The Semantics of Hindi Multi-Head Correlatives

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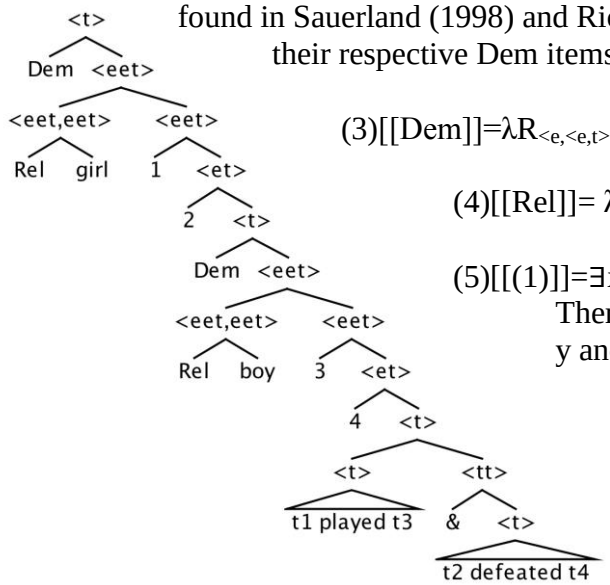
Introducing Hindi Correlatives: Correlatives are biclausal structures which consist of pairs of topic and comment clauses. (Bittner (2001)) The first of which is structured like a relative clause, while the other contains a demonstrative item that refers to what is described in the relative. In Hindi, there can be multi-head correlatives with several pairs of relative (Rel) and demonstrative (Dem) items (Bhatt (2003)). This seems to be a recursive process, as it allows for arbitrarily many pairs:

(1) [jis laRkii-ne jis laRke-ke saath khelaa] us-ne us-ko haraayaa
Rel1 girl-erg Rel2 boy with play Dem1 Dem2 defeated
(Which girl played with which boy, she defeated him)

(2) jo jise jisne se milata hai use usko usa naam batana hoga
Rel1 Rel2 Rel3 –SE introducing is Dem1 Dem2 Dem3 name tell must
(Who1 introduces who2 to whom3, he1 must tell him3 his2 name.)

There is a strict pattern of uniqueness, where a single-head correlative always refers to a unique entity, while one with three or more heads is such that the first one is universal, while the others are unique relative to the first one as noted in Brasoveanu (2008). To get the same uniqueness pattern for two heads, there are two restrictions noted in Gajewski (2008): The exhaustivity requirement is that for every member of the higher head, there must be a pairing with a member of the lower head. The uniqueness requirement is that there is exactly one such pairing for every member of the higher head. Semantically speaking, there are some noteworthy accounts of the phenomenon: Dayal (1991, 1995 & 1996) and Gajewski (2008).

Core Question: Can we explain multi-head correlatives without positing machinery specific to the phenomenon? Dayal's approach either needs quantifiers that are polyadic to a degree equal to the number of heads of the correlative (Dayal 1991) or an operator that typeshifts according to the number of heads (Dayal 1996) while Gajewski (2008)'s approach relies on two-place function application for it to work. My approach wants to provide a recursive method that makes it possible to handle an arbitrary number of heads and can be used for degrees and entities. Syntactically, I follow Bhatt (2003)'s account for Hindi correlative structures, but for the LF the Dem items move to a sentence initial position, keeping the order they are in at surface structure. Afterwards, the Rel items undergo parasitic movement (as found in Sauerland (1998) and Richards (1997) who calls it "tucking in") to their respective Dem items. This gives us the truth conditions in (5).



(3)[[Dem]]=$\lambda R_{<e,<e,t>>}$:∃!a[∀x,y[R(x)(y)∈{1,0}→y=a]].∃z[R(z)(z)]

(4)[[Rel]]= $\lambda P_{<e,t>}.\lambda Q_{<e,<e,t>>}.\lambda x.\ \lambda y.[P(y)\&Q(x)(y)]$

(5)[[(1)]]=∃x[girl(x)&∃y[boy(y)&play(x,y)&defeat(x,y)]]
There is a girl x and there is a boy y and x played y and x defeated y

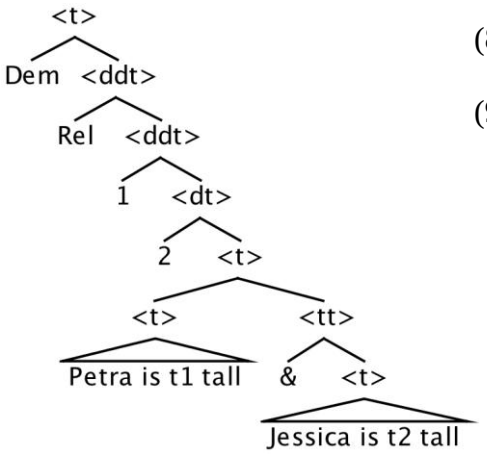
Parasitic movement moves an element in between another moved item and the binder that was generated by that movement. That way, the LF can end up with two moved items standing together, being followed by both binders.

To get the Universal/Unique reading in a structure with two or more heads, I roughly follow Brasoveanu (2008) in assuming that this happens through an operator that distributes over cases, making the uniqueness presupposition relative to a situation, thereby voiding it. This operator starts out adjoined to the IP above the correlative XP's adjunction site. From there, it gets raised to the topmost position in the LF, leaving behind a trace of type <s>, and a binder for it at the landing site. If we make these changes to the LF above, we get this:

(6)[[Dist]]= $\lambda p_{<s,t>}.\lambda s.\forall s'$[s' is relevant in s → p(s')]

(7)[[(1)]]= $\lambda w.\forall s$[s is relevant in w→$\exists x$[girl(x)&$\exists y$[boy(y)&play(x,y)in s & defeat(x,y)in s]]]
The set of all worlds such that for all worlds s that are relevant in w, there is a girl x and there is a boy y and x played y in s and x defeated y in s

Extending the Concept: With minimal modification, this approach is also able to handle other types of correlatives, for example degree correlatives. For this, the presupposition is unnecessary, which reduces Rel_{deg} down to its essence. As Rel_{deg} and Dem_{deg} are at deep structure in the position of a DegP, there is no need to combine $Reld_{deg}$ with property, as Rel does. As this is basically all that Rel does, we can assume that Rel_{deg} is semantically empty or at least redundant. The following example is not a multi-head correlative, but a single-head one. As the process is recursive, the exact same strategy can be used for multi-head ones, as seen above.



(8) [[Dem_{deg}]]=$\lambda R_{<d,<d,t>>}$. $\exists d$[d=max(λd.R(d)(d))]

(9) Petra jitni lambi hai, Jessica utni lambi hai.
Petra Rel tall is, Jessica Dem tall is.
('how tall Petra is, Jessica is that tall')

Conclusion: This approach covers single-head and multi-head correlatives using the same procedure and the same lexicon entries for the used elements, no matter how many heads, and employs only mechanisms that are also used elsewhere. I argue that this approach can therefore be considered more parsimonious than the existing approaches.

Selected References:
Bhatt, Rajesh (2003). "Locality in Correlatives", in Natural Language and Linguistic Theory 21, 485-541.
Dayal, Veneeta (1996). Locality in Wh Quantification: Questions and Relative Clauses in Hindi, Dordrecht: Kluwer.
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