Head Movement and Challenges to the Mirror Principle in Northern Iroquoian

Nutshell: The core/universal functional projections of the extended clausal domain are neatly accounted for assuming standard views of Head Movement (HM) (Travis, 1984) and the Mirror Principle (Baker, 1985). However, a number of morphemes in the verbal complex are problematic for this picture (see Lounsbury, 1949 for the classic discussion of Iroquoian morphology). I propose a revision of head movement such that it still captures the basic facts of Travis' Head Movement Constraint (HMC), but is flexible enough to allow the observed exceptions. In short, HM is recast as the merger of compatible pieces of feature geometry as defined by the universal functional projections of the clausal spine (Grimshaw, 1990, Wiltschko, 2014). Non-compatible heads cannot undergo HM and thus are not constrained by the HMC. Consequently, they can appear in positions not predicted by the Mirror Principle.

Iroquoian Verbs: The verbal complex in Northern Iroquoian has the following partial structure.

(1) Mood-Agr-Root-Caus -Trans/Agent-Aspect

The transitivity/agent morpheme encodes purposeful action and movement (akin to English *I'm gonna go do it*.), so I assume it's a flavour of *v*. This order of morphemes is consistent with the following phrase structure, assuming head movement up to Asp.

(2) MoodP > AgrP > TP > AspP > *v*P > CausP > RootP

The following Onondaga example shows some of these morphemes (Barrie, 2015): FACT = factual (mood), EPEN and JOIN are epenthetic vowels, PUNC = punctual (aspect).

(3)

waʔ-	k-	e-	ʔseht-	a-	tgi-	ht-	aʔ
FACT-	1.SG.AG-	EPEN-	car-	JOIN-	dirty-	CAUS-	PUNC

'*I got the car dirty.*'

The order of morphemes is easily accounted for by head movement of V up to Asp. As mentioned, some morphology on the verbal complex is inconsistent with this picture. The following examples illustrate locative morphology in Cayuga (Dyck et al., 2014) and repetitive morphology in Onondaga (Barrie, 2015). In both cases the semantics of these morphemes suggest they are merged at the VP level (see Barrie, 2014 on the repetitive). Nevertheless, they appear at the left edge of the verbal complex, a fact not easily explained by the Mirror Principle.

(4)

a.

ga-	he:	-ʔ	
3.SG.NT.AG-	sit	-STAT	

'*It's sitting here.*'

b.

heʔ-	ga-	he:	-ʔ	
TLOC-	3.SG.NT.AG-	sit	-STAT	

'*It's sitting way over there.*'

c.

s-	a-	ha-	yętw-	aʔ
REP-	FACT-	3.SG.M-	plant-	PUNC

'*He planted it again.*'

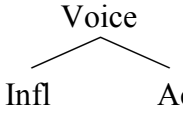
The take home message from these data is the following generalization. ***While the universal functional projections can be accounted for by traditional mechanisms of HM (Mirror Principle, HMC), other functional heads in the clausal spine cannot.*** We first discuss finer details of HM and of feature geometries to come to an understanding of this generalization.

Head Movement: The problems of HM are well documented (Fanselow, 2003, Mahajan, 2003). Pertinent to this discussion are two particular problems: (i) When two heads are merged, how is it determined whether the result is a phrase or a complex head. (ii) There is no way to express a complex head under Bare Phrase Structure (Chomsky, 1994). On the first point, if V merges with *v*, the result is standardly assumed to be a complex head; however, if V merges with a D head (say a clitic or a pronoun) the result is typically taken to be VP, a phrase. On the second point, Merge (a, b) results in the nested set {a, {a,b}}, which represents the phrase AP with the two daughters, a and b. No such set-theoretic notation exists for complex heads.

Feature Geometries: There has been much syntactic work on feature geometries (Cowper, 2005,

Harley and Ritter, 2002, McGinnis, 2005). In particular, Cowper has proposed that the features of Infl are arranged in a geometry that encodes entailment relationships among the features. A feature lower down on the geometry entails the existence of all features higher up, but not vice versa. Extending this idea to the functional hierarchy, the existence of Infl entails the existence of *v*, but not vice versa. Thus, we can propose an extended feature geometry that captures the universal functional projections of extended verbal projection (Grimshaw, 1990, Wiltschko, 2014) along the followings lines (geometry abbreviated for space).

(5)



Proposal: Let us assume that a head is essentially a piece of a feature geometry. If Merge (a,b) consists of the merger of two compatible pieces of feature geometry, then a new larger feature geometry is formed, giving rise to a larger head. Recall that Infl is a feature geometry. Assume also that the features of *v* are also arranged in a feature geometry, as shown in (5). The current proposal suggests that both geometries are actually part of a larger geometry that can remain separate in languages without V-to-T movement or can be united in languages with V-to-T movement (V=root+*v*). Ultimately, V to C movement is possible as we have one single feature geometry that can be put together by the individual heads. Thus, examples such as (3) and (4)a are derived by this kind of head movement. V raises cyclically to Asp, but the feature geometries representing the higher heads remain separate from the complex and appear as prefixes to the left.

Mirror Principle Deviations: We now turn our attention to the deviations from the Mirror Principle in (4)b, c. Given that these forms are optional, their presence or absence does not entail the presence or absence of the universal functional projections in the geometry. Thus, they are not part of the feature geometry and can be skipped over by head movement. Their final surface positions are then handled by XP movement (not discussed here for lack of space). This proposal predicts that Mirror Principle compliant verbal complex structures will be restricted to the universal functional projections (tense, aspect, voice, etc.) and that deviations will be restricted to non-universal, optional morphology (location, repetition, adverbials, etc.)

Consequences: Several welcome consequences fall out from this proposal. The main effects of the HMC (Travis, 1984) are derived. Feature geometry won't allow complex heads to be formed that don't conform to it. For instance V cannot raise directly to C because C entails the existence of Infl features (house on T). Also, HM cannot cross clauses, a fact not explained by the HMC. This is because two distinct feature geometries (from two clauses) cannot be combined.

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