

Toward a Structural Account of Conservativity

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Abstract

In this paper I propose a structural account of conservativity, which derives it as a byproduct of the syntax-semantics interface. In this approach, the reason for the absence of non-conservative determiners from natural languages is that in entering chain relations in the syntax, they would either lead to trivial meanings (in a sense to be made precise) *or* to quantificational clauses truth-conditionally equivalent to ones created by regular conservative determiners. In the latter case, I will argue that they do in fact exist but they are undetectable. As for the former case, I will argue that they are excluded because they lead to triviality, either formulated in terms of a constraint against ‘pointless’ lexical items, or with a notion of logical triviality which leads to ungrammaticality (Gajewski, 2002). Finally, I will explore two possible principles that should be coupled with either of the two: (1) DPs always move (2) DPs should always be moveable and will give some arguments for adopting the first principle in (1).

1 Introduction

A standard way of thinking about the meaning of natural language determiners is as functions from sets to generalized quantifiers, type $\langle\langle e, t \rangle, \langle et, t \rangle\rangle$. Given the huge number of logically possible functions of this type (see discussion and proof in Keenan and Stavi (1986)), one of the aims in the semantics literature, since the introduction of Generalized Quantifier Theory in linguistics, has been defining precisely the range and the properties of those functions that can serve as possible semantic denotations for determiner expressions (Barwise and Cooper (1981), Keenan and Stavi (1986), Van Benthem (1983), Higginbotham and May (1981) among others)¹. Among the properties individuated, **Conservativity** is probably the most famous. Conservativity is a property of functions, which is intuitively based on the question of which individuals are relevant for truth conditions calculation. More precisely, the meaning of a determiner expression *dax* is conservative if and only if given two sets A, B as arguments, to check the truth conditions of $\llbracket \text{dax} \rrbracket(A)(B)$, only the individuals in A are relevant².

¹For Generalized Quantifier Theory see Mostowski (1957) and Lindstroem (1966).

²In the following I will sometimes use ‘determiner’ to indicate the function which serves as the denotation of the determiner expression and sometimes to refer to the expression itself. Where confusion

- (1) Martin Prinzhorn, Viola Schmitt and Sarah Zobel (eds.):
Proceedings of Sinn und Bedeutung 14, Vienna, pp. 373 – 387

CONSERVATIVITY = *def*
 A determiner D is *conservative* iff for all $A, B \subseteq E$:
 $D_E(A, B) \Leftrightarrow D_E(A, A \cap B)$

Sometimes an informal natural language version of the equivalence in (1) is given, as in (2-a) and (2-b).

- (2) a. Every elephant is gray \Leftrightarrow Every elephant is a gray elephant
 b. Most linguists are friendly \Leftrightarrow Most linguists are friendly linguists.

The observation that all English determiners exhibit this property, has led Keenan and Stavi (1986) to the conjecture of the universal in (3)³.

- (3) CONSERVATIVITY UNIVERSAL:
 Extensional determiners in all languages are always interpreted by *conservative* functions.

(3) is a robust and accepted generalization, which has persisted through the years, despite putative counterexamples. To my knowledge, conservativity still does not have a satisfactory and complete explanation, though there are suggestions on how to derive it in the literature, to which I won't be able to do justice here. Rather, in the following I will put forward a new proposal, based on the syntax-semantics interface. In this approach there is no direct ban on non-conservative determiners, in fact some of them are predicted to exist in natural language, though the claim is that we don't see them because the meanings they give rise to are indistinguishable from others obtained by regular conservative determiners.

2 A New structural account of Conservativity

2.1 The idea in informal terms

In the structural account of conservativity that I will propose here ('SC' henceforth), conservativity is not a direct constraint on the lexicon, rather it is a byproduct of the syntax/semantics interface. This approach is suggested in footnotes in Chierchia (1995)

could arise I will refer to the latter as 'determiner expression'.

³Barwise and Cooper (1981) have instead two stronger universals that entail this:

- (i) NP-Quantifier Universal: Every natural language has syntactic constituents (called noun-phrases) whose semantic function is to express generalized quantifiers over the domain of discourse.
 (ii) Determiner Universal: Every natural language contains basic expressions, (called determiners) whose semantic functions to assign to common count noun denotations (i.e., sets) *A a quantifier that lives on A* (Barwise and Cooper (1981:177))

See von Stechow and Matthewson (2008) for a discussion of these two universals.

and Fox (2002) and it is based on the assumption that there are contentful traces in the syntax. The gist of the idea is in (4), which I will call the Chierchia-Fox hypothesis:

- (4) CHIERCHIA-FOX HYPOTHESIS: If a non conservative determiner existed, it would always lead to a trivial meaning.

Below I will discuss the notion of triviality as ungrammaticality and will also present some counterexamples to (4) and consequently propose a modification of it. But first let's see the assumptions and some predictions of SC.

2.2 Some Assumptions on the interpretation of Chains

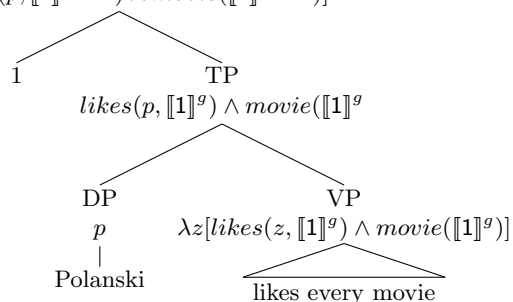
In the following I will assume a syntax semantics mapping that is based on a syntactic structure interpreted by the semantic component (Logical Form) where the (second) arguments and the scope of quantifiers can be determined by movement operations (see Heim and Kratzer (1998), Fox (2003) and Jacobson (2002) for discussions of the arguments and comparison with alternative approaches.). I will also crucially assume the Copy Theory of Movement (Chomsky (1993) and Chomsky (1995)) in which movement transformations are conceptualized just as a copying operation followed by phonological deletion. The copy theory has the advantages of eliminating traces and making movement a simpler operation (*merge*), but more importantly for us here, it opens new perspectives on how chains should be interpreted. In fact, in a framework with traces it was natural to interpret the trace of the moved item as a bare variable (Heim and Kratzer, 1998) and one could also stipulate that this is what happens to copies too, but there are more interesting options (see Fox (2003) for discussion).

For the sake of the discussion here, I will make some simplifications concerning the semantics for chains. So for a sentence like (5), I will not go into the internal composition of the VP and I will just assume the meaning for the entire VP as in (6).

- (5) Polanski likes every movie.

- (6) $[[\text{likes every movie}]^g] = \lambda z[\text{likes}(z, [\mathbf{1}]^g) \wedge \text{movie}([\mathbf{1}]^g)]$

- (7) $\lambda x[\text{likes}(p, [\mathbf{1}]^{g[x/1]}) \wedge \text{movie}([\mathbf{1}]^{g[x/1]})]$



So the meaning of the whole sentence would be ‘everything that is a movie is liked by

Polanski and it is a movie'. Which we can represent in predicate logic or in set notation as in (8-a) and (8-b) respectively.

- (8) a. $\forall x[\text{movie}(x) \rightarrow (\text{likes}(p, x) \wedge \text{movie}(x))]$
 b. $\{x : x \text{ is a movie}\} \subseteq \{\{y : y \text{ is liked by Polanski}\} \cap \{z : z \text{ is a movie}\}\}$

To be sure, SC is compatible with a class of semantics of chains, as long as somehow the NP part of the copies is interpreted at the tail and at the head of the chain. In Romoli (2009) I discuss different semantics of chains and their compatibility with SC, in particular, trace conversions (Fox (1999) and Fox (2003), Sauerland (2004)).

2.3 Predictions for non-conservative determiners

The Chierchia-Fox hypothesis is that if non conservative determiners existed, in entering chain relations, they would lead to trivial meanings. In order to test this prediction, consider some made-up non conservative determiners defined on the complement of the restrictors, let's call them *everynon*, *somenon* and *nonon*, the denotations of which are given in (9), (10) and (11)^{4,5}.

$$(9) \quad \begin{aligned} \llbracket \text{everynon} \rrbracket &= \lambda P \lambda Q [P^- \subseteq Q] = \\ &\lambda P \lambda Q \forall x [\neg P(x) \rightarrow Q(x)] \\ &= \lambda P \lambda Q \forall x [P(x) \vee Q(x)] \end{aligned}$$

$$(10) \quad \begin{aligned} \llbracket \text{somenon} \rrbracket &= \lambda P \lambda Q [(P^- \cap Q) \neq \emptyset] = \\ &\lambda P \lambda Q \exists x [\neg P(x) \wedge Q(x)] \end{aligned}$$

$$(11) \quad \begin{aligned} \llbracket \text{nonon} \rrbracket &= \lambda P \lambda Q [(P^- \cap Q) = \emptyset] = \\ &\lambda P \lambda Q \neg \exists x [\neg P(x) \wedge Q(x)] \end{aligned}$$

To illustrate these possible determiners at work, consider a sentence like (12) and a

⁴The former is used in Chierchia and McConnell-Ginet (2000), see also von Stechow (1994). Notice that these are not those cases of lexicalization gaps of the 'south east corner' of the square of oppositions for connectives and quantifiers as observed in Horn (1972) and Horn (1989). The case of the universal quantifier is usually called *notall* and has the definition in (i), which is perfectly conservative as shown by the equivalence in (ii):

$$(i) \quad \begin{aligned} \llbracket \text{everynon} \rrbracket &= \lambda P \lambda Q \neg \forall x [P(x) \rightarrow Q(x)] = \\ &\lambda P \lambda Q [\{P \cap Q^-\} \neq \emptyset] \end{aligned}$$

$$(ii) \quad \{P \cap Q^-\} = \emptyset \Leftrightarrow P \cap \{P \cap Q^-\} = \emptyset$$

For an explanation based on the notion of generalized scalar implicatures and markedness of negation see Horn's work cited above (see also Levinson (2000)). For a recent different interesting proposal within a system where logical operators are based on min and max operators see Katzir and Singh (2008). It is not clear to me whether there is a relation between the absence of lexicalization of operators of this sort and non-conservative ones and I will leave this topic for future research.

⁵For any set A, A⁻ is the complement of A, that is the domain D - A. Also, whenever possible I will give the meaning of quantifiers in predicate logic.

possible LF of it in (13), where the DP [everynon movie] has moved from its object's position.

(12) Polanski likes everynon movie

(13) [everynon movie] [λ_i [Polanski [likes [the movie] $_i$]]]

As is evident from the informal paraphrases given below, if we apply these meanings to the sentence above, the result is contradictory. The same result is obtained if we replace *everynon* with *somenon* and we obtain a tautological meaning instead if we replace it with *nonon*.

(14) a. $\forall x[\neg movie(x) \rightarrow (likes(p, x) \wedge movie(x))]$
 b. $\{x : x \text{ is not a movie}\} \subseteq \{\{y : polanski \text{ likes } y\} \cap \{z : z \text{ is a movie}\}\}$
 c. For everything x that is not a movie, Polanski like x and x is a movie.

(15) a. $\exists x[\neg movie(x) \wedge (likes(p, x) \wedge movie(x))]$
 b. $\{x : x \text{ is not a movie}\} \cap \{\{y : polanski \text{ likes } y\} \cap \{z : z \text{ is a movie}\}\} \neq \emptyset$
 c. There exists an x that is not a movie and Polanski likes x and x is a movie.

(16) a. $\neg \exists x[\neg movie(x) \wedge (likes(p, x) \wedge movie(x))]$
 b. $\{x : x \text{ is not a movie}\} \cap \{\{y : polanski \text{ likes } y\} \cap \{z : z \text{ is a movie}\}\} = \emptyset$
 c. It is not the case that there exists an x that is not a movie and Polanski likes x and x is a movie.

As we will see a similar result is obtained also for other made-up non conservative *determiners*. From now on, I will use a more schematic way to present the relevant cases, by inventing a symbol, the \Leftarrow , to mean something like 'equivalent once interpreted with the syntactic-semantic regime of SC'. So for instance *everynon* would be presented as follows, where in (a) there is the lexical meaning of the *determiner* and in (b) the output given the syntax-semantics assumed here.

(17) a. $\llbracket \text{everynon} \rrbracket = \lambda P \lambda Q [P^- \subseteq Q]$
 b. $\llbracket \text{everynon} \rrbracket (A, B) \Leftarrow A^- \subseteq (A \cap B)$

Similar cases of possible non-conservative determiners include the proper subset relation, which is non-conservative and which here would lead to quantificational clauses that are always false.

(18) a. $\llbracket \text{prosub} \rrbracket = \lambda P \lambda Q [P \subset Q]$
 b. $\llbracket \text{prosub} \rrbracket (A, B) \Leftarrow A \subset (A \cap B)$

Also the (non-conservative) superset or equal relation leads to a trivial (always true) meaning.

(19) a. $\llbracket \text{superseteq} \rrbracket = \lambda P \lambda Q [P \supseteq Q]$

$$\text{b. } \llbracket \text{superseteq} \rrbracket(A, B) \Leftrightarrow A \supseteq (A \cap B)$$

Notice that *Only* has been sometimes given the meaning of a non conservative *determiner* encoding the superset or equal relation as in (20) (see De Mey (1996) among others).

$$(20) \quad \llbracket \text{Only} \rrbracket = \lambda P \lambda Q [P \supseteq Q] \\ \lambda P \lambda Q \forall x [Q(x) \rightarrow P(x)]$$

The case of *only* is too complicated to be discussed here, and in the literature there are various arguments against the idea of treating it as a determiner with the analysis in (20) (see von Stechow (1999) and Ippolito (2008) among others for some discussion) I just wanted to point out that regardless of the analysis of *only* the superset or equal relation is a potential non-conservative *determiners* and it is predicted to lead to a trivial meaning in SC.

Summing up, what we have seen so far are cases of non-conservative determiners, which create trivial meanings if put in a chain with copies interpreted with direct restriction as above. In the following I will turn to more detailed predictions and implications of SC and in particular to the issue of triviality, of which SC makes crucial use.

3 On triviality

3.1 Which notion of triviality?

A necessary step for SC is to assume that words that lead to trivial meanings are banned. A constraint that excludes trivial meanings and triviality as ungrammaticality have been adopted in different linguistic domains (see among others Barwise and Cooper (1981), Chierchia (1984), Gajewski (2002), Fox and Hackl (2007)). One general issue for these proposals is how to distinguish these trivial meanings from other (at least apparent) contradictions and tautologies that are grammatical, like (21) and (22) for instance.

$$(21) \quad \text{War is war}$$

$$(22) \quad \text{He's an idiot and he isn't (Fox and Hackl, 2007)}$$

Also, more relevant for the discussion here is whether a constraint against trivial sentences would be enough for ruling out cases of possible non-conservative determiners. As for the first issue, I think there are at least two options: one is based on the observation that natural language does not seem to lexicalize completely pointless words. Consider as an analogy a word like *dax* that would mean 'it is both true and false'. It is reasonable to think that this is not attested crosslinguistically as a word, though it is conceivable that it could be lexicalized and it would be understood with no difficulties. So one idea would be that non-conservative determiners are pointless in the

same way, and one evidence in favor of this route is that one can introduce artificially non-conservative determiners in the language, as I did already and I will do again later below, and they seem understandable and usable in a different way than other expressions that are more clearly ungrammatical. For the purposes here an intuitive constraint against the lexicalization of pointless expressions might be enough⁶.

A second option is to adopt a more technical notion of triviality, linked to ungrammaticality (Gajewski, 2002). As mentioned above, the task for this kind of approach is to define a relevant subset of the trivial sentences and link that subset to ungrammaticality. Gajewski (2002) proposes to adopt an algorithm that takes LF structure and transform them by substituting all the non-logical constants with variables with different indices. The output obtained is checked by a semantic system in order to see whether it is trivial. If this system can compute triviality at that level, then the sentence is logically-trivial (always true/false only in virtue of its logical structure). The relevant question here is whether trivial outputs of sentences containing non conservative determiners are logically trivial in this sense.

(23) Polanski likes everynon movies

(24) [everynon movie] [λ_1 [Polanski like [everynon movie]₁]

The logical constants in this sentence is *everynon*. Crucially, we have to add an assumption about substitution of copies: I will assume that they are substituted in the logical skeleton by the same variable.

(25) [everynon NP_{1,<e,t>}] [λ_i [DP_{2,e} VP_{3,<e,<e,t>>} NP_{1,<e,t>}]

In this case the sentence would be indeed L-trivial as under every assignment $g, g(\text{NP}_{1,<e,t>})$ will always be the same. That is the system would be able to detect the triviality from the logical skeleton alone.

(26) $\forall z[\neg P_{1,<e,t>}(z) \rightarrow (R_{3,<e,<e,t>}(x_{2,e}, z) \wedge P_{1,<e,t>}(z))]$

So Gajewski (2002)'s account and the assumption that copies are substituted at the logical skeleton by the same variable, would work for cases as above.

(27) L-trivial meanings are ungrammatical

Still, as we will see now, in order to indirectly exclude non-conservative determiners, both (27) and the previous hypothesis, just ruling out pointless lexicalization, are not enough. In particular I can see two problems: one is DPs in subject positions and the other is a more specific case that could arise, if we allow late merger of relative clauses.

⁶Thanks to Noam Chomsky(p.c.) and Ede Zimmermann(p.c.) for independently pointing out this to me. Thanks to Noam Chomsky also for the example of 'it is both true and false'.

3.2 Two problems

3.2.1 DPs in subject positions

The first problem is constituted by DPs in subject position, which are normally assumed to be interpreted in situ, at least in some cases, given that they are interpretable there. If this is the case, though, they would not create pointless or logically trivial meanings, as it is evident from the example below.

- (28) a. Everynon student smokes
 b. $\forall x[\neg student(x) \rightarrow smoke(x)]$

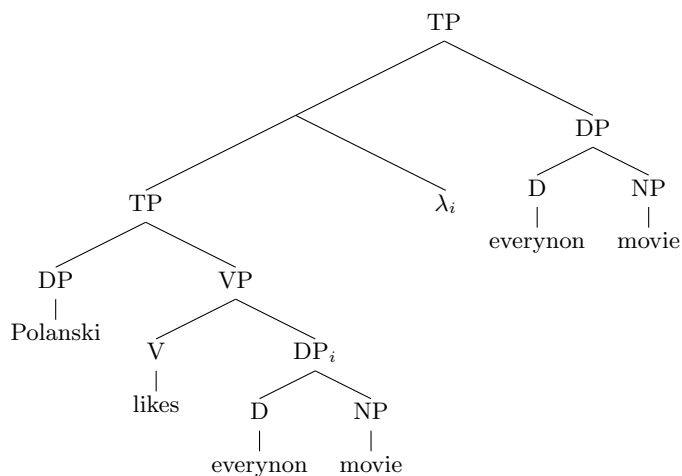
This is of course a consequence of the fact that the meanings of these non-conservative determiners are not trivial by themselves, but become trivial only under the particular transformation that the syntax-semantics assumed here leads to. In other words, if this transformation doesn't occur, the meanings are perfectly contingent, hence we are back to the situation in which it is not obvious why the determiner expressions encoding them should be excluded.

3.2.2 Late merge and non-conservativity

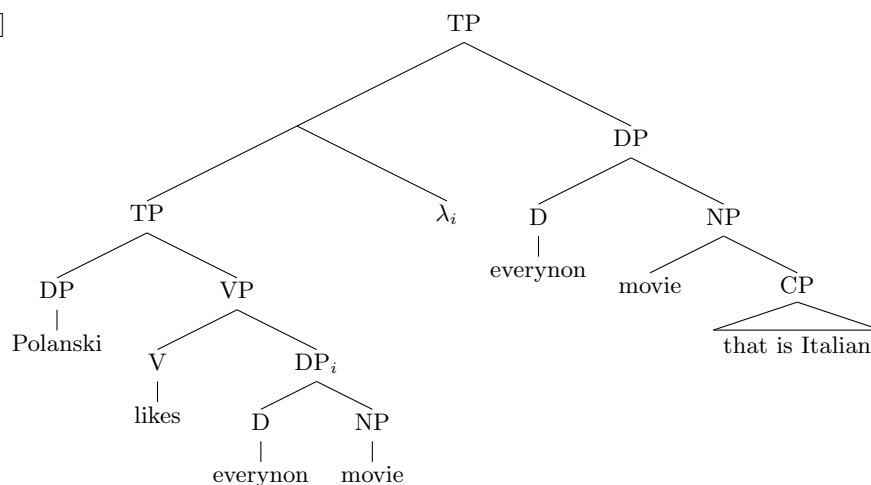
Another problematic prediction is made under some particular assumptions that allow late merge after QR, like in the account for adjunct-extraposition from NP by Fox and Nissenbaum (1999) or the one of Antecedent Contain Deletion by Fox (2002). In fact, in theory, we could create a case, like (29), where we first QR the non conservative DP *everynon movie* and then we late merge the relative clause *that is italian*.

- (29) Polanski likes everynon movie that is Italian.

- (30) a. [rightward QR]



b. [Late merge]



In fact, if we run the semantic computation on the LF thereby created, the output turns out to be non-trivial (something that we could paraphrase as: ‘for every thing that is not an Italian movie, Polanski likes it and it is a movie’)

$$(31) \quad \forall x[\neg(movie(x) \wedge italian(x)) \rightarrow (likes(p, x) \wedge movie(x))]$$

There are at least two possible responses to these problems and I will outline them below.

4 Responses

4.1 DPs always move

The first hypothesis is simply stipulating that DPs have to move in all cases (i.e. QR is obligatory - even if very short). As the reader can immediately see, this entails that DPs in subject position would not be a problem anymore. As for late merge, one can adopt the system of Fox (2000)’s, in which the output of every scope shifting operation must be checked by the semantic component. So the output of QR before late merge is checked by the semantic component. Building on Fox (2002)’s licensing condition of late merge if we add to the conditions of scope economy that the output should not be logically trivial, then the first step in the derivation in (27) above would be blocked and this could account for this type of potential counterexamples⁷.

4.2 DPs should always be moveable

The second possibility is that DPs should always be moveable, even if they don’t move in practice. The intuition behind this is that even if DPs are allowed not to move in some cases, they should always be ‘moveable’, because there are reasons for

⁷thanks to Danny Fox(p.c.) for pointing this out to me.

allowing them to move at least in some cases from every position (i.e. scope ambiguities resolution, binding pronouns, Antecedent Contained Deletion...). Let's state this with a principle along the following lines, (let's call the relevant syntactic relation: 'congruence' relation):

- (32) a. ban a structure Σ if it is congruent with Σ' , such that $\llbracket \Sigma' \rrbracket$ is logically-trivial:
 b. congruence: Σ is *congruent* with Σ' iff either (1) or (2):
 1. Σ' is identical to Σ
 2. Σ' can be derived by Σ by a single (permissible) application of movement.

As long as the structure in which they are is syntactically 'congruent' with another, the interpretation of which is trivial, then it is excluded. Both subject DPs and late merge would not be a problem anymore. The former is self evident, the latter also if one considers that once the relative clause is late merge, the entire DP is in a position in which it should be moveable again, but this is not the case, because it would lead to triviality, as the reader can verify.

5 Some potential counterexamples

5.1 Contingent non-conservative determiners

Recall that the prediction of the Chierchia-Fox hypothesis for non-conservative determiners is that they should always lead to triviality. So what we don't expect is to find cases of determiners that don't lead to triviality and that are also non-conservative. But indeed we do find such cases, consider the relation of larger cardinality, call the corresponding potential non conservative determiner 'Korgat' (I will give them monster names).

- (33) a. $\llbracket \text{Korgat} \rrbracket = \lambda P \lambda Q [|P| > |Q|]$
 b. $\llbracket \text{Korgat} \rrbracket(A, B) \Leftrightarrow |A| > |A \cap B|$

It is straightforward to show that $\llbracket \text{Korgat} \rrbracket$ is contingent:

1. if $A \subseteq B$
 - (a) then $(A \cap B)$ become simply A hence
 - (b) $|A| > |A \cap B|$ becomes $|A| > |A|$ which is always false
2. if $A \not\subseteq B$:
 - (a) then $(A \cap B)$ is either \emptyset or some non-empty proper subset of A itself.
 - i. in the first case $|A| > |A \cap B|$ becomes $|A| > 0$ which is true, if we assume that non-emptiness of the domain of quantification is provided independently.

ii. in the second case $|A| > |A \cap B|$ becomes always true, given that in this last case $A \cap B$ can only be a subset of A .

3. Hence we have cases in which $\llbracket \text{Korgat} \rrbracket$ is true and cases in which it is false, this it is contingent.

Also the identity relation, aka $\llbracket \text{Minulzur} \rrbracket$ gives the same problem:

$$(34) \quad \begin{array}{l} \text{a. } \llbracket \text{Minulzur} \rrbracket = \lambda P \lambda Q [|P| = |Q|] \\ \text{b. } \llbracket \text{Minulzur} \rrbracket(A, B) \Leftrightarrow |A| = |(A \cap B)| \end{array}$$

As shown below, $\llbracket \text{Minulzur} \rrbracket$ is contingent:

1. if $A \subseteq B$
 - (a) then $(A \cap B)$ become simply A hence
 - (b) $|A| = |A \cap B|$ becomes $|A| = |A|$ which is always true
2. if $A \not\subseteq B$
 - (a) then $(A \cap B)$ is either \emptyset or some non-empty proper subset of A itself.
 - (b) in both cases $|A| = |A \cap B|$, which is false, provided again an independent condition that prevents emptiness of the domain of quantification.
3. So, also for $\llbracket \text{Milnuzur} \rrbracket$ we have contingency

Consider $\llbracket \text{Zeesnook} \rrbracket$, which relates two sets with identity directly, or $\llbracket \text{Sakalthor} \rrbracket$, which is the superset relation. As the reader can verify, they both lead to contingent meanings (the latter for instance is always true, unless $A \subseteq B$, then $A \supset (A \cap B)$ becomes $A \supset A$).

$$(35) \quad \begin{array}{l} \text{a. } \llbracket \text{Zeesnook} \rrbracket = \lambda P \lambda Q [P = Q] \\ \text{b. } \llbracket \text{Zeesnook} \rrbracket(A, B) \Leftrightarrow A = (A \cap B) \end{array}$$

$$(36) \quad \begin{array}{l} \text{a. } \llbracket \text{Sakalthor} \rrbracket = \lambda P \lambda Q [P \supset Q] \\ \text{b. } \llbracket \text{Sakalthor} \rrbracket(A, B) = A \supset (A \cap B) \end{array}$$

Other minor variations, lead to contingency, like $\llbracket \text{Balkumagan} \rrbracket$ expressing the the first set is empty or $\llbracket \text{Glusterhap} \rrbracket$ relating the two cardinalities of the arguments to the same number:

$$(37) \quad \begin{array}{l} \text{a. } \llbracket \text{Balkumagan} \rrbracket = \lambda P \lambda Q [P \cup Q = Q] \\ \text{b. } \llbracket \text{Balkumagan} \rrbracket(A, B) \Leftrightarrow A \cup (A \cap B) = (A \cap B) \\ \quad \quad \quad A = (A \cap B) \end{array}$$

$$(38) \quad \begin{array}{l} \text{a. } \llbracket \text{Glusterhap} \rrbracket = \lambda P \lambda Q [|P| = 3 \wedge |Q| = 3] \\ \text{b. } \llbracket \text{Glusterhap} \rrbracket(A, B) \Leftrightarrow |A| = 3 \wedge |(A \cap B)| = 3 \end{array}$$

Summing up, there are cases of potential determiners that have non-conservative meanings but that do not lead to trivial structure (in the sense above).

6 The response: they do exist!

If we look at the meanings above, it turns out that the truth-conditions of all of them correspond to the ones of existing determiners. In fact, $\llbracket \text{korgat} \rrbracket$, once fed the appropriate argument, is equivalent to *not every*: always true, unless $A \subseteq B$.

$$(39) \quad \llbracket \text{korgat} \rrbracket(A, B) \Leftrightarrow |A| > |A \cap B| = \\ (A \not\subseteq B)$$

Similarly, the other cases either correspond to the meaning of sentences created by *every* or *not every* or some numeral.

$$(40) \quad \llbracket \text{Minulzur} \rrbracket(A, B) \Leftrightarrow |A| = |(A \cap B)| \\ (A \subseteq B)$$

For instance when is $\llbracket \text{Minulzur} \rrbracket(A, B)$ true? only when $(A \cap B) = A$ and this is so when $A \subseteq B$. The same goes for the others.

$$(41) \quad \llbracket \text{Zeesnook} \rrbracket(A, B) \Leftrightarrow A = (A \cap B) = \\ A \subseteq B$$

$$(42) \quad \llbracket \text{Sakalthor} \rrbracket(A, B) = A \supset (A \cap B) = \\ (A \not\subseteq B)$$

$$(43) \quad \text{a. } \llbracket \text{Balkumagan} \rrbracket = \lambda P \lambda Q [P \cup Q = Q] \\ \text{b. } \llbracket \text{Balkumagan} \rrbracket(A, B) \Leftrightarrow A \cup (A \cap B) = (A \cap B) \\ A = (A \cap B) = \\ (A \subseteq B)$$

As for the case of the identity related to a number, it ends up being identical to the meaning of the numeral.

$$(44) \quad \llbracket \text{Glusterhap} \rrbracket(A, B) \Leftrightarrow |A| = 3 \wedge |(A \cap B)| = 3 \\ (A \subseteq B \ \& \ |A| = 3)$$

The moral is that they should not be excluded after all. In fact, as far as we can tell, these could be the meaning of *every* or *not every* or a numeral determiner, or in other words we could not distinguish them from the meaning of *every* and *not every* and numerals.

$$(45) \quad \llbracket \text{every} \rrbracket = \lambda P \lambda Q [P \subseteq Q]$$

The former do exist, while for the latter we can adopt a story along the lines of Horn (1989) that would account for his non-existence (see also Katzir and Singh (2008) and footnote 4 above). Summing up, it seems that the potential counterexamples could be explained away by showing that they are equivalent to the meaning of existing determiners. To put it differently, we could say that the Chierchia-Fox hypothesis was not completely correct, in fact it is not the case that if non-conservative determiners existed, they would always lead to triviality but rather it should be that if non-conservative determiners existed, they either lead to trivial meanings or to

contingent meaning that are equivalent to the ones obtained by some conservative determiners⁸.

6.1 But wait a minute! what if they don't move?

A remaining issue, though, is with one the two choices above (DPs always move or DPs should always be moveable). In fact if we decide not to enforce QR always, then in the cases where the monsters above are in subject position they should 'reveal their true nature'. That is to say, if they don't move they retain their non-conservative meaning, whereas if they do they 'become' conservative.

(46) $[[\text{Minulzur}]([\text{students}])([\text{smoke}]])$

(47) a. $|\{x : x \text{ is a student}\}| = |\{y : y \text{ is a smoker}\}|$
 b. $\{x : x \text{ is a student}\} \subseteq \{y : y \text{ is a smoker}\}$

(48) a. the cardinality of the set of students equals the one of the smokers.
 b. every student smokes.

The first option is of course excluded if we assume that QR is always obligatory. It seems then that we would have to assume that DPs always move after all. This would ensure that if non-conservative determiners existed, they would either lead to trivial meanings or to contingent one equivalent to ones obtained with conservative determiners.

Summing up: SC indirectly excludes non conservative determiners by a ban on structures mapped to logically-trivial meanings. It allows for a link between the constraint of 'conservativity' and the syntactic category of determiners, as it is crucially based on the syntax of DP movement. There are some counterexamples that can be solved if it is assumed that DPs always move. This route then requires finding some independent justification for triggering movement of DPs always.

7 Conclusion

In this paper I have developed and explored an account of conservativity based on the copy theory of movement following suggestions in Chierchia (1995), Fox (1999) and Fox (2002). The first idea, which I called the Chierchia-Fox hypothesis, is that non-conservative determiners do not exist because they would always lead to trivial meanings. I have also discussed the problems posed to such formulations by subject DPs and Late merge and I have proposed to either deal with them by saying that DPs always move or that DPs should always be moveable. Finally, I have discussed some potential counterexamples and shows that they can be dealt with if we choose the first option (QR is obligatory), in fact if they always move they become equivalent to meanings that are obtained with existent conservative determiners (namely *every* and *not every*). So SC is based on the idea that non-conservative determiners do not exist because in this syntactic-semantic system they would either always lead to trivial meanings or lead to contingent meanings that are equivalent to ones obtained by conservative existing determiners.

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