

## Indirect interaction of person and number

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**Introduction:** Ojibwe and Mohawk show a complicated interdependence of person and number features in their agreement paradigm. Bejar & Rezac 2009 and Preminger 2014 can't account for this interdependence, as the number and person probes are independently relativized in those systems. Instead of stipulating the interaction between person and number features, we show that it can be derived by an ordering of the number and person probes, with movement to the specifier of the lower probe feeding agreement by the higher one.

**Data:** Ojibwe verbs follow a radically different agreement paradigm inside embedded clauses, known in the descriptive literature as the 'Conjunct Order' (Valentine 2001). Bejar & Rezac 2009 provide an account of the Independent Order agreement by way of second-cycle probing; however, they do not consider the Conjunct Order, which crucially depends on the number and person features of both arguments of the verb. Descriptively, Conjunct Order agreement behaves as follows:

1. If both arguments are plural, agree with the most highly specified person ( $1 > 2 > 3$ ) in all features.
2. Otherwise: If one argument is plural, agree with it in both person and number.
3. Otherwise: Agree with the subject in both person and number.

- |     |                                           |              |     |                                         |              |     |                                          |              |
|-----|-------------------------------------------|--------------|-----|-----------------------------------------|--------------|-----|------------------------------------------|--------------|
| (1) | waabm -i                                  | -yaang       | (2) | waabm -inin                             | -agog        | (3) | waabm -i                                 | -yan         |
|     | see                                       | -TH-SIGN -1p |     | see                                     | -TH-SIGN -2p |     | see                                      | -TH-SIGN -2s |
|     | "you (p) sees us" ( $2p \rightarrow 1p$ ) |              |     | "I see you (p)" ( $1s \rightarrow 2p$ ) |              |     | "you (s) see me" ( $2s \rightarrow 1s$ ) |              |

Example (1) shows that the verb preferentially agrees with a 1st person plural object over a second person plural subject. (2) shows that this preference is ignored in the case that the subject is singular but the object is plural — here, agreement is with the plural argument. Finally, (3) shows that in the case where neither argument is plural, omnivorous agreement with person features is inactive and the verb agrees with the structurally higher argument, i.e. the subject.

Mohawk also shows an interdependence of person and number features in its agreement paradigm. Unlike Ojibwe, Mohawk shows separate agreement for person and plurality, and it is possible for the verb to express the person of one argument but the number of the other. Descriptively, number agreement in Mohawk behaves as follows:

1. If both arguments are local (1st or 2nd person), agree in number with the more highly specified argument (plural > dual > singular).
2. If only one argument is local, agree with it in number.
3. Otherwise, do not agree in number.

- |     |                         |     |                         |     |                         |
|-----|-------------------------|-----|-------------------------|-----|-------------------------|
| (4) | k- wa- V                | (5) | se- wa- V               | (6) | ye- sa- V               |
|     | 1- pl- V                |     | 2- pl- V                |     | fem- 2- V               |
|     | ( $1s \rightarrow 2p$ ) |     | ( $3s \rightarrow 2p$ ) |     | ( $3p \rightarrow 2s$ ) |

The pattern in Mohawk is thus the inverse of Ojibwe — omnivorous agreement number is conditioned by person.

**Theoretical background** Recent work in the domain of agreement (Bejar 2003, Preminger 2011, 2014 a.o.) has argued that number and person features probe separately from one another. By assuming that the relevant  $\phi$ -probes are simply situated in different syntactic positions and utilizing the notion of cyclicity, these accounts ensure that the head that is merged first will probe immediately before the other is merged, and thus person and number agreement takes place in different derivational steps.

Preminger's 2014 system of 'omnivorous' agreement additionally argues for probes which are relativized to specific features (e.g. [author] or [plural]). This allows a probe to see past DPs which do not bear the relevant

features and enter into an agreement relationship with the most local DP bearing the feature that the omnivorous probe seeks. Crucially, for both these accounts person and number probes are taken to be independent of one another - the number probe is unable to make reference to person features and vice versa.

**Problem:** This separation makes it difficult to account for facts like (2). Given the independently demonstrated primacy of the 1st person, both systems would predict that the person probe should copy the 1st person subject's features, while the number probe should copy features from the plural object. This is in contradiction to the attested agreement in (2), which shows 2nd person plural features. This configuration apparently allows the results of one probe (number) to condition the possibilities for the other probe (person). Similar challenges are posed by Mohawk, where agreement for number is conditioned by person features.

**Analysis:** For Ojibwe, we position a number probe specified for [plural] above the base position of the subject, which engages in Multiple Agree (Hiraiwa 2001) with all plural arguments in its domain. This probe raises its goals to its specifier position, where they are visible to a higher person probe (7). (See Oxford 2014 for similar raising in other agreement domains in this language.) All the arguments below the specifier of the number probe remain invisible for the person features probe (8). This allows us to derive the facts in (2), where the 1st person argument remains invisible for the person feature probe, despite being more specified in person features. If there are no plural arguments, a second-cycle of probing moves only the closest one (the subject, as in (9)). This explains the facts in (3), where the verb shows agreement with the 2nd person singular argument despite the presence of the 1st person object argument.

- (7)  $[\pi [DP\text{-}pl_i DP\text{-}pl_j] \quad [\# [t_i [v [V t_j \dots]] \quad [= (1)]$
- (8)  $[\pi [DP\text{-}pl_i] \quad [\# [DP\text{-}sg [v [V [t_i \dots]] \quad [= (2)]$
- (9)  $[\pi [DP\text{-}sg_i] \quad [\# [t_i [v [V DP\text{-}sg \dots]] \quad [= (3)]$

The facts in Mohawk can be captured by reversing the order of the probes. A low person probe specified for [participant] raises all local arguments into the domain of a higher number probe (10), which then shows omnivorous agreement with the number features. In (4), we assume that the person probe agrees with both local arguments, but only the more specified features are spelled out. Once these arguments have been raised into the specifier of the person probe, they are visible to the higher number probe. Since the 3rd person argument is not targetted by the person probe in (12), it remains low and is therefore invisible to the higher number probe; as such, number features from non-participant arguments are not visible on the verb.

- (10)  $[\# [DP\text{-}1\text{-}sg_i DP\text{-}2\text{-}pl_j] \quad [\pi [t_i [v [V t_j \dots]] \quad [= (4)]$
- (11)  $[\# [DP\text{-}2\text{-}pl_i] \quad [\pi [DP\text{-}3\text{-}sg [v [V [t_i \dots]] \quad [= (5)]$
- (12)  $[\# [DP\text{-}2\text{-}sg_i] \quad [\pi [DP\text{-}3\text{-}pl [v [V t_i \dots]] \quad [= (6)]$

**Predictions:** Within Ojibwe, we predict syntactic asymmetries between singular and plural arguments in terms of the availability of binding from the raised plural object into the singular subject. In a similar way, for Mohawk we predict the availability of binding from the 1st and 2nd person raised objects into the 3rd person subjects.

**Conclusion:** Taking the ordering of the two probes, the availability of multiple agree, and the possibility of movement as parameters allows us to extend prior accounts of omnivorous agreement to Mohawk and Ojibwe. Our analysis derives the attested agreement facts through indirect interaction of the person and number probes rather than a stipulated agreement hierarchy — agreement with one probe conditions the availability of agreement for the other.