The Habitual Imperfective and Evaluation Plurality

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Existing approaches to the semantics of the Habitual Imperfective (HabImpf) analyze it as involving either universal quantification over time intervals or situations (e.g. Bonomi 1997, Cipria & Roberts 2000, Deo 2009 a.o.) or existential quantification over non-atomic mereological sums of events (Ferreira 2005, 2016). This captures the intuition that HabImpf is used to convey the existence of a multiplicity or sequence of events. However, consider (1) from Russian, which involves an interaction between HabImpf and a quantificational adverb:

(1) Kogda Maša prijezžala v Moskvu, ona vsegda naveščala svoju mat'.
when Masha came.**IMPF**.PST in Moscow, she always visit.**IMPF**.PST her mother
'When Masha came to Moscow, she always visited her mother'.

This example allows for a *co-distributive interpretation* (cf. Sauerland 1994), where there is a multiplicity of events of Masha coming to Moscow and of her visiting her mother, and each event of Masha coming to Moscow is related to an event of her visiting her mother. To account for the fact that in examples like (1) the multiplicity condition associated with HabImpf doesn't apply with respect to each value of the event/situation variable bound by the adverb (i.e. (1) doesn't have to mean that on each relevant occasion Masha visited her mother multiple times), both Deo (2009) and Ferreira (2016) postulate that the HabImpf operator in the main clause scopes above the quantificational adverb. However, this solution fails to account for the imperfective marking on the verb in the restrictor *when*-clause: in this case the aspectual head cannot be plausibly analyzed as scoping above the quantificational adverb. In fact, both approaches only derive an interpretation for (1) on which *multiple events* of Masha coming to Moscow are related to single events of her visiting her mother.

The same problem arises in the following example, where imperfective marking occurs on both the main verb, and a verb inside a relative clause embedded inside the main clause subject:

(2) V etoj igre vsegda vyigryval tot, kto xodil pervym
in this game always win.IMPF.PST that who move.**IMPF**.PST first
'In this game the person who made the first move always won'.

Here, again, the imperfective operator inside the relative clause cannot be analyzed as scoping above the quantificational adverb, and both approaches described above derive the interpretation: 'For each relevant occasion, the person who made the first move *multiple times* won.' In fact, however, (2) is most naturally understood co-distributively: 'For each relevant occasion, the person who made the first move (once) won.'

The ability of HabImpf to be interpreted co-distributively in the scope and restrictor of quantificational adverbs is parallel to the phenomenon of dependent plurals in the nominal domain (cf. de Mey 1981, Zweig 2009, Minor 2017, a.o.):

(3) When John goes to large cities, he always stays at expensive hotels.

Sentence (3) is naturally interpreted as stating that on each relevant occasion where John goes *to a large city*, he stays at *an expensive hotel* (the same facts hold

for Russian). Minor (2017) argues that this type of interpretation can best be captured in a semantic framework that interprets expressions relative to sets of assignments, or *plural information states* (van den Berg 1994, 1996, Nouwen 2003, Brasoveanu 2007, 2008, a.o.). In this framework, quantificational adverbs like *always* introduce a plural information state where the values for the event variable are distributed across multiple assignments. The plural feature on the noun phrase is then interpreted as stating that the sum of values of the corresponding individual variable across the assignments in that plural info state is non-atomic. This can be referred to as *evaluation plurality* (cf. Henderson 2014).

This analysis can be extended to the semantics of HabImpf, accounting for co-distributive readings of examples like (1) and (2). Specifically, the adverb in (1) would introduce a plural info state *H*, as illustrated in Fig 1, where, h_1, h_2 ... are assignments, ε_1 and ε_2 are variables over events, e_{1i} is the value of ε_1 for the assignment h_i and e_{2i} is the value of ε_2 for the assignment h_i.

Fig. 1

Info state *H*	ε_1	ε_2
h_1	e_{11}	e_{21}
h_2	e_{12}	e_{22}
...	...	...

Moreover, e_{11}, e_{12} ... are events of Masha coming to Moscow, while e_{21}, e_{22} ... are events of Masha visiting her mother. Then, each value for ε_1 is related by the relevant contextually-dependent relation (cf. Rothstein 1995) to the corresponding value of ε_2. Given this plural info state, the habitual imperfective head inside the *when*-clause in (1) will have access to the whole set of coming-to-Moscow events. Then, building on Klein 1994, Kratzer 1998, Ferreira 2005, 2016, we can state the semantics of HabImpf as requiring for the sum of events *across the assignments* to be plural and for the temporal trace of that sum to include the reference time, i.e. $t_{ref} \subseteq \tau(e_{21} \oplus e_{22} \oplus \ldots)$.

However, HabImpf and the nominal plural exhibit contrasting properties when they occur in the scope or restrictor of singular quantificational DPs:

(4) Každyj student, kotoryj k nam obraščajetsja, polučaet pomošč
each student.SG who.SG to us contact.**IMP**.PRES receive.**IMP**.PRES help
'Every student who contacts us receives the necessary help.'

(5) Každyj student kotoryj nadel jarkie shapki, polučil prizy.
each student.SG who.SG put.om.PF.PAST bright hat.**PL** receive.PF.PAST prize.**PL**
'Each student who put on flashy hats received prizes.'

Sentence (4) can mean that generally, if a student contacts the speakers, (s)he receives help, i.e. each student can be related to one *contacting*-event and one *receiving*-event. Sentence (5), on the other hand, can only be interpreted as stating that each student who put on *multiple hats* received *multiple prizes*. Minor (2017) captures the latter fact by interpreting singular quantificational determiners like *each* as introducing distributivity across multiple info states, i.e. in (5) atomic *student*-individuals will be distributed as values of a variable across multiple info

states. The evaluation plurality condition associated with the plural DPs will then apply separately to each of these info states, deriving the fact that a co-distributive relation between the *student*-variable and the *hats*- and *prizes*-variables is blocked in (5).

We propose to capture the contrast between (4) and (5) by invoking the notion of *post-suppositions*, i.e. semantic conditions that are not evaluated relative to the current info state, but relative to a later info state that arises once all the at-issue content has been evaluated (Brasoveanu 2012, Henderson 2014). We follow Henderson (2014) in assuming that once all the at-issue conditions in the restrictor and scope of quantifiers like *each* are evaluated, the separate info states introduced by *each* are 'glued' back together into a single plural info state. Then, if the state-level plurality condition imposed by HabImpf is post-suppositional, it will apply to this later unified info state, accounting for the co-distributive interpretation of examples like (4).

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