing quantifiers in Basque, we have evidence enough to conclude that agreeing quantifiers are counting quantifiers while non-agreeing quantifiers are measures (cf. section 7). What we propose then is that measures appear in a different syntactic position and that they head their own functional projection in the expanded structure of the Noun Phrase: the Measure Phrase (MP). As is expressed in (81), the MP is placed just in between the ClP (where division occurs) and the NumP (where counting occurs).

(81)   [DP [Number Phrase [**Measure Phrase** [Classifier Phrase [NP]]]]

Now, the division we do between the measuring field (in MP position) and the counting field (in NumP position) affects referentiality; in fact, we think that agreement and reference (i.e. establishing discourse variables and permitting enumeration) come once you reach NumP, not before that position, i.e. not in MP position. That referentiality comes once you get to NumP is borne out by anaphora cases as well as by the referential possibilities that agreeing and non-agreeing quantifiers show. We provide anaphora cases in (82): agreeing quantifiers create grammatical sentences and can be antecedent to anaphoras (in (82a)), something that is not allowed for non-agreeing quantifiers as the ungrammaticality of the example in (82b) clearly shows.

(82)   a. Ikasle$_i$ asko   presaka etorri dira,
            student many hurry-in come aux.pl
        eta _$_i$ mahaia altxatu ondoren _$_i$ alde egin dute
        and   table   lift   after   go do aux.pl
        'Many students came in a hurry, and after lifting the table he/she left.'
        b. * Ikasle$_i$ asko   presaka etorri da,
            student MANY hurry-in come aux.sg
        eta _$_i$ mahaia altxatu ondoren _$_i$ alde egin du
        and   table   lift   after   go do aux.sg
        'Many students came in a hurry, and after lifting the table he/she left.'

In (83a), we see that Basque agreeing quantifiers allow the enumeration of individuals, i.e. it is possible to make reference to the members of the set we are talking about. The enumeration of individuals denoted by the NP combined with non-agreeing quantifiers is not possible, (83b).

(83)   a. Politikari askok,   alegia A, B, C, D, ez dute   lotsik iritziz   aldatzeko
            politician many-erg that-is   neg aux.pl shame opinion change-fut
            'Many politicians, to name A, B, C, D, are not ashamed of changing their

opinion'

    b. * Politikari askok,   alegia A, B, C, D, ez du   lotsik iritziz aldatzeko
      politician MANY-erg that-is   neg aux.sg shame opinion change-fut
      'Many politicians, to name A, B, C, D, are not ashamed of changing his/her
      opinion'

Assuming the structure we propose in (81) as correct, let us see now how the different uses of a vague quantifier like asko 'many/much' would fit in this structure.[9] In combination with mass terms, the structure will be the one in (84). The noun *garagardo* 'beer' in (84) will be interpreted as a mass term due to the fact that there is no ClP in the structure, and hence, no portioning-out of the stuff. Above the NP we will have the MP, position where the vague quantifier *asko* will appear in this case, its function being that of measuring the quantity of beer.

(84)   **Mass nouns:**
    garagardo asko
    beer   much

    [… [$_{MP}$ asko [$_{NP}$ garagardo]]]

We have seen in initial sections that non-agreeing quantifiers need the NP they combine with to have atomic structure (cf. sections 3 and 4). It follows from here that non-agreeing quantifiers do not measure masses and therefore the portioning-out function is needed; in other words, the ClP must be present in the structure. We assume that there is a covert classifier head in Basque (represented as $\varnothing$ in (85)) that portions-out stuff.[10] According to Borer, once you portion-out stuff there is no other possibility but to count on it by means of a counter (numerals, quantifiers, etc.) which would appear in the NumP position. Basque non-agreeing quantifiers show that this is not necessarily so and that it is possible to not be in NumP position and still need the stuff be portioned-out in order to measure it. Furthermore, recall that once you reach NumP position is where referentiality and agreement appear, we argue, and Basque non-agreeing quantifiers do not show any of these properties (see examples (82-83)). Thus, the structure we propose for non-agreeing quantifiers is the one in (85): first we have the noun *ikasle* 'student' which enters the structure as a default mass term; it must be portioned-out in order to combine with non-agreeing quantifiers (which do not measure masses) which will be placed in MP position. It is exactly in the functional projection MP where the structure stops, going no higher than that (i.e. there will be neither

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[9]   Note that Basque is a head final language. However, for the structures that we will be proposing in this paper we leave aside directionality.

    Among authors defending the head final analysis (where the Specifier position is proposed to be always to the left of the head) see 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 contrary, Haddican (2001, 2004, 2005) suggests, following Kayne (1994), that Basque is a head initial language.

[10]   A question that comes to our mind is the following: Does Basque posses a plural marker that can portion-out stuff just like the plural marker -s does in English? The answer to the question is yes and no. Yes because Basque possesses a plural marker, realised morphologically as -*k*; and no because this plural marker is categorically and phonologically dependent on the D, that is to say, the plural marker never appears in Basque unless the D is present (see Etxeberria 2005, 2007). Furthermore, note that the plural marker -*k* does not appear with the weak quantifiers we are considering in this paper. If -*k* were behaving as a classifier (i.e. portioning-out stuff) it should have appeared with both agreeing and non-agreeing quantifiers, but it does not as shown by the examples used in the whole paper.

NumP nor DP projected).[11] The structure we propose for non-agreeing quantifiers in (85) is the one that allows the application of the homomorphism function permitting these elements measure individuals denoted by the NP and events/states denoted by the VP.

(85)   **Non-agreeing Qs:**
       ikasle   asko [-agr]
       student MANY

       [$_{MP}$ asko [$_{ClP}$ $\varnothing$ [$_{NP}$ ikasle]]] $\Rightarrow$ *homomorphism*

Finally, Basque agreeing quantifiers are considered simple counters and as a consequence they will appear in NumP position. Of course, these quantifiers quantify over portioned-out stuff and the presence of the ClP with a covert classifier head will also be necessary in these cases.[12] Thus, first in (86) we have the noun *ikasle* 'student' which as in (85) enters the structure as a default mass term; it must be portioned-out in order to combine with the counting system, hence the ClP is necessary. Above the ClP we will have NumP where the agreeing quantifier appears assigning quantity to the portioned-out stuff.

(86)   **Agreeing Qs:**
       ikasle   asko [+agr]
       student many

       [… [$_{NumP}$ asko [$_{ClP}$ $\varnothing$ [$_{NP}$ ikasle]]]

11. Conclusions

In this paper we have shown that non-agreeing quantifiers in Basque are conceptually measures. Furthermore, based on the differences between agreeing and non-agreeing quantifiers and observing that the latter do not behave as counters (i.e. they can not appear in NumP position) we have proposed a new syntactic structure for NPs (building on Borer, 2005) where measures head their own functional projection. This functional projection is placed in between the Classifier Phrase and the Number Phrase. We have also shown that non-agreeing quantifiers are sensitive to the nature of the predicates they associate to and that Measure Phrases seem to measure both individuals and events/states, as long as the latter denote non-trivial part-whole structures. The predicate sensitivity of measuring quantifiers has been explained using the monotonicity constraint (Schwarzschild, 2002) and a homomorphism function (Krifka, 1989; Nakanishi, 2004, 2007).

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[11]   Borer (2005: ch.4, ch.8) argues that measure expressions head a quantity phrase ($\approx$NumP) and that the DP fails to project resulting in the absence of referential reading. Similar claims are made by Ritter (1991) or Li (1998). See also Pereltsvaig (2006) where what she calls Small Nominals (pararell to Small Clauses) are argued not to project a whole DP (but a QP ($\approx$NumP)) and to lack individual reference. Basque non-agreeing quantifiers would show that reference appears once you reach NumP, not below, i.e. not in MP.

[12]   We think there's more structure above MP and above NumP in (84) and (86) respectively, and this is what makes both these structures different from the structure proposed for non-agreeing quantifiers in (85), which projects a MP but fails to project higher. However, we won't get into that in this paper; cf. Etxeberria & Etxepare (forthcoming).

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