Quantification in event semantics: generalized quantifiers vs. sub-events

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Introduction In semantic systems that do not take events to be a basic semantic type, the interpretation and semantic behavior of quantificational DPs have been intensely studied and are comparably well understood. QPs are standardly assumed to denote generalized quantifiers, type $\langle et, t\rangle$, which implies an asymmetry between subjects and non-subjects: non-subjects produce a type clash in their base positions, which is usually circumvented by Quantifier Raising to a position of type t, typically S/IT/TP. Furthermore, it is Quantifier Raising that is also used to model quantifier scope ambiguities.

In event semantic frameworks, by contrast, not a single but several equally well established analyses of the semantics of QPs 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 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). 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 for reasons of scope.

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

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

Both analyses capture the fact that the event quantifier always takes scope under quantifiers over individuals (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 (Schein, 1993; Kratzer, 2000; but see Champollion, 2010). The goal of this talk is to show that there is also some data which the sub-events analysis has difficulties to account for (namely, data concerning the interpretation of indefinites in habituals) and to present an analysis of these data within the generalized quantifiers analysis.

Data The semantics of habitual sentences, such as in (4) and (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 (3). Being a quantifier, GEN is expected to enter into scopal relations with other quantifiers, and this is indeed the case 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 scope configuration in (5-a) is pragmatically odd, the fact that the sentence in (5) is infelicitous altogether implies that the pragmatically fine scope configuration in (5-b) must be unavailable for some reason.

(3) John $\{$always$\}$ smokes a cigarette $\{$every morning$\}$.

(4) John smokes a cigarette $\left\{\begin{array}{c}\text{when he is nervous}\\ \text{after dinner}\end{array}\right\}$.

(5) #John smokes a cigarette.

a. $\#\exists x \gg \text{GEN}e$ (pragmatics; cf. *John smokes a pipe*)

b. $^*\text{GEN}e \gg \exists x$ (unavailable since the sentence is #)

Now, it is exactly the scope configuration in (5-b), and only this scope configuration, that the sub-events analysis for *a cigarette* in (2) yields for the sentence in (5), which gets the following semantics:

(6) $[\![(5)]\!] = \underline{\text{GEN}e}[\mathbf{C}(e)][\mathbf{agent}(\mathbf{john})(e) \wedge \underline{\exists x}[\mathbf{cigarette}(x) \wedge \exists e'[e' \subseteq e \wedge \mathbf{smoke}(e') \wedge \mathbf{theme}(x)(e')]]]$

Thus, Schein's (1993) analysis of quantificational DPs in (2) generates the logical form for (5) that must be ruled out in some way, but fails to produce the logical form for the (pragmatically infelicitous) reading this sentence actually has. This can be remedied by assuming that there is something special about GEN in (5) as compared to (4), as has indeed been done in the literature: it can be assumed that (5) contains a non-quantificational generic operator introduced close to the verb (whence narrow scope) which is different from the generic quantifier in (4) (Rimell, 2004; Boneh & Doron, 2013) or it can be assumed that the generic quantifier in (5) is introduced by type-shifting and so has narrow scope (Cohen, 2013). In what follows, I will show however that the scope configurations available for (5) can be derived under the generalized quantifiers analysis of quantificational DPs without the need to assume multiple silent generic elements or type-shifting.

Analysis For bare habituals such as (5), I assume that they contain the standard aspectual head HAB, i.e. the habitual version of the imperfective, which introduces the generic quantifier GEN (Krifka et al., 1995), and the (semantically vacuous) present tense head PRES whose specifier position is occupied by the deictic pronoun NOW which refers to the utterance time **now** (von Stechow, 2009).

(7) $[\![\text{HAB}]\!] = \lambda P.\lambda t.\exists E[t \subseteq \tau(E) \wedge \text{GEN}e[e \subseteq E \wedge \mathbf{C}(e)][P(e)]]$

(8) $[\![\text{PRES}]\!] = \lambda P.\lambda t.P(t)$

Accordingly, (5) gets the structure in (9), which under the generalized quantifiers analysis of *a cigarette* is interpreted as in (10).

(9) $[_{\text{TP}}$ [a cigarette]$_1$ λ_1 $[_{\text{TP}}$ NOW PRES $[_{\text{AspP}}$ HAB $[_{\text{VoiceP}}$ John smoke $\text{t}_1]]]]$

(10) $\exists x[\mathbf{cigarette}(x) \wedge \exists E[\mathbf{now} \subseteq \tau(E) \wedge \text{GEN}e[e \subseteq E \wedge \mathbf{C}(e)][\mathbf{smoke}(e) \wedge \mathbf{agent}(\mathbf{j})(e) \wedge \mathbf{theme}(x)(e)]]]$

Since *a cigarette* is assumed to denote a generalized quantifier and thus *must* undergo QR to a position of type t (i.e., TP), whereas HAB, being an aspectual head, cannot be QRed, the (pragmatically odd) scope configuration in (10) is the only one we can get for (5), as desired.

For adverbs of quantification like in (3), I assume that they are merged in [Spec,TP], thus competing for the same position as NOW. Semantically, they are generalized quantifiers over times, as shown in (11) below for *every morning* (*always* being the spellout of 'all times'/'every time'). The aspectual head in sentences containing adverbs of quantification is a simple perfective head PFT, rather than HAB.

(11) $[\![\text{every morning}]\!] = \lambda P.\forall t[\mathbf{morning}(t) \rightarrow P(t)]$

(12) $[\![\text{PFT}]\!] = \lambda P.\lambda t.\exists e[\tau(e) \subseteq t \wedge P(e)]$

If *every morning* is interpreted in its base position in [Spec,TP], *a cigarette* takes scope over it and this results in the pragmatically odd reading similar to the one formalized in (10). However, unlike HAB, the QP *every morning* can also be QRed to take scope over *a cigarette* as shown in (13), yielding the pragmatically felicitous scope configuration in (14). Thus, again, all the readings available to (3) get accounted for.

(13) $[_{\text{TP}}$ [every morning]$_2$ λ_2 $[_{\text{TP}}$ [a cigarette]$_1$ λ_1 $[_{\text{TP}}$ t_2 PRES $[_{\text{AspP}}$ PFT $[_{\text{VoiceP}}$ John smoke $\text{t}_1]]]]]$

(14) $\forall t[\mathbf{morning}(t) \rightarrow \exists x[\mathbf{cigarette}(x) \wedge \exists e[\tau(e) \subseteq t \wedge \mathbf{smoke}(e) \wedge \mathbf{agent}(\mathbf{j})(e) \wedge \mathbf{theme}(x)(e)]]]$

Finally, for overt restrictors without an overt adverb of quantification such as in (4), I assume that they restrict a silent *always* as a default adverb of quantification (Lewis, 1975), which accounts for the fact that there are the same two scope configurations available in (4) as in (3), as desired. Thus, in sum, a restrictor can always stay unpronounced, an adverb of quantification can stay unpronounced if it's *always*, but *always* and its restrictor cannot both stay unpronounced, unless they are contextually licensed (e.g., if (5) is the answer to *What does John do after dinner?*). This excludes the possibility that bare habituals such as in (5) always contain a silent *always*, which would allow two scope configurations contrary to fact.

References

Boneh, N., & Doron, E. (2013). Hab and Gen in the expression of habituality. In A. Mari, C. Beyssade, & F. Del Prete (Eds.), *Genericity* (pp. 176–191). Oxford: Oxford University Press.
Cohen, A. (2013). No quantification without reinterpretation. In A. Mari, C. Beyssade, & F. Del Prete (Eds.), *Genericity* (pp. 334–351). Oxford: Oxford University Press.
Krifka, M., Pelletier, F., Carlson, G., ter Meulen, A., Link, G., & Chierchia, G. (1995). Genericity: An introduction. In G. Carlson & F. Pelletier (Eds.), *The generic book* (pp. 1–124). Chicago, IL: University of Chicago Press.
Landman, F. (2000). *Events and plurality: The Jerusalem lectures*. Dordrecht: Kluwer.

Rimell, L. (2004). Habitual sentences and generic quantification. In V. Chand, A. Kelleher, A. J. Rodríguez, & B. Schmeiser (Eds.), *Proceedings of the 23rd West Coast Conference on Formal Linguistics* (pp. 663–676). Somerville, MA: Cascadilla Press.

Schein, B. (1993). *Plurals and events*. Cambridge, MA: MIT Press.

von Stechow, A. (2009). Tenses in compositional semantics. In W. Klein & P. Li (Eds.), *The expression of time* (pp. 129–166). Berlin: Mouton de Gruyter.