Relational nouns and existential *have*
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In this paper, we propose a new view on relational nouns as starting life as type <e,t> instead of type <e,<e,t>>. We briefly motivate this view and argue that it allows for a simpler account for known observations about existential *have* as well as for observations that as yet have gone unnoticed and cannot be derived under current analyses (Partee 1999, Landman 2004, Saebo 2009).

1. A non-relational view on relational nouns

In the literature, it has become standard to assume that there are relational and non-relational nouns. This is typically implemented as distinguishing between nouns that are lexically of type <e,t> and those that are of type <e,<e,t>> (Löbner 1985). We maintain the assumption but implement it differently. Instead of assuming that nouns are relational in the lexicon, we assume they are uniformly of type <e,t>.

(1) $\lambda x(\text{hand}(x))$

We consequently don’t formalize relationality in the entry of the noun. Instead, we propose to formalize it at the level of the model in terms of meaning postulates. Admissible models for the interpretation of (1) would be those that obey the meaning postulate in (2):

(2) $\forall x(\text{hand}(x) > \exists y(H(y)(x)))$

where $H$ is the relation that holds between a hand and its inalienable possessor.

Note that – for *hand* – we don’t use standard implication but commonsense entailment (Asher & Morreau 1991). This means we allow for worlds with hands without possessors. We foresee that for nouns like *side* or *mother* we have to strengthen the commonsense entailment to standard implication. Given that this is an empirical question we’ll leave it aside.

The initial motivation for our analysis comes from four observations. First, if we take nouns to be uniformly of type <e,t>, we immediately derive the fact that relational nouns are in general unlike relational verbs in not requiring their internal argument to be realized. Second, several nouns that we don’t naturally associate with a relational interpretation pattern with relational nouns in contexts that are thought to be restricted to ‘lexical relational’ nouns like the complement position of post-nominal of: *the church of the monastery of Asteri* or *the cafe of the old harbor*. Our account allows us to give a unified analysis for both by resorting to meaning postulates. Third, relational nouns can be used without there being any possessor. The French sculptor Rodin e.g. made a number of sculptures that can readily be described as hands without them belonging to anyone. In order to derive the felicity of these descriptions, it doesn’t suffice to assume a detransitivization operation in which we existentially bind the possessor argument in the <e,<e,t>> interpretation of *hand*. This would still entail the existence of a possessor. On our treatment of *hand* the example follows straightforwardly. Fourth, relational interpretations require possessives as opposed to simple definites. To show this, we look at a language like French in which the definite article has been claimed not to be an obstacle for binding (Vergnaud & Zubizarreta 1991): *Jean a rencontré la mère* (‘John met the mother’) cannot mean that John met his own mother even though nothing should stop *John* from binding the relational argument of *mother*. The simplest account for this is that there is no relational argument and that possessives function as relation triggers.

An important feature of our take on relational nouns is that their relational component is not part of the lexical entry. This does not mean we cannot add it in the derivation. The operation that allows us to do that is the transitivization operation defined in (3):

(3) $\pi = \lambda P \lambda x \lambda y(\text{P}(y) \& \text{R}(x)(y))$

where $R$ is a free (pragmatically controlled) variable standing for a relation.
For relational nouns, R will by default be specified as the relation that is encoded in meaning postulates. For non-relational nouns, we follow Saebo (2009) in assuming that R will by default be specified as owned by or part of.

2. Existential have: challenge 1

In the literature on existential have with relational nouns, one of the challenges that has been at the forefront is that of compositionality. We illustrate on the basis of (4):

(4) John has a sister.

Under the standard assumptions that sister is of type <e,<e,t>>, the indefinite article of type <<e,t>>,<<e,t>>, and have of type <e,<e,t>>, it’s a mystery that (4) is typically interpreted as There is an individual who stands in the sister relation to John. The reason for this is that we would expect sister to combine first with John instead of with a and has.

Several solutions have been proposed for this compositionality puzzle. All proposals make sure that have does not constitute a boundary between John and sister. For a the proposals differ a bit more: Partee (1999) and Saebo (2009) assume there is abstraction over the possessor argument after a combines with sister. Landman on the other hand assumes indefinites are predicate modifiers. Our take on relational nouns allows us to maintain a GQT type for indefinites while at the same time avoiding abstraction.

We build on Landman (2004) for the semantics of existential have. We take it to select relations, taking over their semantics while applying existential closure to their internal argument. Its semantics is written out in (5):

(5) \[ [\text{have}] = \lambda R \lambda y \exists x (R(y)(x)) \]

The derivation we propose for (4) starts from an <e,t> interpretation of sister. There is no type mismatch to resolve when it combines with a and we consequently get (6):

(6) \[ [\text{a sister}] = \lambda P \exists x (\text{Sister}(x) \& P(x)) \]

We then combine have with a sister. In order for this combination to succeed, we first shift a sister to type <e,t> by applying BE and then apply \( \pi \) to the result. This leads to (7):

(7) \[ [\text{a sister}] = \lambda y \lambda x (\text{Sister}(x) \& S(y)(x)) \]

where S is the relation that holds between a sister x of y

When combining (7) with have, we obtain the result in (8) that can then be further combined with John, giving rise to (9):

(8) \[ [\text{have a sister}] = \lambda y \exists x (\text{Sister}(x) \& S(y)(x)) \]

(9) \[ [\text{John have a sister}] = \exists x (\text{Sister}(x) \& S(j)(x)) \]

As should be clear from the derivation, our take on relational nouns in which we put their relational component into meaning postulates offers a straightforward way around the compositionality challenge while maintaining a GQT analysis of a and avoiding abstraction.

3. Existential have: challenge 2

A second challenge that is addressed in the literature on existential have is that there is a definiteness restriction that surfaces when we combine have with relational nouns. Partee (1999) and Saebo (2009) derive it by covertly building the predicate exist into their analyses. Landman derives it as a constraint on predicate formation that he assumes is restricted to expressions that are generated at the type of predicates (<e,t>, <e,<e,t>>, …). We argue that the facts fall out naturally from our assumption that relational nouns are generated as type <e,t> and that their relational component is added on demand.

To set the stage we make a – to our knowledge – unobserved distinction between non-presuppositional definites (e.g. with only, see McNally 2008) that lead to felicitous utterances (see (10)) and presuppositional definites that lead to infelicitous utterances (see (11)):
(10) Mary probably had the only mother who didn’t want her daughter to go to college.
(11) ?John has the mother.

We note that this contrast poses a challenge for Landman (2004) who would have to assume that the only mother in (10) but not the mother in (11) is generated at type <e,t>. It however follows on Partee (1999) and Saebo (2009) in the sense that the covert exist in their analyses only rules out positive strong determiners. We argue that our analysis derives the same contrast but is less stipulative in the sense that we don’t have to make use of a covert exist.

Parallel to the analysis we proposed for (4) in (9), (12) gives the analysis for (10) where we assume the is realized as Partee’s (1987) THE (the quantificational version of the definite article). In (13) we do the same for (11) with the iota operator (the presuppositional version):

(12) \[ [\text{John has THE mother}] = \exists x (\text{mother}(x) \& \forall y (\text{mother}(y) \rightarrow y=x) \& R(j)(x)) \]
(13) \[ [\text{John has iota mother}] = \exists x (x=\iota y (\text{mother}(y)) \& R(j)(x)) \]

The difference between (12) and (13) is that the shift (Partee’s BE) that is required to apply the transitive operator to THE mother gets us back to the set of mothers – be it a set that is specified as a singleton. The shift required for iota mother (Partee’s IDENT) however does not get us back to the set of mothers but gets us to the set of individuals identical to the unique mother, a set for which no lexical item and no meaning postulate exists. We propose that – as a consequence – R can be set to relate (x) to (j) as a mother in (12) but not in (13). This means that mother in (12) will receive its standard relational reading whereas it can only get a pragmatically infelicitous owned by or part of interpretation in (13).

Under the independently needed assumption that definites can only get a non-presuppositional reading in special contexts (involving e.g. only) we derive the contrast between (10) and (11) without having to build in a covert exist.

4. Existential have : challenge 3

A new challenge we propose for previous analyses like Partee’s and Saebo’s is the following. (10) means that there’s only one mother who doesn’t want her daughter to go to college. This follows straightforwardly on our analysis (see (12)) but would be a mystery on an analysis in which we generate the mother of x and then apply quantifying-in. The only interpretation one would get on the latter analysis is that (10) is about the unique mother of Mary’s, allowing for there to be other mothers who think the same about their daughter.

5. Conclusion

In this paper we explored a non-relational view on relational nouns in which we assume they are generated at type <e,t> and can be enriched with a relational component based on meaning postulates. We showed how it offers the simplest and empirically most adequate analysis of existential have and can deal with data that – previously – were thought of in terms of lexical vs. derivational relations.

References