Exemplification and Quantification

David Y. Oshima (Nagoya University)

Aim: Exemplificational phrases (ExPs) with *such ... as* (e.g., "such N's as X and Y", "N's such as X and Y") and their variants exhibit interesting interpretational behavior, which has largely been overlooked in the literature. In cases like (1a), a phrase of the form "N's such as X and Y" can be roughly paraphrased as "X and Y and (possibly) some other N's"; (1b) thus is a reasonable paraphrase of (1a).

(1) a. **Billionaires such as Buffett and Gates** came to the fund-raising party.
b. **Buffett and Gates, and possibly some other (comparable) billionaires,** came to the fund-raising party.

In cases like (2a), however, a paraphrase with *or* appears to be more appropriate.

(2) a. The president will be happy if **billionaires such as Buffett and Gates** come to the fund-raising party.
b. The president will be happy if **Buffett, Gates, or some other (comparable) billionaire**, comes to the fund-raising party.

Below are approximate and tentative logical representations of (1a) and (2a); this work discusses how truth conditions like these are derived:

(1a): $\exists P_{<\text{e,t}>}[P(\textbf{buffett}) \wedge P(\textbf{gates}) \wedge \forall x[P(x) \rightarrow [\textbf{billionaire}(x) \wedge \textbf{come-to-the-party}(x)]]]$
(There is some set of billionaires P such that (i) Buffett and Gates are members of P, and (ii) all members of P came to the party.)

(2a): $\exists P_{<\text{e,t}>}[P(\textbf{buffett}) \wedge P(\textbf{gates}) \wedge \forall x[P(x) \rightarrow [\textbf{billionaire}(x) \wedge [\textbf{come-to-the-party}(x) \rightarrow \textbf{happy}(\textbf{the-president})]]]]$
(There is some set of billionaires P such that (i) Buffett and Gates are members of P, and (ii) if a member of P comes to the party, then the president will be happy.)

Exceptional interpretational behavior of ExPs: The scopal properties of ExPs are different from those of (i) generalized quantifiers (GQs), (ii) specific indefinites, and (iii) kind-denoting bare plurals, which are prima facie candidates for the semantic category of ExPs. **ExPs contrast with GQs**, in that they can take scope over a scope island for GQs; compare (2a) with *The president will be happy if every billionaire comes to the fund-raising party*, which does not allow the interpretation that every billionaire is such that the president will be happy if he comes. **ExPs differ from specific indefinites** too, which are known to have "upward-unbounded existential scope" but "clause-bounded distributive scope" (e.g., Szabolcsi 2010:93); as illustrated in (3), a plural specific indefinite occurring in an *if*-clause cannot be distributed over the predicate of the main clause, while an ExP in the same environment can.

(3) The president will be happy if **two billionaires** come to the fund-raising party. (The two billionaires are Buffett and Gates.)
"Two billionaires are such that the president will be happy if {OKthey both/#either of them} come(s) to the party."

ExPs cannot be considered kind-denoting, either. One may hypothesize that, like the bare plural *billionaires* denotes the kind BILLIONAIRE, *billionaires such as Buffett and Gates* denotes (i) the kind BILLIONAIRE or (ii) a subkind of BILLIONAIRE whose instances include and are in some way comparable to Buffett and Gates (Buffett-Gates-class billionaires; BILLIONAIRE$_{\text{K-G}}$). Analyses along these lines, however, fail to predict that (4) entails that all of Buffett, Gates, and Walton came to the party. If the ExP in question denotes BILLIONAIRE or BILLIONAIRE$_{\text{K-G-W}}$, then (4) should mean that there is more than one instance of BILLIONAIRE$_{(\text{K-G-W})}$

that came to the party, so that Buffett's and Gates' coming should suffice to make it true.

(4) Billionaires such as Buffett, Gates, and Walton came to the fund-raising party.

Proposal: ExPs are special in that they can take the matrix distributive scope wherever they occur, whereas distributive scope is generally clause-bounded; observe, for example, that the conjoined NP in *The president will be happy if Buffett and Gates come to the fund-raising party* cannot take the matrix distributive scope. This property of ExPs, however, is shared by wh-phrases.

(5) a. **Which billionaires** did at least one student claim that the president invited _?
b. (exam question) The president will be happy if **which billionaires** come to the fund-raising party? Name two.

Another property shared by ExPs and wh-phrases is that they both allow a "partitive" interpretation, as in *Artists such as Nelson and Sosa painted this picture together* and *Who, together with Nelson, painted this picture?*.

I propose that "distribution" of ExPs, like that of *wh*-phrases, takes place at the level of illocutionary meaning, rather than within propositional content. In the literature, it is commonplace to consider that the meaning of utterances (root sentences) has two-part structure: (i) illocutionary operator (ASSERTION, QUESTION, etc.) + (ii) propositional content (e.g. Krifka 2011). In the case of assertions (statements), the propositional content is a proposition, as in (6b); in the case of questions, it is an open proposition (or alternatively, a set of propositions), as in (7b).

(6) a. Buffett came to the fund-raising party.
b. $\textbf{ASSERTION}(\lambda i[\textbf{come-to-the-party}_i(\textbf{buffett})])$
c. I hereby state that $\textbf{come-to-the-party}_{i0}(\textbf{buffett})$ = Truth, where i_0 is the world of evaluation.

(7) a. Which billionaires came to the fund-raising party?
b. $\textbf{QUESTION}(\lambda i[\lambda x \in \textbf{billionaire}_i[\textbf{come-to-the-party}_i(x)]])$
c. I hereby ask you to specify for which arguments the function:
$\lambda x \in \textbf{billionaire}_{i0}[\textbf{come-to-the-party}_{i0}(x)]$ yields Truth, where i_0 is the world of evaluation.

I hypothesize that the meaning of "exemplificational statements" like (1a) and (2a) involves the operator $\text{ASSERTION}_{\text{EX}}$, which is a variant of ASSERTION and takes two arguments: an open proposition and (a set of) examples.

(8) a. Billionaires such as Buffett and Gates came to the fund-raising party.
b. $\textbf{ASSERTION}_{\textbf{EX}}(\lambda i[\lambda x \in \textbf{billionaire}_i[\textbf{come-to-the-party}_i(x)]])(\{\textbf{buffett}, \textbf{gates}\})$
c. I hereby provide examples of arguments for which the function:
$\lambda x \in \textbf{billionaire}_{i0}[\textbf{come-to-the-party}_{i0}(x)]$ yields Truth, where i_0 is the world of evaluation; Buffett, Gates.

The suggested meaning of $\text{ASSERTION}_{\text{EX}}$ implies that it functions as a "global distributivity operator".

References: **Szabolcsi, Anna**. 2010. *Quantification*. Cambridge University Press; **Krifka, Manfred** 2011. Questions. In: K. von Heusinger *et al.* eds., *Semantics*, vol.2. de Gruyter.