Who and what do *who* and *what* range over cross-linguistically?

Dayal (1996) and others analyze *who* as number neutral. We show that Dayal's analysis cannot be maintained, and that *who* must be analyzed as ranging over generalized quantifiers (see also Spector 2008). Our main argument comes from the observation that even in languages such as Spanish that morphologically distinguish between *who*.SG and *who*.PL, questions with *who*.SG lack a global uniqueness presupposition. Furthermore we argue in the talk that if Dayal's number neutrality were correct for English, we would expect systems such as the Spanish one to be unlearnable.

Background on the UP: In English, singular *which*-questions carry a *Uniqueness Presupposition* (UP) (1), unlike *who*-questions (2). Dayal (1996) treats the UP as a reflex of the *Maximal Informativity Principle* (MIP): a question presupposes the existence of a unique, maximally-informative true answer. Furthermore, Dayal assumes that singular *which*-phrases range only over atomic individuals. Simplex, *wh*-expressions on the other hand range over both atomic and sum individuals. Assuming a Hamblin/Karttunen question semantics, if in w_1 both Harry and Sally voted for Trump, (1) has as true members of its denotation the propositions in $[\![(1)]\!]^{w_1}$, and (2) the propositions in $[\![(2)]\!]^{w_1}$. Only the answer set $[\![(2)]\!]^{w_1}$ satisfies the MIP.

Weak theory of plurality: Sauerland, Anderssen & Yatsushiro (2005) argue that the feature SING is presuppositional, whereas PLUR is semantically vacuous, in order to account for inclusive readings of plurals in DE contexts. The anti-singleton presupposition associated with plurals is derived via Heim's (1991) *Maximize Presupposition!* (MP!) principle. According to the weak theory of plurality, then, *who* is semantically plural. It carries no implicated anti-singleton presupposition since it has no singular alternative (unlike a plural *which* phrase).

Simplex *wh*-expressions cross-linguistically: Dayal's account of the UP and the weak theory of plurality make a straightforward prediction: in languages which distinguish between singular and plural *who*, a singular *who* question should carry a UP, and a plural *who* question should carry an implicated anti-singleton presupposition. We show that the first prediction but not the latter is false, here with data from Spanish and Hungarian. Our informants judge that questions with *who*.SG in both Spanish (3) and Hungarian (5) carry neither a UP nor an anti-singleton inference. Questions with *who*.PL on the other hand, in both Spanish (4) and Hungarian (6) are judged as carrying an anti-singleton inference.

Analysis: We reconcile this with the MIP *and* the weak theory of plurality by claiming that simplex *wh*-expression, but not *which*-phrases, can range over higher-order semantic objects (Spector 2008). We derive this without lexical ambiguity by claiming that *who* spells out the structure in (9). The restrictor of *who* is the domain of an arbitrary type σ. Features are defined recursively as in (8). When σ is e, SING ensures that *who* ranges over atomic individuals. When σ is $\langle et, t\rangle$, SING ensures that *who* ranges over sets of sets of atomic individuals. Q_{wh} is a type-flexible operator which takes a predicate and delivers a Cresti (1995) style *wh*-phrase denotation. In a world w_1, where Harry and Sally left, but Bill didn't, the denotation of ② *who left?* contains the true members in (10-②). Each member is a proposition of the form *that* Q *left*, where Q is a set of sets of atomic individuals. The MIP is satisfied by the highlighted proposition, predicting that *Harry and Sally* left is a felicitous answer to *who*.SG *left?*. The UP does not arise, but *who*.SG is still *semantically singular*, since features apply recursively. We maintain the MP! account of the anti-singleton presupposition for *who.PL*, by assuming that *who.PL* competes with the presuppositionally strongest meaning of *who.SG*, which we obtain when the type variable σ is e.

Conclusion: we account for an apparently problematic datapoint for both the weak theory of plurality, and the MIP, by proposing a new, decompositional account of simplex *wh*-expressions.

(1) Which philosopher voted for Trump?

a. Harry voted for Trump.

b. #Harry and Sally voted for Trump.

$[\![(1)]\!]^{w_1} = \left\{ \begin{array}{l} \text{H voted for Trump,} \\ \text{S voted for Trump} \\ \end{array} \right\}$

(2) Who voted for Trump?

a. Harry voted for Trump.

b. Harry and Sally voted for Trump.

$[\![(2)]\!]^{w_1} = \left\{ \begin{array}{l} \text{H voted for Trump,} \\ \text{S voted for Trump,} \\ \text{H} \oplus \text{S voted for Trump} \end{array} \right\}$

(3) *Quién se fue pronto?*
Who.SG REFL left early?

(4) *Quiénes se fueron pronto?*
Who.PL REFL left early?

(5) *Ki énekel?*
who.SG sing.3SG

(6) *Ki-k énekel-nek?*
who.PL sing.3PL

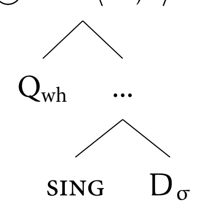
(7) $[\![Q_{wh}]\!] = \lambda X_{\sigma t}.\lambda f_{\langle\sigma,\langle st,t\rangle\rangle}.\lambda p_{st}.\exists x_\sigma[X(x) \land f(x)(p)]$ For any type σ

(8) **Recursive definition for features:** for any type σ

a. $[\![\text{SING}]\!](P_{et}) = \lambda x : \text{ATOM}(x).P(x)$

b. $[\![\text{SING}]\!](Q_{\sigma t}) = \lambda a_\sigma : \forall b_\sigma[Q(b) \rightarrow [\![\text{SING}]\!](b)].Q(a)$

(9) ① $\sigma = e$
② $\sigma = \langle et, t\rangle$



$= \begin{cases} ① \ \lambda f_{\langle e,\langle st,t\rangle\rangle}.\lambda p_{st}.\exists x_e[\\ \quad [\lambda x' : \text{ATOM}(x').x' \in D_e](x) \land f(x)(p)] \\ ② \ \lambda f_{\langle\langle et,t\rangle,\langle st,t\rangle\rangle}.\lambda p_{st}.\exists Q_{\langle et,t\rangle}[\\ \quad [\lambda Q' : \forall P[Q'(P) \rightarrow \forall x'[P(x') \rightarrow [\text{ATOM}(x')]]]]. \\ \quad Q' \in D_{\langle et,t\rangle}](Q) \land f(Q)(p)] \end{cases}$

(10) $[\![\text{who.SG left?}]\!] = \begin{cases} ① \ \lambda p.\exists x[p = \lambda w : \text{ATOM}(x).\text{left}_w(x)] \\ ② \ \lambda p.\exists Q[p = \lambda w : \forall P[Q(P) \rightarrow \forall x'[P(x') \rightarrow [\text{ATOM}(x')]]]].Q(\text{left}_w)] \end{cases}$

$[\![(10\text{-}②)]\!]^{w_1} = \{\ \lambda w.\text{leave}_w \in \{\{H, S\}, \{H\}, \{S\}\}, \lambda w.\mathbf{leave}_w \in \{\{\mathbf{H, S}\}\}, \ldots\ \}$

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