Further evidence for an HPSG-based theory of the semantics of 'different' and 'the same'

Shûichi Yatabe
University of Tokyo
shuichi_yatabe@yahoo.co.jp

1 Introduction

Yatabe (2021) presents a theory according to which one of the meanings of an adjective like *different* contains the meaning of a reciprocal pronoun inside it. In this theory, a sentence like (1) is associated with a semantic representation like (2) by mechanisms provided by HPSG and Minimal Recursion Semantics.

(1)   Anna and Bill like different films.

(2) a = Anna $\wedge$ b = Bill
       $\wedge$ some(X, X = {a, b},
                every(y, member_of(y, X),
                     some(z, and(film_or_films(z),
                               every(w, other(w, X, y),
                                    the(v, film_or_films(v) $\wedge$ like(w, v),
                                         different(z, v)))),
                     like(y, z))))

Lines 5–7 more or less correspond to the contribution that the adjective *different* makes to the meaning, and line 5 more or less corresponds to what I claim to be the reciprocal meaning contained in the meaning of *different*. As is standard in MRS representations, quantifier meanings are expressed by three-place predicates whose three arguments are the variable it binds, its restrictor, and its nuclear scope respectively. The predicate *member_of* is assumed to hold of its two arguments if and only if the denotation of the first argument is a member of the group denoted by the second argument. The predicate *other* is assumed to hold of its three arguments if and only if the denotation of the first argument is a member of the set denoted by the second argument other than the denotation of the third argument. (The symbol *and* represents conjunction that is expressed by an elementary predication whose RELN value is *and*, while the symbol "$\wedge$" represents conjunction that is expressed by a shared handle.) In this paper, I will refer to the analysis illustrated in (2) as the hidden-reciprocal analysis of internal readings.

At the same time, it is claimed in Yatabe (2021) that the apparent internal readings of sentences like (12) and (13) (on page 5) are licensed in a way that is entirely different from the way in which the internal readings of sentences like (1) are licensed. I will refer to this claim as the non-uniformity claim about apparent internal readings.

In this paper, I will present one additional piece of evidence for the hidden-reciprocal analysis of internal readings and one additional piece of evidence for the non-uniformity claim about apparent internal readings. I will mostly rely on Japanese examples because Japanese makes a morphological distinction between two meanings that are both expressed by *different* in English, a distinction that is made in languages like German as well, as documented in Beck (2000) and Brasoveanu (2011).

2 Distributed internal readings

First, consider the range of interpretations that a sentence like (3) can have.

(3)   [Gakusei-tachi ga]   [betsu-betsu no   hon o]   yonda.
      [students   NOM] [mutually different book ACC] read-PAST

      'The students read different books.'

When the sentence is presented without any context, the most salient reading is probably one in which it means "No two of the students read the same book or books". This, however, is not the only reading the sentence has. Suppose that a group consisting of 15 students had been divided into groups of three and had been told that they were not to read the same book or books as the other two in the same group. In such a context, (3) has a reading in which it is true if and only if each student obeyed the instruction and read a book or books different from each of the books read by the other two students in the same group. This is a reading in which the internal reading of the adjective *different* is required to hold, in a distributed way, in each of the subgroups that together constitute the group that the sentence is talking about. I will refer to a reading like this as a distributed internal reading.

The existence of distributed internal readings is predicted by the hidden-reciprocal analysis of internal readings. In order to see how, we first need to take a look at a certain type of interpretation that can be assigned to reciprocal pronouns. Consider the sentence in (4).

(4) [Gakusei-tachi ga] [otagai   no   kaado ni] sain shita.
     [students   NOM] [each other GEN card   DAT] sign do-PAST

     'The students signed each other's cards.'

Suppose that a group consisting of 15 students had been divided into groups of three and had been told to sign the cards of the two other students in the same group. In such a context, sentence (4) has a reading in which it is true if and only if each student signed the cards of the two other students in the same group. This is a reading embodying what Dalrymple et al. (1998) call Distributed Strong Reciprocity.

The theory presented in Yatabe (2021) does not take the existence of Distributed Strong Reciprocity into account, but we can easily rectify that shortcoming by modifying the assumption about the denotation of the predicate *other*, which is used in the semantic representations of adjectives like *different* and those of reciprocal pronouns. Suppose that the denotation of an elementary predication of the form "other(w, x, y)" is defined as in (5).

(5) a. If there is a contextually salient or easily inferable subdivision of the group denoted by x into subgroups, "other(w, x, y)" is true if and only if the denotation of w is (i) a member of the subgroup that the denotation of y belongs to and (ii) different from the denotation of y.
     b. If there is no such subdivision, "other(w, x, y)" is true if and only if the denotation of w is (i) a member of the group denoted by x and (ii) different from the denotation of y.

Given this definition, the semantic representation associated with sentence (4), shown in (6), expresses the meaning of Distributed Strong Reciprocity.

(6) the(X, students(X),
          every(y, member_of(y, X),
              every(w, other(w, X, y),
                  the(z, card_or_cards_of(z, w)
                      signed(y, z)))))

What I called a distributed internal reading above is the reading that results when the reciprocal meaning inside the meaning of *different* expresses Distributed Strong Reciprocity. Consider, for example, the semantic representation shown in (7), which is associated with sentence (3).

(7) the(X, students(X),
          every(y, member_of(y, X),
              some(z, and(book_or_books(z),
                  every(w, other(w, X, y),
                      the(v, book_or_books(v) $\wedge$ read(w, v),
                          different(z, v)))),
              read(y, z))))

When the predicate *other* in line 4 is interpreted the way described in (5a), this semantic representation expresses the distributed internal reading of the sentence.

The proposed theory makes correct predictions about the interpretation of sentences in which the antecedent of *different* is a quantified noun phrase as well. Consider (8) and (9), for example.

(8) [Hotondo no gakusei ga] [otagai   no kaado ni] sain shita.
    [most   student NOM] [each other GEN card   DAT] sign do-PAST

    'Most students signed each other's cards.'

(9) [Hotondo no gakusei ga] [betsu-betsu no   hon o]   yonda.
    [most   student NOM] [mutually different book ACC] read-PAST

    'Most students read different books.'

Since in this theory the quantifier meaning inside the reciprocal meaning is assumed to be copied from the antecedent of the reciprocal, these sentences are associated with the semantic representations shown in (10) and (11) respectively.

(10)   the(X, students(X),
            most(y, member_of(y, X),
                most(w, other(w, X, y),
                    the(z, card_or_cards_of(z, w)
                        signed(y, z)))))

(11)   the(X, students(X),
            most(y, member_of(y, X),
                some(z, and(book_or_books(z),
                        most(w, other(w, X, y),
                            the(v, book_or_books(v) $\land$ read(w, v),
                                different(z, v)))),
                    read(y, z))))

The predicate *most* in line 3 of (10) has been copied there from line 2, and the same predicate in line 4 of (11) has been copied there from line 2. Suppose that the sentences are both talking about a group consisting of 12 students that had been divided into six subgroups of equal size, so that each student had a partner, so to speak. In such a situation, the representation in (10) is true if and only if most students signed their partner's card, assuming that an elementary predication of the form "most(x, R, S)" is true if and only if the number of possible values of x that make both R and S true is larger than the number of possible values of x that make R true but S false. This is one possible reading of sentence (8). Likewise, (11), which is true in the situation described above if and only if most students read a book or books different from the book or books their partner read, expresses a reading that sentence (9) can have in such a situation.

Thus, when combined with the natural hypothesis that the reciprocal meaning contained in the meaning of an adjective like *different* can express Distributed Strong Reciprocity as well as Strong Reciprocity, the hidden-reciprocal analysis of internal readings makes correct predictions about what I have called distributed internal readings.

3   Non-coordinate RNR and LNR

The hidden-reciprocal analysis of internal readings is not applicable to sentences like (12) and (13) (on page 5), which do not contain a DP that could serve as the antecedent of the reciprocal meaning. The analysis thus entails that the grammatical mechanism that gives rise to the apparent internal readings of these sentences is different from the mechanism that gives rise to the internal readings of sentences like (1). In Yatabe (2021), the apparent internal readings of (12) and (13) are accounted for by hypothesizing (i) that (12) involves left-node raising (LNR) of *different people* out of two clauses, (ii) that (13) involves right-node raising (RNR) of *different films* out of two VPs, and (iii) the word *different* in these sentences denotes a one-place predicate that is satisfied if and only if its argument denotes a group whose members are distinct from each other, that is to say, a group that has two or more members in it.

The details of this account are as follows. In the theory of right-node raising and left-node raising defended in Yatabe and Tam (2021), a right- or left-node-raised expression may be given a composite index whose components are the indices that the expression is given before application of right- or left-node raising. As a result, sentence (12) can be associated with a semantic representation that means "for some x + y such that x + y are different people, x discovered America and y invented bifocals", if

different people is taken to have been left-node-raised. Likewise, sentence (13) can be associated with a semantic representation that means "for some x + y such that x + y are different films, John saw x and reviewed y", if *different films* is taken to have been right-node-raised.

The example in (14) (on page 5), discussed in Kubota and Levine (2016) and Kubota and Levine (2020), could be taken to be circumstantial evidence for such an account. Example (14) involves non-coordinate RNR, and the account described above is the only currently available account of the apparent internal reading that this sentence has. The theory advocated in Kubota and Levine (2016) and Kubota and Levine (2020) does not contain a mechanism that licenses non-coordinate RNR, and is therefore incapable of handling the apparent internal reading of a sentence like this.

However, Kubota and Levine make the remark shown in (15) (on page 5) concerning examples like (14). I take them to be saying here something like the following: if a sentence like (14) is possible only when the syntactic structure involved has conjunctive meaning, then the semantic part of their theory can be kept intact, and it might even be the case that a syntactic structure that has conjunctive meaning can be treated, on some temporary basis, as a type of coordinate structure, allowing the syntactic part of their theory to be kept intact as well. In other words, the authors appear to be saying, in effect, that non-coordinate RNR and LNR are coordinate RNR and LNR in disguise.

It is my contention here that non-coordinate RNR and LNR cannot be explained away as coordinate RNR and LNR in disguise. Consider sentence (16) (on page 5). This sentence shows that an example like (14) is possible even when the syntactic structure involved does not have conjunctive meaning (at least in Japanese). Sentence (16) involves non-meaning-preserving LNR of the dative noun phrase *onaji apaato no betsu-betsu no heya ni* out of an adjunct clause and out of the clause modified by that adjunct clause. The meaning expressed by the adjunct clause is not conjunctive, unlike that expressed by the adjunct clause in (14). The adjunct clause in (16) means that the event denoted by the main clause took place on a certain day, and that temporal meaning is clearly part of the truth conditions of the sentence, not any kind of implicature.

This observation is consistent with the theory proposed in Yatabe (2021), which incorporates the non-uniformity claim about apparent internal readings, and problematic for theories like those proposed in Carlson (1987), Barker (2007), and Kubota and Levine (2020), in which the presence of coordination or plurality is taken to be the source of all apparent internal readings and sentences like (12) and (13) receive the same treatment as sentences like (1).

4   Concluding remarks

In summary, I have shown the following two things. First, the hypothesis that the reciprocal meaning contained inside the meaning of an adjective like *different* can express Distributed Strong Reciprocity as well as Strong Reciprocity serves to expand the empirical coverage of the hidden-reciprocal analysis of internal readings, arguably boosting the plausibility of that analysis. And second, cases of apparent internal readings involving non-coordinate RNR or LNR indicate that not all apparent internal readings involve coordination or plurality, lending support to the non-uniformity claim about apparent internal readings.

(12) Different people discovered America and invented bifocals.

(13) John saw and reviewed different films.

(14) John defeated, whereas/although Mary lost to, the exact same opponent.

(15) We think that the relevant generalization is whether the construction in question has the meaning of conjunction. *Whereas* and *although* are truth-conditionally equivalent to conjunction, with an extra pragmatic function of indicating a particular discourse relation (some kind of contrast) between the two clauses. Since the analysis we present below is predicated of the conjunctive meaning of *and* rather than its syntactic coordinatehood, the examples in [(14)], rather than undermining our analysis, in fact provide further corroboration for it. (from Kubota and Levine (2020, p. 123))

(16) [Onaji apaato no betsu-betsu no heya ni], Tanaka san ga hikkoshite
[same apartment building GEN mutually different room DAT] Tanaka san NOM move-GER

kita no to onaji hi ni Yamada san mo hikkoshite kita no desu.
come-PAST NML with same day DAT Yamada san also move-GER come-PAST NML be.POL.PRES

'Yamada san also moved into, on the same day that Tanaka san moved into, different units in the same apartment building.'

References

Barker, Chris (2007). Parasitic scope. *Linguistics and Philosophy*, 30:407–444.

Beck, Sigrid (2000). The semantics of *different*: Comparison operator and relational adjective. *Linguistics and Philosophy*, 23:101–139.

Brasoveanu, Adrian (2011). Sentence-internal *different* as quantifier-internal anaphora. *Linguistics and Philosophy*, 34:93–168.

Carlson, Greg N. (1987). Same and different: Some consequences for syntax and semantics. *Linguistics and Philosophy*, 10:531–565.

Dalrymple, Mary, Makoto Kanazawa, Yookyung Kim, Sam Mchombo, and Stanley Peters (1998). Reciprocal expressions and the concept of reciprocity. *Linguistics and Philosophy*, 21:159–210.

Kubota, Yusuke and Robert Levine (2016). The syntax-semantics interface of 'respective' predication: A unified analysis in Hybrid Type-Logical Categorial Grammar. *Natural Language & Linguistic Theory*, 34:911–973.

Kubota, Yusuke and Robert D. Levine (2020). *Type-Logical Syntax*. MIT Press, Cambridge, Massachusetts.

Yatabe, Shûichi (2021). A representational theory of the semantics of *different*, *the same*, and *each other*. https://ling.auf.net/lingbuzz/006007.

Yatabe, Shûichi and Wai Lok Tam (2021). In defense of an HPSG-based theory of non-constituent coordination: A reply to Kubota and Levine. *Linguistics and Philosophy*, 44:1–77.