# Contextual restriction and the arguments of quantificational determiners

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**Proposal.** Matthewson (2001) argues that quantification in natural language proceeds in two steps: first, a determiner (DET) creates a sum of type *e* out of the NP denotation; this object then serves as the argument of the quantificational determiner (Q-det) to form a generalized quantifier. In this paper, I consider this proposal, which challenges our standard view of quantification, and show that its central predictions are too strong. I then reconsider the facts that motivated it in the light of the hypothesis that what looks like *e*-formation is in fact an operation of contextual restriction. My proposal makes use of Westerstahl's (1984) idea that the definite article supplies a context set that restricts the denotation of a given NP. Given that natural language quantifiers are generally contextually restricted, the implication of this analysis is that languages vary with respect to whether they syntactically encode an operation of contextual restriction in the QP: languages of the St'át'imcets Salish (SS) type do, but languages of the English type don't (but may do so occasionally).

**Facts  and problems**. In SS, the structure of QPs looks like (1):

(1)   a     tákem [**i**      smelhmúlhats-**a**]
            all     DET    womam(PL)- DET
            all      the women
      b     [<sub>QP</sub> Q-DET [<sub>DP</sub>  DET [<sub>NP</sub> N]]]

All Q-dets in this language combine with a DP headed by the non-quantificational DET *i...a* (or *ti..a*  for singulars), which is definite or indefinite (e.g. *q'wez-ílc [**ti**-smúlhats-**a**]* '{The/a} woman danced'; Matthewson 2001: ex. (3a)). This DET is argued to function as an operator yielding an *e*-type plural individual, a function assigned otherwise to definite DETs. Based on the obligatoriness of the DP layer, Matthweson proposes (1b) as the structure of QPs in SS, and proceeds to make the stronger claim that this must be the way quantification is done crosslinguistically, thus challenging the view that Q-Dets combine with <e,t> arguments. In this general form, this proposal has a number of undesirable consequences. I summarize the major sets of problems below:

(a) Since the sum operator in English and the languages that look like it (other Germanic languages, Romance, Greek) is the definite article, it is predicted that Q-dets in these languages should be able to combine directly with definites. But, as is well known, this is not borne out: though *all*  (and *only)*  can combine with definites (see the English 1a), the bulk of Q-dets doesn't: *\*every the boy, \*most the boys, \*few the boys*. This fact remains unexplained;  and worse, we are forced to say that elements that we have reasons to believe are NOT determiners— like *all* (Brisson 1998) and *only* (von Fintel 1997, Herburger 2000)— actually exhibit the typical case, which is at best counterintuitive.

(b) Since Q-dets combine directly with *e*-objects, we are forced to treat partitive *of* as semantically vacuous (contra Ladusaw 1982); Matthewson argues that *of* is inserted only for case reasons. *Of*, however, can be optional: *all (of) the boys, half (of) the boys*, *both (of) the boys,* quite unexpectedly if it is there for case only. Moreover, we leave unaccounted for certain well-known facts about partitives (among others, contrasts like *half of the water* vs. *\*one of the water* (de Hoop 1997) which are not expected to exist).

(c) Non-partitive *all* and *most*, when construed with bare NPs, are predicted to be only kind-denoting, because it is only the kind that gives the right *e* input. Though this prediction seems to be supported by *all*, it breaks down in the case of *most*, which routinely admits episodic interpretations with bare NPs:

(2)　　a　　Most women at yesterday's meeting were professors.
　　　　b　　*All women at yesterday's meeting were professors.

Matthewson acknowledges the problem of episodic interpretation of *most*, which becomes more acute when we consider the respective Greek determiners: the definite DET *i* preceding the NP cannot be dropped with *oli* "all", but it can with *i perissoteri*, lit. **the.pl** more, 'most', allowing both generic and episodic interpretations in both cases (4):

(3)　　a　　*oli i fitites* 'all the students'; **oli fitites* 'all students'
　　　　b　　*i perissoteri i fitites* '*most the students'; *i perissoteri fitites* 'most students'
(4)　　a　　<u>I perissoteri (i) fitites</u> doulevoun sklira.
　　　　　　Most students work hard.　　　　　　　　　(generic)
　　　　b　　<u>I perissoteri (i) fitites</u> efigan noris.
　　　　　　Most students left early.　　　　　　　　　(episodic)

The crucial example is (4a): Greek and English *most students*/*i perissoteri fitites* are generic, but Greek, unlike English, does not allow generic bare plurals. This clearly questions Matthewson's prediction that languages lacking generic bare plurals should not be able to combine their *most* Q-dets with a bare plural.

(d) Rather than embedding a DP under Q-det, we seem to have evidence for the reverse: as shown by the Greek *i perissoteri* above, it is the DET that selects QP as its argument. Likewise with *o kathe,* lit. the.sg every, 'each', where it can be argued that the definite composes directly with the Q-det. Interestingly, *o kathe* is incompatible with a definite argument: **o kathe o fititis* '*each the student', although Greek allows definite reduplication (as is the case with (4)). I come back to these facts below.

**Alternative analysis**. I propose to treat the extra DET layer as encoding contextual restriction. Following Westerstahl, I assume that DET introduces a context set, so the created DP remains of type <e,t>, though now it refers to a contextually specified set of individuals— an outcome comparable to Chung and Ladusaw's (2003) RESTRICT:

(5)　　[[i... a]] = λP λx [P(x) & C(x)]

So, DET works like an intersective modifier. The fact that the output is <e,t> explains the lack of partitive *of* in Salish and it enables the classical analysis in (1a); we only need to say that contextualization is syntactic (via DET) in SS, but not in English or Greek.

If this proposal is correct, we can capture the link between the contextualization of the Q-det and the availability or not of a DP layer under it (points c, d above). The Greek facts that we noted follow easily: if contextualization happens at the Q-det level, no further definite is necessary; if, on the other hand, a Q-det is unrestricted, as is the case with *oli* 'all' (in Greek it also means 'whole'), it is the definite that achieves it. Crucially, the partitive *of* with *oli* is out: *??oli apo tus fitites* 'all (of) the students'. This fact is expected if the DP argument of *oli* is, as I argue here, a predicate and not an individual; and it can only be predicted by the meaningful *of* hypothesis, where *of* a type-shifter.