Different, *same* and their interaction with distributivity

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The adjectives *same* and *different* (**S** and **D** henceforth) can give rise to two readings shown in (1). Recently, two compositional analyses have been developed for the adjectives, one that focuses solely on bound readings Barker (2007), one in which the bound reading is derived from the discourse reading (Brasoveanu, 2008b). My talk points out empirical data that cause problems for both of these approaches and offers a novel account.

(1) Each boy likes a different girl.

a. *discourse reading:* there is some contextually salient girl and each boy likes a girl different from that one

b. *bound reading:* each boy likes a girl different from the girls that the other boys like

Data: To obtain the bound reading, the DPs *a* **D** *NP* or *the* **S** *NP* have to be in the scope of a DP referring to pluralities (hence, PlDP) as *each boy* in (1). In a questionnaire for Dutch conducted with my colleague we found out that the availability of the bound reading of *a* **D** *NP* depends on the type of PlDP in the following way ($\alpha > \beta$ means 'β is significantly less acceptable than α as PlDP that can give rise to the bound reading of *a* **D** *NP*'):

(2) $[_{DP}$each NP$]/[_{DP}$every NP$] > [_{DP}$all the NPs$] > [_{DP}$the NPs$]$

We found out that the same hierarchy holds for distributive readings, i.e. the distributive reading of *read a book* is acceptable with *each/every NP* as the subject, but is degraded with *all the NPs* as the subject, and is degraded even further with *the NPs* as the subject. The bound reading of *the* **S** *NP*, on the other hand, is accepted with plural definites, as well as with distributive quantifiers. I take the data to show that the bound reading of *a* **D** *NP* requires distributivity, unlike *the same NP*. This generalization does not follow from either of the previous compositional analyses of the adjectives. Barker (2007) makes the prediction that the bound readings should be impossible whenever distributivity is licensed. This is because in his account **D** and **S** take the plurality referred to by the PlDP as its argument and distribute over it, thus behaving as distributive operators on their own, which consequently makes the occurence of any other distributive operator impossible, at least when the operator would distribute down to singularities. In Brasoveanu (2008), distributivity is crucial to obtain the bound readings of **D** and **S** but this approach (correct for **D**) is achieved only at the cost of giving an idiosyncratic meaning to the distributive operator that makes incorrect predictions in other cases (it wrongly predicts that in *Each boy read a book. They each liked it* the second sentence could be understood as 'each boy liked the books that the other boys read'). Furthermore, something extra needs to be said for *the* **S** *NP*.

Analysis: I follow Brasoveanu (2008b) and capture the bound readings using compositional dynamic semantics with pluralities as developed in Berg (1996) and others since but avoid the problems of Brasoveanu (2008b). Propositions are updates on the set of variable assignments (notated as $S, S' \ldots$). A new plural referent in a proposition leads to an update in which each assignment gets a new variable whose value is one of the individuals of the plural referrent. For example, if we have a proposition that starts a discourse and introduces John and Bill, the updated set of variable assignments is $S = \{s_1, s_2\}$, where $s_1 = \{x \rightarrow John\}$, $s_2 = \{x \rightarrow Bill\}$. If the next proposition introduces Mary and Sue, the updated set of variable assignment is concatenation of S with $S' = \{s'_1, s'_2\}$, where $s'_1 = \{y \rightarrow Mary\}$, $s'_2 = \{y \rightarrow Sue\}$. Simplifying somewhat (see Brasoveanu, 2008a) I take concatenation to proceed in a pointwise manner, so we end up with $S'' = \{s''_1, \ldots s''_4\}$, where $s''_1 = \{x \rightarrow John, y \rightarrow Mary\}, \ldots s''_4 = \{x \rightarrow Bill, y \rightarrow Sue\}$. Assume that the next sentence is *They are sick*. *They* picks up the value of a particular variable, let us say, x. *Sick* checks that the predicate holds for x for each assignment. For an assignment s, the individual that s assigns to x is xs. Thus, we end up with $[\![\text{sick(they}_x)]\!] = \lambda S \lambda S'.S = S' \wedge \forall s \in S(sick(xs))$, i.e., each of John and

Bill are sick. *Different* in its discourse reading is then an adjective that picks up the values of a variable and states that the noun it modifies is different from that one. *Same* only differs from **D** in stating that the value of the variable and the noun are the same ($z = x$ instead of $z \cap x = \emptyset$ in (3)). (Square brackets contain a presupposition. For reasons that Px should be a presupposition, see Brasoveanu (2008b). The reason for treating Pz as a presupposition will be given in the talk.)

(3) $[\![\text{different}_z]\!] = \lambda P.\lambda x.[P(x) \wedge P(z)].z \cap x = \emptyset$

To account for distributivity, which I claim is necessary for the bound reading of **D**, I follow Nouwen (2007). The distributive operator (*Distr*) concatenates the original set of variable assignments with a new set. For each value d of the argument over which *Distr* distributes, the new set contains the assignments in which d is assigned. For example, let us have S as before, and a predicate *Distr like a girl*, distributed over x. We concatenate S with S', where $\forall d \in xS(S' = \{s \in S : xs = d\})$ (in this notation, $xS = \{xs : s \in S\}$). A new individual (*a girl*) leads to further concatenation of S' (with a set that has a variable y whose value is a girl) and, finally, the relation *like* must hold between d and y in S'. If this is true we end up with S'' where in each s x likes y. The set S'' gives us two kinds of information. First, what individuals are assigned to each variable. Second, the relation between the individuals. In our example, we still retain the information of who likes who. This is crucial for the analysis of **D**. Unlike Nouwen (2007) I assume that the set S'' (containing all the boys under x and all the girls under y in our example) is accessible still in the scope of *Distr* because sometimes we can see that a plural individual understood as the sum of singular individuals in scope of *Distr* can be referred to by a pronoun. In (4) *they* can refer to the set of chopsticks.

(4) Each of us put a chopstick on the table in such a way that they (=the chopsticks) formed a picture of a house.

The crucial assumption is that *different* can concatenate a set of variable assignments in a similar way as *Distr*. In particular, it concatenates the set with all the assignments different from those introduced by *Distr*. In (1) for each d of x *Distr* concatenates the original set with $S' = \{s \in S : xs = d\}$ and **D** concatenates it further with $S'' = \{s \in S : xs \neq d\}$. Since S'' retains relations between individuals S'' contains the set of girls that everyone else than d likes. Otherwise, **D** in its bound reading is exactly the same as in its discourse reading, but crucially, the variable z of (3) is the set of girls in S''. Similarly for **S**. Since this account requires the presence of *Distr* to get the bound reading (because the creation of S'' requires the comparison of the original set with the set of assignments created by *Distr*) the hierarchy in (2) for **D** is captured while we do not run into the problems of Brasoveanu (2008b) mentioned above. To explain why **S** is grammatical with any PlDP I further assume that **D** and **S** are ambiguous. The second meaning is what Carlson (1987) calls the 'various' reading (see Moltmann, 1992 for a similar idea). In the 'various' reading, **S** and **D** state that the the individuals newly introduced into the discourse are identical and different, respectively. Since this meaning does not require *Distr* **S** does not obey the hierarchy of (2). *A* **D** *NP* obeys it despite the ambiguity of **D** because the 'various' reading would lead to a conflict with a non-plural morphology: *a NP* introduces a set consisting of one individual while *different* in the 'various' reading states that this set consists of different individuals. The 'various' reading of **D** is available only to plural DPs. Consequently, the ambiguity account correctly predicts that **D** *NPs* should not obey the hierarchy in (2).

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