## Interpretation of a Focus Sensitive Determiner

Takuro Tanaka

The interpretation of sentences with the determiner many is sensitive to focus structure and depends on the context in which sentences are uttered. Compare (1) and (2).
(1) Many [GERMANS] ${ }_{\mathrm{F}}$ like driving a Toyota.
(2) Many Germans like driving a [TOYOTA $]_{\mathrm{F}}$.

First, let us consider (1), where Germans is focused. Suppose there is a discussion about the number of drivers of Toyota at the G8 (Group of Eight powers) meeting, and someone utters sentence (1). (1) has different truth values under different situations. (3) and (4) represent lists of the number of Toyota drivers according to nationalities in different situations. Suppose also, that no other information (such as the number of German BMW drivers) is available. Judging purely from this information, (1) is true under the situation (3), but false under (4).
(3) Japan(14million),Germany(13ml),U.S.A(10ml),UK(9ml),France(9ml),Italy(7ml),Canada(5ml),Russia(4ml)
(4) Japan(34million),Germany(13ml),U.S.A(10ml),UK(8ml),France( 2 ml ),Italy( 2 ml ),Canada( 1 ml ),Russia( 1 ml )

The point is that the truth values are different even though the number of German drivers of Toyota is the same in both situations: 13 million. Secondly, consider (2) where Toyota is focused. Suppose there is a meeting at a branch of Toyota in Germany, comparing the number of drivers of the top 6 rival motor companies. (5) and (6) are the lists of the number of German drivers according to makers. Again, suppose there is no other information available. (2) is false under the situation (5), but true under (6), even though, here again, the number of German drivers of Toyota is the same: 13 million.
(5) BMW(24milion), Volkswagen(21ml), Nissan(15ml), Ford(14ml), Toyota(13ml), Mazuda(8ml)
(6) BMW(14milion), Toyota(13ml), Volkswagen(9ml), Nissan( 6 ml ), Ford( 4 ml ), Mazuda( 8 ml )

In previous treatments, some strategies to interpret sentences with the determiner many have been suggested. These analyses can be sorted into four ways roughly.
(7) many $_{1}(\psi, \phi)$ is true iff $|\psi \cap \phi|>\rho$, where $\rho$ is "large." (cf. Partee 1988 a.o.)
(8) many $_{2}(\psi, \phi)$ is true iff $\frac{|\psi \cap \phi|}{|\psi|}>\rho$, where $\rho$ is "large." (cf. Partee 1988 a.o.)
(9) $\operatorname{many}_{3}(\psi, \phi)$ is true iff $\frac{|\psi \cap \phi|}{|\phi|}>\rho$, where $\rho$ is "large." (cf. Westerståhl 1985)
(10) many $_{4}(\psi, \phi)$ is true iff $\frac{|\psi \cap \phi|}{|\psi \cap \cup A|}>\rho$, where $\rho$ is "large" or $\frac{|\cup A \cap \phi|}{|\cup A|}$

$$
\text { where } \mathrm{A}=\left\{\psi^{\prime} \cap \phi^{\prime} \mid \psi^{\prime} \in \operatorname{ALT}(\psi) \& \phi^{\prime} \in \operatorname{ALT}(\phi)\right\} \quad(\text { cf. Cohen 2001) }
$$

These strategies, however, cannot explain the judgments of sentences in (1) and (2) under situations (3)-(6). First, (7) cannot explain why (1) is true in (3) and false in (4) when the number of German Toyota drivers is the same. Second, (8) predicts that you need to know the population of Germany, which is represented by $|\psi|$ to interpret (1). However, all you need to interpret (1) is the information available in (3) or (4). Third, interpretation (9) cannot explain why truth values of (1) in (3) and (4) are different either. (9) predicts that we need to know the number of all drivers of Toyota all over the world, which is represented by $|\phi|$, all you need to interpret (2) is the information available in (5) or (6). Even if we have the total number of Toyota drivers, (9) has a crucial problem; (9) predicts that truth values of (1) is the same in both situations (3) and (4) because the number of German drivers of Toyota $(|\phi \cap \psi|=13$ million) and the number of all Toyota drivers $(|\phi|=71$ million $)$ are the same, which is
not the case actually. Intuitively, the ratio (13/71) is interpreted as "large" in (3), but not in (4). (9) cannot explain such different interpretation. Fourth, (10) requires you to know the population of Germany, which corresponds to $|\psi \cap \cup A|$, and the number of all human beings, which corresponds to $|\cup A|$. The interpretation of (1) under (3) or (4), however, does not require such information. To make matters worse, this analysis cannot explain the interpretation of the sentence (11). (11) is false when the information in (3) or (4) is available to judge the sentence.
(11) Many [CANADIANS] $]_{F}$ like driving a Toyota.
(10) predicts that the sentence (11) is true if you know the population of Canada ( 31 million) and the number of all human ( 6 billion). This judgment is not compatible with our judgment.

I ague that a focused part of a sentence determines its set of alternatives. Following focus structure of Rooth (1992), we analyze a determiner many taking a context variable C. Then I show the appropriate truth condition of the sentences with many.

## Selected References

Barwise, J. and R. Cooper. 1981. Generalized Quantifiers and Natural Language. Linguistics and Philosophy 4, 159-219.
Cohen, A. 2001. Relative Reading of many, often, and Generics. Natural Language Semantics 9, 41-67.
Partee, B. H. 1988. Many Quantifiers. in J. Powers and K.de Jong eds. Proceedings of the fifth Eastern States Conference on Linguistics, pp383-402. The Ohio State University, Columbus.
Rooth, M. E. 1992. A Theory of Focus Interpretation. Natural Language Semantics 1, 75-116.
Westerståhl, D. 1985. Logical Constants in Quantifier Languages. Linguistics and Philosophy 8, 387-413.

