# Elaborations on Cyclic Agree: a window into morphology/syntax mismatch

I propose specific mechanics of Cyclic Agree and a fine-grained approach to morphosyntactic feature organization that account for mismatched morphological and syntactic transitivity in Ojibwe (Central Algonquian). My analysis includes important theoretical revisions to Béjar & Rezac's (2009) version of Cyclic Agree, which requires that syntactic labels behave like independent heads and the acyclic insertion of a probe, and I derive unique predictions (e.g. concerning second cycle effects). Further, this account directly relates the infamous Algonquian Inverse System to the full range of Ojibwe verbal paradigms, and has typological extensions to Person ($\pi$) restrictions found in many unrelated languages (e.g. French, Spanish, Icelandic, Chinook).

A persistent puzzle in Algonquian involves VTI verbs (transitive verbs with inanimate internal arguments/IAs), which bear verbal *theme-sign* suffixes associated with VAI verbs (*in*transitives with an animate external argument/EA) (1). This morphology is problematic because VTI and VAI do not match in transitivity or animacy and occupy opposite paradigms, indicated by shading in (2). It has been previously claimed (e.g. Bloomfield 1957) that VTIs are actually intransitive with oblique IAs.

(1)    Transitive Inanimate (VTI):             Animate Intransitive (VAI):
   a.    waab-am-d-**am**    'sees it'      a′.    asosod-**am**  'coughs'
   b.    bii-d-**oo**         'bring it'     b′.    bimibat-**oo**  'run'
   c.    naa-d-**i**          'fetch it'     c′.    maw-**i** 'cry'   (Piggott 1989:181-2)

(2)

|            | Transitive | Intransitive |
|------------|------------|--------------|
| Animate    | VTA        | VAI          |
| Inanimate  | VTI        | VII          |

However, I argue that VTIs are actually transitive since they syntactically select two arguments and share transitivity markers with unambiguously transitive animate verbs (e.g. *waab-**am**-aa* 'see(VTA) him/her' (4)a vs. *waab-**am**-d-am* 'see(VTI) it' (1)a). I claim that VTI stems bear intransitive morphology because they have inanimate IAs, which are completely unspecified for $\pi$-features (as has been proposed for 3rd person in other languages; Harley & Ritter 2002; Anagnostopoulou 2005; Adger & Harbour 2007, for example). This means the IAs of VTIs are invisible to a $\pi$-probe (on *v*, spelled-out as the theme-sign), and both VTI and VAI only have one argument bearing visible $\pi$-features.

Cyclic Agree (extended to intransitive constructions from Béjar & Rezac 2009) involves a complex probe on *v* which can Agree first with an IA in its complement, and second with the EA that merges into spec *v*P, provided unmatched [uF]s remain on the probe after Agree with the IA goal. With VTI and VAI constructions, no [uF] is matched on *v* when it searches its complement, but only when the probe must look into the specifier to the EA, which bears $\pi$-features. Arguments in VTI and VAI constructions therefore mark this probe identically, as illustrated in (3), and *v* spells-out with the same theme-sign suffix. Ojibwe inanimate arguments pattern with syntactically absent arguments with respect to $\pi$-agreement.

(3)    a.    VTI: w-waaband-**am**    b.    VAI: asosod-**am**
          'He/she sees it.'                      'He/she coughs.'
          EA    *v*      IA                         EA      *v*
          [$\pi$] − [u̶π̶]   Ø                      [$\pi$] − [u̶π̶]    Vocab Insertion: $v$[u̶π̶] → /-am/ / VERB$_I$

Suppose also that the Person probe takes the form $v$:[u$\pi$-u1-u2] where the [F]s are related via entailment such that more specific features (e.g. [2]) entail less specific ones (e.g. [$\pi$-1]) that intervene between them and the root node of the geometry (namely [$\pi$], see also Harley & Ritter 2002). The geometry of the *v* probe reflects the Participant Hierarchy in Ojibwe: 2>1>3>0(inan). Hierarchy effects are found in the Ojibwe transitive animate/VTA paradigm − where both IA and EA are animate and possible goals for *v*. This paradigm exhibits the Inverse System (IS) where the theme-sign suffix encodes the $\pi$-features and relative grammatical function of both clausal arguments. In IS the theme-sign is *direct* when the EA matches a more specific (i.e. higher ranked) $\pi$-feature on *v* than the IA (4)a. The theme-sign is *inverse* in the opposite situation, when the IA matches a more specific feature than the EA (4)b.

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Contra Béjar & Rezac (2009), I claim that arguments are contrastively underspecified with respect to π-features and normally only match and delete a single feature on the *v* Probe. [F]s matched on *v* must mark entailed features in order to connect to the root node [uπ], but entailed features are not matched (i.e. do not correspond to [iF]s on the goal). I posit that a clear distinction can now be made between the direct and inverse: The direct only has features that are matched when unentailed, since the first Agree relation with the less specified IA, does not entail the π-features of the more highly specified EA (5)a (unentailed features gray, entailed black, Agree indicated by strikethrough). The situation in the inverse does have a [uπ] checked after being entailed since the IA ([1]) Agrees first and entails the EA ([π]) (5)b, and spells-out uniquely from the direct. By appealing to contrastive underspecification and this kind of organization of π-features I avoid Béjar & Rezac's need to acyclically insert an added probe into a higher label of *v* (thus treating a label as a kind of independent head) as a repair mechanism in the inverse. Entailed features are not deleted in my analysis and can be checked after being entailed, where Béjar & Rezac delete entailed features, which can block EA Agree in the inverse.

(4)  a.  n-waabm-**aa**                    b.  n-waabm-**ig**
         1-see-DIRECT                          1-see-INVERSE
         'I see him.'                          'He sees me.'        (Valentine 2001:270)

(5)  a.  **Direct**:   EA   *v*   IA      b.  **Inverse**:   EA   *v*   IA
                  [u̶π̶] – [π]                              [π] – [u̶π̶]
             [1] – [u̶1̶]                                    [u̶1̶] – [1]
                  [u2]                                        [u2]

The manner of Cyclic Agreement proposed to license π-features on (multiple) arguments is not an Ojibwe specific mechanism, but makes predictions about locality/intervention effects in unrelated languages. For example, the Strong Person-Case Constraint (PCC, Bonet 1991) in French restricts direct objects/DAT to 3rd person (unspecified in French) in the presence of indirect objects/ACCs (e.g. *Paul **me** lui présentera.* 'Paul will introduce me to him.'). With *v* as the locus of Person licensing, the DO cannot be properly licensed in this instance since the IO is an intervener. If the DO is instead 3rd person, it does not bear π-features, and does not need to be licensed. Similar situations are found in Icelandic quirky subject constructions (Sigurðsson 1996), as well as in Spanish spurious "se" effects.

I am proposing critical revisions of the mechanics of Cyclic Agree, based on Béjar & Rezac (2009), that allow for an elegant account of the complex verbal paradigms found in Ojibwe and eliminate theoretical difficulties within their account. Having organized morphosyntactic features illuminates well-known Participant Hierarchy effects in a range of unrelated languages and contributes to how arguments are licensed, and therefore restricted, by their π-features.

**References:**
Adger, D. & D. Harbour. 2007. The syntax and syncretism's of the person case constraint. *Syntax* 10:2-37.
Anagnostopoulou, E. 2005. Strong and weak person restrictions. In L. Heggie & F. Ordóñez (eds), *Clitic and Affix Combinations*, 199-235. John Benjamins.
Béjar, S. & M. Rezac. 2009. Cyclic Agree. LI 40:35-73.
Bloomfield, L. 1957. Eastern Ojibwa. UMichigan Press: Ann Arbor.
Bonet, E. 1991. Morphology after syntax: pronominal clitics in Romance. MIT thesis.
Harley, H. & E. Ritter. 2002. Person and number in pronouns: a feature-geometric analysis. Language 78:482-526.
Piggott, G. L. 1989. Argument structure and the morphology of the Ojibwa verb. Theoretical Perspectives on Native American Languages, 176-208.
Sigurðsson, H.A. 1996. Icelandic finite verb agreement. *WP in Scandinavian Syntax* 57, 1-46.
Valentine, J.R. 2001. Nishnaabemwin reference grammar. UToronto Press.