

Taking Exception to Quantified Statements

Stanley Peters
Stanford University

Dag Westerståhl
Gothenburg University

The standard view of exceptives (examples in (1), with truth conditions of the form (2))

- (1) a. Every professor except Susan approved.
 - b. I haven't met anyone except Susan and John.
 - c. No students except freshmen were invited.
- (2) $Exc(Q,C)(A,B)$

is that they are characterized by four conditions:

- (QC) Quantifier Condition: Q is either *every* or *no* (or a synonym)
(GC) Generality Claim: $Q(A-C, B)$
(IC) Inclusion Condition: $C \subseteq A$
(NC) Negation Condition: $Q(A \cap C, A-B)$

The standard view in effect defines (2) as the conjunction of the latter three conditions.

Von Stechow (1993) proposed to explain QC in view of GC, on the basis of a hypothesized minimality condition. Moltmann (1995) proposed an alternative explanation for QC in view of IC, on the basis of a hypothesized homogeneity condition.

In actuality, three of the four standardly accepted conditions, including QC and IC, are quite dubious on empirical grounds. Many exceptives violate IC, for instance:

- (3) a. No Bostonians except Deirdre's friends were at the party. Some of her New York friends were there too.
- b. No students except foreigners need apply in advance for the course. (N.B. (3b) does not entail that all foreigners are students.)

Generally the strongest inclusion condition satisfied by exceptives is:

- (IC') $A \cap C \neq \emptyset$

QC was observed to be violated in (4), by Hoeksema (1990) and von Stechow; and Garcia-Álvarez (2003) presented numerous counterexamples to QC, including those in (5).

- (4) a. Most of Mary's relatives were there. Except (for) her father, of course.
 - b. Except for assistant professors, most faculty members supported the dean.
- (5) a. Johnston noted that most dishwashers except very low-end models have a water-saving feature.
- b. ... redeemed by a strain of something feminine that most men except creative geniuses lack.
 - c. Kate is an actress who played many roles except that of a real woman.
 - d. Few people except director Frank Capra expected the 1946 film 'It's a Wonderful Life' to become a classic piece of Americana.

The correct quantifier constraint QC' must allow exceptives with *most*, *many*, and *few* as well as *every* and *no*.

NC is often violated as well, e.g., in

- (6) a. All dishwashers except very low-end models have a water-saving feature. In fact, a few of the low-end models have this feature as well.
- b. Harry has a strain of something feminine that most men except creative geniuses lack. Which is not to say, by the way, that all men who are creative geniuses possess it.

And (5d) violates even the weakest imaginable negation condition NC': $\neg Q(A,B)$. When one person, Frank Capra, is added to few other optimists, the total number of optimists is still few.

Exception Conservativity is a previously unnoticed and, it appears, fully general characteristic of exceptives.

(EXCCONSERV) Exception Conservativity: $Exc(Q,C)(A,B) \Leftrightarrow Exc(Q,A \cap C)(A,B)$

This principle is illustrated by the redundancy of the (b) sentences in (7)-(9), which are each equivalent to the corresponding (a) sentence.

- (7) a. No students except foreigners need visas.
- b. No students except foreign students need visas.
- (8) a. All logicians except Swedes know this.
- b. All logicians except Swedish logicians know this.
- (9) a. Most men except creative geniuses lack that feminine strain.
- b. Most men except male creative geniuses lack that feminine strain.

This highly natural principle does not seem to have any counterexamples at all. Indeed, for a conservative quantifier Q , how could the truth of a quantified claim be affected by exceptions lying outside the restriction on Q ? Nevertheless, the standard analysis of exceptives, which entails IC, is inconsistent with EXCCONSERV since e.g. the existence of Swedes who are not logicians makes (8a) false, according to the standard analysis, even if (8b) is true.

We offer a new analysis of exceptives which combines the Generality Claim with an Exception Claim, and which accounts for EXCCONSERV as well as solving the problems noted above.

First observe that exceptives concern violations of generalizations. Note that some but not all quantifiers express generalizations (e.g. *every*, *no*, *most*, *many*, *few* do). We do not yet have a characterization QC' of exactly which quantifiers do so.

Second observe that generalizations fall into two classes, positive and negative. *Every*, *most*, and *many* express positive generalizations; *no* and *few* express negative generalizations. For any type $\langle 1,1 \rangle$ quantifier Q of a natural language, whether $Q(A,B)$ holds or not depends on two sets: $A-B$ and $A \cap B$. Members of $A-B$ are potential exceptions to positive generalizations, and members of $A \cap B$ are potential exceptions to negative generalizations. So if Q expresses a positive generalization, let Q^{exc} be the set difference operation $-$; and if Q expresses a negative generalization, let Q^{exc} be \cap .

In terms of these concepts, we introduce strong and weak truth conditions for exceptive sentences. For any type $\langle 1,1 \rangle$ quantifier Q that expresses a generalization:

$$Exc_w(Q,C)(A,B) \Leftrightarrow Q(A-C,B) \ \& \ C \cap (A \ Q^{exc} \ B) \neq \emptyset$$

$$Exc_s(Q,C)(A,B) \Leftrightarrow Q(A-C,B) \ \& \ \emptyset \neq A \cap C \subseteq (A \ Q^{exc} \ B)$$

With these definitions, the following can be demonstrated.

Fact: $Exc_s(Q,C)(A,B)$ entails $Exc_w(Q,C)(A,B)$.

Fact: Both $Exc_w(Q,C)(A,B)$ and $Exc_s(Q,C)(A,B)$ satisfy EXCCONSERV.

Fact: Both $Exc_w(Q,C)(A,B)$ and $Exc_s(Q,C)(A,B)$ entail the correct Inclusion Condition IC' but not the incorrect one IC.

Fact: Neither $Exc_w(Q,C)(A,B)$ nor $Exc_s(Q,C)(A,B)$ entails either Negation Condition NC or NC'.

Fact: If C has exactly one member (as in (1a,b)), then $Exc_w(Q,C)(A,B) \Leftrightarrow Exc_s(Q,C)(A,B)$.

Fact: If Q is *every* or *no*, $Exc_s(Q,C)(A,B)$ is equivalent to the conjunction (GC & IC' & NC).

In actuality a more general analysis is needed for exceptives, since exceptions themselves can be described with a quantified noun phrase.

(10) All beach goers except a few enthusiastic swimmers were fully clothed.

Thus we want a definition of $Except(Q,Q')(A,B)$, where Q is a type $\langle 1,1 \rangle$ quantifier as before, but Q' is a type $\langle 1 \rangle$ quantifier rather than a subset of the universe. If there is a smallest set $W_{Q'}$ that Q' lives on, a strictly compositional definition can be given using an idea suggested by Moltmann among others.

$$Except_w(Q,Q')(A,B) \Leftrightarrow \exists X \subseteq W_{Q'} (Q'(A \cap X) \& Exc_w(Q,X)(A,B))$$

$$Except_s(Q,Q')(A,B) \Leftrightarrow \exists X \subseteq W_{Q'} (Q'(A \cap X) \& Exc_s(Q,X)(A,B))$$

Fact: If Q' is a proper name or a conjunction of names or a bare plural (interpreted universally, as above), $Except_i(Q,Q')(A,B) \Leftrightarrow Exc_i(Q,C)(A,B)$ where i is w or s , when C is the set of individuals named, or the set denoted by the common noun.

Furthermore, $Except_s(\text{all, a few enthusiastic swimmers})(\text{beach goers, fully clothed})$ arguably gives the correct truth conditions for sentence (10). This accords with the following (possibly pragmatic) principle.

(Strong Exceptions Principle) When putative exceptions are enumerated or explicitly quantified over, all of them are claimed to be exceptions, i.e. $Except_s$ is used.

We note, however, that it is not known whether $Except_w$ and $Except_s$ have a fully general, strictly compositional definition; nor, if so, what the definition is. For many Q' , no smallest set that Q' lives on exists, e.g. for *denumerably many primes*, as in:

(11) All odd numbers except denumerably many primes have property \mathcal{P} .

Nevertheless, this sentence and many similar ones have perfectly clear truth conditions, which complete definitions of $Except_s(Q,Q')(A,B)$, and possibly in some cases $Except_w(Q,Q')(A,B)$, need to provide.

Garcia-Álvarez, I. 2003 'Quantifiers in exceptive NPs' *WCCFL* 207-216.

Hoeksema, J. 1990 'Exploring exception phrases' *Proceedings of the Seventh Amsterdam Colloquium* 165-190.

Moltmann, F. 1995 'Exception sentences and polyadic quantification' *Linguistics and Philosophy* 18:223-80.

Peters, S. and D. Westerståhl 2006 *Quantifiers in Language and Logic*. Oxford University Press.

von Stechow, P. 1993 'Exceptive constructions' *Natural Language Semantics* 1:123-148.