Modeling quantification in event semantics: evidence from habituals

Sascha Alexeyenko
University of Göttingen

Introduction In semantic systems that take events to be a basic semantic type, several equally well established analyses of the semantics of quantificational DPs exist. On the one hand, QPs may be assumed to be of type $\langle et, t\rangle$ and to denote generalized quantifiers as in (1) (cf., e.g., Landman, 2000). In this case, both subjects and non-subjects alike must undergo QR to a position of type t (TP) for type reasons. On the other hand, QPs may also be assumed to be expressions of type $\langle\langle e, vt\rangle, vt\rangle$ that make reference both to 'ensemble' events and to sub-events and introduce an existential quantifier over sub-events in the scope of quantifiers over individuals as in (2) (cf., e.g., Schein, 1993; Ferreira, 2005). In this case, neither subjects nor non-subjects can undergo QR to TP, but they can be interpreted in situ or be optionally QRed to vP (position of type $\langle v, t\rangle$) for reasons of scope.

(1) $[\![\text{a cigarette}]\!] = \lambda P.\exists x[\textbf{cigarette}(x) \wedge P(x)]$

(2) $[\![\text{a cigarette}]\!] = \lambda P.\lambda e.\exists x[\textbf{cigarette}(x) \wedge \exists e'[e' \sqsubseteq e \wedge P(x)(e')]]$

Both analyses capture the fact that the event quantifier always takes scope under quantifiers over individuals ((3); cf. the Event Type Principle in Landman (2000)): due to obligatory QR to TP in the generalized quantifiers analysis and due to the presence of an existential quantifier over sub-events in the sub-events analysis. However, the latter analysis has also been argued to be able to account for some further data, viz. for adverbs qualifying ensemble events and for mixed cumulative/distributive readings (cf. Schein, 1993; Kratzer, 2002).

(3) John kissed every girl. $\forall x \gg \exists e$, $^*\exists e \gg \forall x$

So far, it was mainly cases involving a universal quantifier over individuals and an existential quantifier over events ($\forall x \gg \exists e$) that have been looked at when comparing the generalized quantifiers analysis and the sub-events analysis. The goal of this talk is a methodological comparison between these two analyses that has in its scope also cases with an existential quantifier over individuals and a universal/generic quantifier over events ($\exists x \gg \forall e$ or $\exists x \gg$ GENe). It will be shown that if these cases are considered, the sub-events analysis turns out to provide a better account also of the Event Type Principle.

Bare habituals and Q-adverbs The first crucial piece of data concerns the semantic behavior of indefinites in bare habituals and sentences containing adverbs of quantification, in particular the availability of their narrow scope. The semantics of habitual sentences like in (5) is usually assumed to contain the silent generic quantifier GEN (Krifka et al., 1995), an unpronounced counterpart of overt adverbs of quantification like *always* in (4). Being a quantifier, GEN is expected to enter into scopal relations with other quantifiers, as this is the case with *always* in (4), where both scope configurations are available (although only one of them is pragmatically felicitous). However, bare habituals like in (5) do not seem to allow for multiple scopally distinct readings: while the wide scope of the indefinite is pragmatically odd, the fact that the sentence in (5) is infelicitous altogether implies that the pragmatically fine narrow scope must be unavailable for some reason.

(4) John $\{$always$\}$ smokes a cigarette $\{$every morning$\}$. $\#\exists x \gg \forall e$, $\forall e \gg \exists x$

(5) #John smokes a cigarette. $\#\exists x \gg$ GENe, *GEN$e \gg \exists x$

The second important piece of data concerns the compatibility of habitual forms with adverbs of quantification: in languages which have specialized habitual tense forms, these forms can combine with Q-adverbs, as (6) shows for Hindi/Urdu (cf. also English *used to*).

(6) Raam (roz / *ek baar / *kal) sigret pii-taa thaa.
R. every_day one time yesterday cigarette drink-HAB be.PAST
'Ram smoked/would smoke (every day/*once/*yesterday).'

This fact suggests that bare habituals and sentences containing adverb(ial)s of quantification should receive a unified analysis. However, it is not immediately clear how to achieve this if both the habitual aspect and quantificational adverbials introduce event plurality.

Comparing the analyses If bare habituals are assumed to contain the silent generic quantifier GEN, as is often done (cf. Krifka et al., 1995), a unified analysis of habituals and sentences containing overt adverbs of quantification is not possible independently of whether the generalized quantifiers analysis or the sub-events analysis of QPs is adopted: in both cases there is too much event plurality in sentences with Q-adverbs. For this reason, I follow a non-quantificational analysis of habituals whereby a habitual sequence consists of a sum of (proper) part events that are its stages (Rimell, 2004; Ferreira, 2005; Boneh & Doron, 2013):

(7) $[\![\text{HAB}]\!] = \lambda P.\lambda t.\exists e[t \subseteq \tau(e) \wedge P(e) \wedge e = \sigma e'[\mathbf{stage}(e')(e)]]$

Given this semantics of HAB, both the generalized quantifiers analysis and the sub-events analysis successfully account for the obligatory wide scope of indefinites in bare habituals like (5): independently of whether the indefinite is QRed or not, the only interpretation that (5) receives is the one whereby the same cigarette is smoked in all sub-events (stages) of the habitual sum event, which accounts for pragmatic oddness.

But the two analyses yield different results for sentences with Q-adverb(ial)s like (4). The generalized quantifiers analysis produces the following semantics for (4) with *every morning*, which undergoes QR to TP along with the indefinite (things are entirely analogous with *always*, which I assume to be the spellout of 'all times'/'every time'):

(8) $\forall t[\mathbf{morning}(t) \rightarrow \exists x[\mathbf{cigarette}(x) \wedge \exists e[\mathbf{now} \subseteq \tau(e) \wedge e = \sigma e'[\mathbf{stage}(e')(e)] \wedge \mathbf{smoke}(x)(\mathbf{john})(e) \wedge \tau(e) \subseteq t]]]$

This semantics is problematic for at least three reasons: it implies that there is a habitual sequence of smoking events per morning; that the same cigarette is smoked in all sub-events of the habitual sequence; and that there is an *ongoing* smoking event per morning, but its run time is *included* in the morning. By contrast, the sub-events analysis produces the following semantics if *every morning* is QRed to vP over the indefinite:

(9) $\exists e[\mathbf{now} \subseteq \tau(e) \wedge e = \sigma e'[\mathbf{stage}(e')(e)] \wedge \forall t[\mathbf{morning}(t) \rightarrow \exists e'[e' \sqsubseteq e \wedge \exists x[\mathbf{cigarette}(x) \wedge \mathbf{smoke}(x)(\mathbf{john})(e')] \wedge \tau(e') \subseteq t]]]$

This yields the desired interpretation according to which a different cigarette is smoked in different sub-events of the habitual sequence. Moreover, the pragmatically odd inverse scope ($\exists x \gg \forall t$) can be derived as well if *every morning* is interpreted in situ.

Conclusions It has been shown that, within event semantics, the sub-events analysis, but not the generalized quantifiers analysis, is able to account for the interpretation of indefinites in bare habituals and sentences with Q-adverbs in a unified way, given that a non-

quantificational treatment of the habitual aspect is assumed. This is a further argument, in addition to the existing arguments from ensemble adverbs and mixed cumulative/distributive readings, in favor of a treatment of quantificational DPs that makes use of sub-events.

References

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