

**Title:** Direction Marking and Case in Menominee

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## 1 Introduction

In Algonquian languages such as Menominee, transitive predications where the object is higher in animacy than the subject (e.g. 1st/2nd person vs. 3rd person) are marked by an "inverse" marker (*-a·* in (1a)) on the verb; when the subject is higher, a "direct" marker is used (*-eko* in (1b)):<sup>1</sup>

### (1) Direct/Inverse Marking in Menominee

- |    |                          |                                 |
|----|--------------------------|---------------------------------|
| a. | <i>ke-na-n-a·-w-a·w</i>  | 'you (pl.) fetch him' (p. 153)  |
|    | 2-fetch-D-[+3]-[-1+pl]   |                                 |
| b. | <i>ke-na-n-eko-w-a·w</i> | 'he fetches you (pl.)' (p. 154) |
|    | 2-fetch-D-[+3]-[-1+pl]   |                                 |

It has long been observed that direction (direct/inverse) marking is functionally equivalent to case marking systems since it allows to identify subject and object which are not overtly distinguished in Algonquian by case marking on nouns or agreement. Thus, the agreement markers are identical in (1a) and (1b). That *ke-* refers to the subject in (1a) and to the object in (1b) while it is the other way around for *-w* and *-a·w* becomes only clear by the different direction markers. A number of current generative approaches to this phenomenon (e.g. Halle and Marantz, 1993; Bruening, 2001) imply that the connection between case direction marking is even tighter and argue that direction marking does not emerge from a prominence hierarchy, but expresses case at a more formal level. In this paper, I argue that the second conclusion is right, but the first is too strong: Direction markers express abstract case features, but the realization of these features is mediated by general optimality-theoretic constraints on prominence hierarchies, as proposed in Trommer (2002, 2003b,d,e)

Here is an overview of the rest of the paper: Section 2 introduces crucial basics of Menominee verbal agreement. In section 3, I discuss the "classical" account of direction marking by Halle and Marantz (1993), which tries to eliminate reference to feature hierarchies from the analysis of direction marking. I show in section 4 that this approach fails to account for the systematicity of direction marking in Menominee, and in section 5 I argue that the same problems extend to other current approaches to direction marking. The alternative analysis to direction marking I propose is presented in section 6. Finally, section 7 contains a short summary of the paper.

## 2 Menominee Verb Agreement

In this section, I introduce basic categories and notions of Menominee (and more generally Algonquian) verb inflection which are crucial for the theoretical discussions in the following sections. Let us start with “order”, a category Algonquianists use to differentiate a predicative verb paradigm (“independent order”) from a second one used mainly in subordinate sentences which is based in most respect on a different set of agreement affixes but uses the same set of direction markers (“conjunct order”):

- (2) a. *ke-nε-w-e-m-waw* ‘you (pl.) see me’ (independent order, p. 156)  
2-see-D-[-3]-[-1+pl]  
b. *nε-w-e-yε-k* ‘when you (pl.) see me’ (conjunct order, p. 181)  
see-D-2pl-[-3+pl]

A second point that is crucial for the understanding of Algonquian morphosyntax is the differentiation of 3rd person arguments illustrated in (3) and (4):

- (3) a. *po-se-w(-ak)* ‘he embarks’ (‘they embark’, proximate, p. 150)  
embark- [+3](-[+pl])  
b. *po-se-w-an* ‘the other embarks’ (obviative, p. 150)  
embark- [+3]-[+obv]
- (4) a. *po-se-n* ‘there is embarking’ (indefinite subject, p. 150)  
embark- [+per]  
b. *mεhki-w(-an)* ‘it is red’ (‘they are red’, inanimate, p. 151)  
be.red- [+3](-[+pl])

The first distinction is that between proximate (3a) and obviative (3b) NPs, where “proximate” corresponds roughly to NPs referring to topic information and “obviative” to NPs introducing new discourse referents. In transitive predications, either the subject or the object (but not both) must be obviative. Following Bloomfield (1962), I will gloss obviative arguments in examples by the phrase “the other”. Slightly modifying a proposal by Halle and Marantz (1993), I will code the distinction by the feature [+/-obv], where obviatives are [+obv] while non-third person arguments and proximates are [-obv].

The second relevant distinction is a gender contrast between animate ((3a,b) and (4a)) and inanimate arguments (4b). I will assume that 1st and 2nd person arguments are generally [+an] and only inanimates are [-an]. Finally, subjects can be “indefinite”, i.e. unspecified in a passive-like manner (4a). Bloomfield actually calls these forms passives, and I will follow him here in

the translations. However, the alleged passive forms are integrated in the inflectional system of transitive forms in so many respects that it makes more sense to treat them as unspecified actor forms. I will mark unspecified subjects by the specification [-spec] in contrast to all other arguments which are [+spec]. Table 1 shows the distribution of the assumed features:

Table 1: Nominal Features in Algonquian

	[+/-obv]	[+/-an]	[+/-spec]
1st/2nd person	-	+	+
3rd proximate	-	+	+
3rd obviative	+	+	+
inanimate	-	-	+
unspecified	-	+	-

### 3 Halle and Marantz (1993)

Halle and Marantz (1993, in the following: H&M) analyze verb inflection including direction marking in Potawatomi, a language closely related to Menominee, but differing in a number of interesting morphological details. While I think that direction marking in Potawatomi is largely parallel to the same phenomenon in Menominee, I will mainly discuss Menominee here since it is much better documented. As Hockett, the primary source of H&M for Potawatomi puts it, discussing a treatment of his own data by Pike and Erickson (1964):<sup>2</sup>

“If exercises in restatement have methodological or theoretical aims, then they should be based on the best and fullest available primary reports, not on anything as full of holes as my sketch of Potawatomi . . . Why did Pike and Erickson choose Potawatomi rather than Ojibwa or Menomini, on which Bloomfield’s treatments - superbly full in the latter case - are now available?” (Hockett, 1966:73)

Potawatomi has direction markers analogous (and phonologically related) to the ones introduced above for Menominee: *-ukO* appears if the object is 1st or 2nd person and the subject 3rd person, while *-a* appears in transitive forms with the opposite feature distribution. In this section, I introduce H&M’s analysis of Potawatomi direction marking. In section 4, I will show that it cannot capture the full range of data in Menominee.

Halle and Marantz assume that *-a* and *-ukO* represent an agreement head (“Agr<sub>1</sub>”) different from two other heads underlying simple agreement marking in the language (“Agr<sub>2</sub>” and “Agr<sub>3</sub>”) and adjoined to a functional head that represents the order category (“Ind” for the independent order). This agreement head is supposed to agree only with non [-obv] DP arguments. To understand this, it is important to note that H&M posit a three-way distinction for obviation:

“[+obv], [-obv] and unmarked for obviation. 1st and 2nd person pronouns . . . are always marked [-obv]. 3rd person DPs may be marked [+obv] for discourse reasons or left unmarked. In a particular syntactic environment . . . in clauses with 3rd person DPs as both subject and object arguments, one of the 3rd person DPs must be specially marked [-obv] and the other must be marked [+obv]” (Halle and Marantz, 1993:141/142).

Table 2 spells out different possible combinations of subject and object features in this system. If subject and object are both non-third person (a,b), all arguments are [-obv], hence there is no argument for Agr<sub>1</sub> to agree with. If only the subject is 1st or 2nd person, and the object is 3rd person and obviative (d) or unmarked for obviation (c), the object is the only argument that is not [-obv], and therefore triggers agreement. The same holds true if the subject is 3rd person and non-obviative and the object is 3rd person obviative (e). The configurations in f, g and h represent the mirror image of c, d and e, and consequently involve subject agreement for Agr<sub>1</sub>.

Table 2: Potawatomi Agreement Configurations according to H&M

	Subject	Object	Agr <sub>1</sub> agrees with . . .	Direction Marker
a.	1 [-obv]	2 [-obv]	none	??
b.	2 [-obv]	1 [-obv]		
c.	1/2 [-obv]	3	object	<i>-ukO</i>
d.	1/2 [-obv]	3 [+obv]		
e.	3 [-obv]	3 [+obv]		
f.	3	1/2 [-obv]	subject	<i>-a</i>
g.	3 [+obv]	1/2 [-obv]		
h.	3 [+obv]	3 [-obv]		

Now, in H&M’s approach, after syntax agreement heads copy the syntactic features of the arguments they agree with. Under the assumption that subjects and objects in Menominee bear the abstract case features [+Nom(inative)] and [+Acc(usative)] even though there is no overt case morphology, Agr<sub>1</sub> contains [+Nom] in the configurations for f, g and h, and [+Acc] in those for c, d and e. H&M use this fact to derive the distribution of *-ukO* and *-a* by the vocabulary items in (5) spelling out Agr<sub>1</sub> and the Ind head which are assumed to have been fused into a single node by an earlier morphological operation.<sup>3</sup>

- (5) [Agr<sub>1</sub> + Ind]
- a. [+Nom] ↔ /-ukO/ / [+trans] \_\_\_\_
- b. [ ] ↔ /-a/ / [+trans] \_\_\_\_

(5a) is inserted into [Agr<sub>1</sub> + Ind] if this agrees with the subject, and (5b) if it does not, hence if it agrees with the object. The context restriction (“+trans”) stands for the class of transitive verbs

in both vocabulary items and blocks them from occurring with intransitive verbs. Crucially, the vocabulary items in (5) relate the different direction markers straightforwardly to case. No reference to prominence hierarchies or related constraints seems to be necessary.

As far as the core cases are concerned (c, d, e, f, g and h in table 2), Menominee behaves just as Potawatomi and according to H&M's analysis. We saw above in (1) that Menominee shows direct marking (*-a·* corresponding to *-a*) if the subject is 1st or 2nd person and the object 3rd person, and inverse (*-eko* corresponding to *-ukO*), for the converse feature distribution in subject and object. As (6) shows, *-eko* (here reduced phonologically to *-ek*) is also used if the subject is obviative and the object proximate. (6b) contains *-ε·* instead of *-a·*, but this seems to be just a morphophonologically conditioned variant of the direct marker.

- (6) a. *na·n-ek-w (na·nek)* 'the other fetches him' (p. 154)  
 fetch-D-[+3]  
 b. *na·n-ε·-w* 'he fetches the other' (p. 152)  
 fetch-D-[+3]

Thus up to this point, Menominee as well as Potawatomi are in accordance with the analysis proposed by H&M. In the next section, I will show that the analysis is problematic for conceptual reasons, and is in principle unable to capture the distribution of direction markers in Menominee once the full range of relevant data is taken into account.

#### 4 Problems with Halle and Marantz' Analysis

The most obvious conceptual problem with H&M's analysis is that it presupposes a feature with three values (obv in the forms +obv, -obv and obv unvalued). Much of current research in feature theory (see e.g. Harley and Ritter, 2002, for a recent approach in morphosyntax) seeks to eliminate exactly the formal possibility to allow three-valued features. Moreover, the evidence for an unvalued obviation feature is at best indirect since there are no minimal pairs of forms differing just by the fact that a third person argument is coded [-obv] in one and [obv] in the other. Recall from the examples in (3) repeated here in (7) that such minimal pairs do exist for the contrast between [+obv] and not [+obv]:

- (7) a. *po·se-w(-ak)* 'he embarks' ('they embark', proximate, p. 150)  
 embark-[+3](-[+pl])  
 b. *po·se-w-an* 'the other embarks' (obviative, p. 150)  
 embark-[+3]-[+obv]

The only empirical motivation to differentiate [-obv] and [obv] is the behavior of the direction markers. This problem is closely connected to the fact that table 2 does not list all possible

combinations of feature values for subject and object. More concretely, the configurations listed in table 3 are excluded:

Table 3: Impossible Agreement Configurations according to H&M

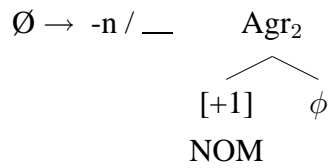
	Subject	Object	Agr <sub>1</sub> agrees with . . .
a.	3 [-obv]	3 [-obv]	??
b.	3 [+obv]	3 [+obv]	??
c.	3	3	??
d.	3	3 [+obv]	??
e.	3 [+obv]	3	??
f.	1/2 [-obv]	*3 [-obv]	??
g.	*3 [-obv]	1/2 [-obv]	??

Excluding a, b and c is well-motivated since Potawatomi, Menominee and all other Algonquian languages I know of disallow the cocurrence of two 3rd-person arguments with the same obviation marking in a clause. But in H&M's account, there must be constraints which also exclude d, e, f and g since these would lead to unattested forms of direction marking. In d and e, both arguments are not [-obv], hence Agr<sub>1</sub> should agree with both arguments. In f and g, both arguments are [-obv] and Agr<sub>1</sub> should not exhibit any agreement with either of them. Thus the assumption that [obv] can be unvalued presupposes that there are further constraints which determine why [obv] and [-obv] occur in complementary distribution. Since it remains unclear in H&M's paper what the formal nature of these constraints is, this sheds further doubts on their analysis.

Note finally that the condition for Agr<sub>1</sub> for triggering agreement with an argument is formulated within a negated context. Agr<sub>1</sub> is assumed to agree with non [-obv] DP arguments. It is unclear whether this is a natural class in any existing feature system, and I know of no other implementation of syntactic agreement relations which presupposes negation as a crucial device for defining agreement triggers.

A second major problem with H&M's analysis is that they treat the direct and the inverse marker as the only markers of their class. In contrast to this, traditional descriptions of Algonquian assume at least two additional direction markers, one used in transitive 1 → 2 (-*n* in Potawatomi, -*enenε* in Menominee) independent order forms and the other one in the corresponding 2 → 1 forms (Potawatomi: -*y*, Menominee: -*e*). H&M analyze Potawatomi -*y* and -*n* completely differently, as the result of phonological readjustment rules introducing segmental material. (8) shows the rule they assume for -*n* in a slightly simplified form: (Halle and Marantz, 1993:159):

(8) **Readjustment Rule Introducing -n**



This is to be read as follows: The rule only applies if  $\text{Agr}_2$ , a further agreement head has two bundles of  $\phi$ -features, one specified [+1] NOM, the other simply as  $\phi$ . As a consequence of other constraints, this rule applies exactly if the subject is first and the object second person, and inserts *-n*.

The main argument for not relating *-y* and *-n* to the direct and inverse marker is the fact that in Potawatomi *-a* ( $\approx$  Menominee *-a*) and *-ukO* ( $\approx$  *-eko*) appear before the negation element *-s* while *-y* (here: *-i*  $\approx$  *-e*) and *-n* ( $\approx$  *-enene*) appear after it (Halle and Marantz, 1993:165):

- (9) a. *n-wapm-a-s'i*            'I do not see him'  
      1-see-D-NEG  
      b. *k-wapm-us'-i-mun*    'you do not see us'  
      2-see-NEG-D-1pl

Even in H&M's (1993) framework, their different position is not a decisive argument against treating the two groups of direction markers as belonging to essentially the same affix type<sup>4</sup>, while the stipulative nature of a rule format like in (8), makes the concrete analysis of H&M for *-y* and *-n* highly questionable. In Menominee, no comparable evidence for a H&M-style analysis for *-e* and *-enene* exists. Negation appears outside of all agreement morphology:

- (10) *ke-ne-w-e-n-i-naw-an*        'you (sg./pl.) do not see us' (p. 171)  
      2-see-D-[+per]-1pl-NEG

More importantly, in Menominee there is strong evidence that all direction markers belong to the same affix type. In the conjunct order, *-e* and *-enene* are not only used for  $1 \rightarrow 2$  and  $2 \rightarrow 1$



forms, but for all forms with a 1st or 2nd person object:

(11) **1/2 → 1/2 Forms (Conjunct Order)**

- a. *na·tom-enenε-an* (*na·tomenan*) ‘when I call you (sg.)’ (p. 183)  
 call-[+Nom],[+Acc+2]-[-3]
- b. *nε·w-e-yan* ‘when you (sg.) see me’ (p. 181)  
 see-[+Nom],[+Acc+1]-[-3]

(12) **3 → 1/2 Forms (Conjunct Order)**

- a. *na·tom-enenε-k* (*na·tomeh*) ‘when he calls you (sg.)’ (p. 183)  
 call-[+Nom],[+Acc+2]-[+per]
- b. *nε·w-e-t* ‘when he sees me’ (p. 181)  
 see-[+Nom],[+Acc+1]-[+3]

The table in 4 summarizes the differences between independent and conjunct order in the distribution of direction markers.

Table 4: Distribution of *-e*, *-eko* and *-enenε*

	Independent Order	Conjunct Order
<i>-e</i>	2 → 1	2 → 1
	3 → 1	3 → 1
<i>-eko</i>	[-an] → 1	[-an] → 1
	[-an] → 2	[-an] → 2
<i>-enenε</i>	3 → 2	3 → 2
	1 → 2	1 → 2

Interestingly, in transitive forms there is always exactly one direction marker. If *-eko* is suppressed, *-e* or *-enenε* appear instead. This strongly suggests that all direction markers belong to the same affix type and compete for realization, which is inexplicable if *-e* and *-enenε* have a completely different source as the other direction markers, as suggested by H&M’s analysis of Potawatomi.

The third and most serious problem with H&M’s analysis for Menominee is that it does not take into account all features relevant for direction marking. Thus, indefinite actor forms pattern differently from forms with a (proximate or obviative) 3rd person agent. Such forms have the inverse marker *-eko* if the object is 1st or 2nd person, but the direct marker if the object is 3rd

person:

- (13) a. *ne-na·tom-ek-ε·-m* ‘I am called’ (p. 155)  
call-D-[-lrs]-[-3]  
b. *na·n-a·-w-an* ‘the other is fetched’ (p. 152)  
fetch-D-[+3]-[+obv]

In terms of a feature-hierarchy account, indefinite actors are higher in the animacy hierarchy than proximate arguments, but lower than 1st/2nd person arguments. What is problematic for H&M’s account is that the indefinite actor in (13a) must be [obv] or [+obv] to trigger subject agreement of Agr<sub>1</sub> and hence appearance of *-eko*. But the assumption that indefinite actors are consistently not [-obv] predicts that *-eko* should also appear in (13b). The only way out I see for a H&M-style analysis is to postulate that indefinite actors are [-obv] in some contexts, but [+obv] (or [obv]) in others. This however would pose further burden on the constraints governing the cooccurrence of feature values for obv with other features which is already problematic for the data explicitly discussed by H&M.

A similar, but even more severe problem as with indefinite actors emerges with inanimate arguments which cooccur with obviative arguments in a transitive clause, as in (14):

- (14) *o-po·n-a·-n-e·n-an* ‘the other does not put it in the pot’ (p. 173)  
3-pot.put-D-[+per]-[+obv]-NEG

Since the subject is obviative, in a H&M-style analysis, Agr<sub>1</sub> must agree with the subject, which should result in the use of *-eko*. However, in this case only the direct affix *-a·* is possible. *-eko* is used if the subject is inanimate, and the object obviative:

- (15) *ne·qn-eko-n* ‘it kills the other’ (p. 154)  
kill-D-[+per]

Under H&M’s analysis, this suggests that Agr<sub>1</sub> agrees with the subject, which hence must be non [-obv] ([obv] or [+obv]). But since the obviative object is by definition [+obv], this would lead to a violation of the condition that for two 3rd-person arguments in a transitive clause, one must be [-obv], and the other one [+obv]. Thus, there is no straightforward way to incorporate direction marking with transitive predicates involving an inanimate and an obviative argument into H&M’s account. However, the facts follow from an approach in terms of the animacy

hierarchy if obviative is ranked higher than inanimate leading to the overall hierarchy in (16):

(16) 1st/2nd person > indefinite actor > proximate > obviative > inanimate

Hence, the failure of H&M's approach to account for the full distribution of direction marking in Menominee seems to be due to their reluctance to acknowledge prominence hierarchy effects. These effects can be reduced to a binary (or rather ternary) feature (obv) for a reduced scale (1st/2nd person > proximate > obviative), but not for the full scale in (16). The alternative analysis for Menominee I will propose in section 6 will reconcile the basic insight of H&M that direction marking is related to case with a formal account of feature hierarchy effects couched in Optimality Theory.

## 5 Other Formal Accounts of Direction Marking

The reluctance to view prominence hierarchies as grammatically relevant entities is by no means restricted to H&M's analysis of Potawatomi, but a more general feature of much recent syntactic research especially of work adhering to the Minimalist Program (Chomsky, 1995, 2000). Here is a representative statement from Newmeyer:

“To establish the Animacy Hierarchy as a grammatical construct, one would need to find for some language a grammatical generalization that involves a mapping from distinct positions on the hierarchy to some aspect of grammatical form. I know of no such case. To be sure, certain grammatical generalizations seem sensitive to relative degree of animacy. In Navajo, for example, higher-animacy arguments must precede lower-animacy ones (Witherspoon 1977). And other languages have chosen some cut-off point in the hierarchy to make some grammatical distinction. In Kharia, pronouns and nouns referring to animate beings have a number distinction not found among common nouns referring to inanimate things (Biligiri 1965). Such situations are easily handled by means of reference to a binary feature distinction (whose roots might well lie in some hierarchically-arranged cognitive categorization of animacy distinctions). But apparently, however, no language has grammaticalized the Animacy Hierarchy itself. We only see bits of its shadow in the actual grammars of particular languages.” (Newmeyer, 2000)

What is interesting about direction marking is that it seems to be just such a non-existing device grammaticalizing the Animacy Hierarchy itself. There are a number of other formal approaches to direction marking in various Algonquian languages which do not formally involve feature hierarchies (e.g. Anderson, 1992; Steele, 1995; McGinnis, 1995)<sup>5</sup>, but just as the approach of H&M none of them seems to be adequate to capture the full distribution of direction markers

in Menominee. Here I will discuss only two of them which are especially explicit and closely related to H&M's analysis, namely Bruening (2001) and Stump (2001).

### 5.1 Bruening (2001)

Bruening, discussing yet another Algonquian language, Passamaquoddy, proposes a more syntactically oriented approach having strong affinities to H&M's analysis:

“Let us suppose that there is a syntactic feature in Algonquian languages, call it Proximate ([P]), which is a feature of NPs. First and second persons are inherently valued for this feature; they are [+P]. Third persons are not inherently valued (except for inanimates, which cannot be [+P]); they derive a value only from context, and only through opposition between NPs. If two NPs occur in the same local domain . . . , one will always become [+P] while the other will remain unvalued. Which does which is entirely free; speakers can choose to assign any of two locally co-occurring NPs [+P]. There is one restriction: any animate co-occurring with an inanimate will always become [+P]. This follows from the stipulation that inanimates cannot be [+P]; if one of two third persons must become [+P], it will have to be the animate one.” (Bruening, 2001:119)

As in H&M's account, direction marking is crucially related to one feature (P) connected to obviation, but in contrast to H&M's, this feature's plus-value corresponds to proximate, not to obviative. P is interpreted as an un-interpretable feature in the sense of Chomsky (1995), hence a feature which has no semantics, but only a syntactic function and which must be checked by moving it to an appropriate head. Bruening assumes that [P] (unvalued P) can be checked in situ by little *v*, a functional head in the verb phrase introducing the external argument while all [+P] NPs must move to a higher head H to be checked. As a consequence of the concrete formalism he presupposes for cyclic movement, this means that all [+P] NPs must appear at some point in a specifier of *v*P, either by base generation (for [+P] subjects) or by movement to the specifier of *v*P in the case of [+P] objects. Direction markers are then taken to be the spellout of agreement features at *v* agreeing with the NPs in its specifier positions. If the object of a transitive verb is non-third-person, both argument NPs have to appear in a Spec-*v*P position since the subject is generated there anyway, and the object is [+P] and has to move there. If both arguments are third person, “one becomes [+P], . . . , this is the proximate category. In addition, the third person that does not become [+P] will be assigned an additional feature, call it [Obv]. This feature will be assigned on top of its [P] feature, and will eventually be spelled out as an obviative suffix.” (Bruening, 2001:120).

The introduction of the additional feature [Obv] is largely parallel to H&M's assumption of a three-valued obviative feature, since NPs now have the three options of being [+P], [P] or [P][Obv].

An important departure from H&M’s analysis is that the head corresponding to direction marking (*v*) can agree with both arguments. This is also reflected in the vocabulary entries Bruening assumes for Passamaquoddy direction markers which can encode agreement features of subject *and* object (the corresponding Menominee markers appear in brackets):

- (17) a. -i ↔ [2Subj,1Obj] (-*e*)  
 b. -ol ↔ [1Subj,2Obj] (-*enene*)  
 c. -oku ↔ [+P Obj] (-*eko*)  
 d. -a ↔ [ ] (-*a*·)

In contrast to H&M, Bruening also provides an account of indefinite actor forms. Since indefinite forms with a non-third object have a [+P] object, (17c) is licensed, and the default marker (17d) is correctly predicted for indefinite forms with 3rd person objects. In this respect, Bruening’s analysis is clearly superior to H&M’s account.

However like H&M’s approach, it fails to fully capture direction marking in Menominee. Note first that the entries in (17a) and (17b) are inadequate for the corresponding Menominee affixes which also occur with 3rd person subjects in conjunct order forms (see (17) above). It seems to be a trivial modification to replace these by (18a,b), but Bruening assumes that competition among VIs is determined by specificity. Since the entry for *-eko* (*-oku*) is equally specific as (18a,b), this means that there is no possibility to determine which one is inserted in a specific context.

- (18) a. -e ↔ [1Obj]  
 b. -enene ↔ [2Obj]

Bruening also inherits the problem with Menominee verbs having an inanimate subject and an obviative object which take the inverse marker *-eko* (see example 14). To derive the fact that inanimate subjects of transitive verbs always require *-eko*, he assumes that inanimate arguments are *inherently* [P] (unvalued P), but an obviative object must also be [P] since [+P] is incompatible with [Obv]. But a [P] object would not license insertion of the inverse marker and predict incorrectly insertion of *-a*·. Thus, as H&M’s account, Bruening by trying to reduce direction marking to restrictions on a single case-like feature fails to capture the effects of the full hierarchy in (16) on Menominee direction marking.

## 5.2 Stump (2001)

Ironically, the analyses of H&M and Bruening show a strong resemblance to the detailed account of Potawatomi direction marking in Stump (2001), which is based on completely different theoretical assumptions. Stump assumes an elaborate model of lexicalist morphology based on paradigm rules. For reasons of space, I will only paraphrase his technically intricate analysis

informally here. Stump states rules that introduce *-a* if the subject has the feature MR (Major Reference), and *-ukO* if the object has MR. MR is a diacritic feature whose occurrence is governed by different rule types basically stating the following:

- (19) a. In a transitive form where subject  $\gg$  object, the subject has the feature MR.  
In a transitive form where object  $\gg$  subject, the object has the feature MR  
b.  $X \gg Y$  holds if  $X$  is 1st or 2nd person and  $X$  is 3rd person or obviative,  
or if  $X$  is animate and  $Y$  inanimate

This would avoid for Menominee the problems with transitive verbs having an obviative and an inanimate argument, and (19b) could be trivially extended to cover indefinite actor forms. Nonetheless, there are two serious problems with Stump's analysis: First, he assumes a diacritic feature (MR) without semantic, and not even syntactic content (recall that H&M's *obv* feature is linked to obviation, while Bruening's [P] triggers syntactic movement). Second, the type of the rule paraphrased in (19b) seems to be completely unrestricted. and could easily be reformulated as in (20) to capture the distribution of a hypothetical direction marker which patterns with *-a* if only animates are involved, but with *-eko*, as soon as inanimates are involved:

- (20)  $X \gg Y$  holds if  $X$  is 1st or 2nd person and  $X$  is 3rd person or obviative,  
or if  $Y$  is animate and  $X$  inanimate

Direction markers of this type are unattested, and probably impossible given the current understanding of prominence hierarchy effects in natural language. Thus, without the addition of further substantial constraints, Stump's analysis hardly provides more than a set-theoretical restatement of the empirical facts.

## 6 An Optimality-Theoretic Analysis of Menominee Direction Marking

In this section, I show that the distribution of direct and inverse markers in Menominee can be derived from minimal representations of the markers themselves specifying animacy and case, and an independently motivated optimality-theoretic account of hierarchy effects in agreement. While a full analysis of Menominee direction marking would require much more space than I have here, this is evidence that the shortcomings of the discussed approaches can be avoided without the stipulation of ad-hoc mechanisms restricted to direction marking itself.

### 6.1 The Representation of Direction Markers

Since the typical distribution of direction markers is in transitive verb forms with person/number affixes that are not specified for case, it is natural to assume that direction markers express just

the case features left unexpressed by other affixes and have roughly the content in (21):

(21) [+Nom ... ][+Acc ... ]

This representation does still not allow to differentiate between direct and inverse markers. But taking a schematic look at the distribution of *-a·* and *-eko*, an interesting generalization emerges:

Table 5: Distribution of *-a·* vs. *-eko*

<i>-a·</i>		<i>-eko</i>	
[1/2 +an]	→ [3]	[3]	→ [1/2 +an]
[−spec +an]	→ [3 +spec]	[−spec +an]	→ [1/+2 +an]
[3 -obv +an]	→ [3 +obv +an]	[3 +obv +an]	→ [3 +obv +an]
[3 -obv +an]	→ [3 −an]	[3 −an]	→ [3 -obv +an]
[3 +obv +an]	→ [3 −an]	[3 −an]	→ [3 +obv +an]

Whenever *-a·* is used, the subject is [+an]; if *-eko* appears, the object is [+an]. Since this feature is not realized by any other agreement affix in Menominee, it is plausible that it is also part of the specification of the direction markers as in (22):

(22) *-a·* : [+Nom +an] [+Acc]  
*-eko* : [+Nom] [+Acc +an]

This still does not account completely for the distribution of *-a·* and *-eko* since for many cases both markers would be licensed. For example, if one argument is 1st person and the other proximate/animate, both arguments are animate; hence, both markers should be possible:

(23) a. [+Nom +1 +an] [+Acc +3 -obv +an]  
b. [+Nom +3 -obv +an] [+Acc +1 +an]

In the next subsection, I will introduce the formal apparatus which allows to derive the correct appearance of both markers based on an optimality-theoretic account of hierarchy effects in agreement.

## 6.2 Hierarchy-based Competition

The formal framework I will assume here is Distributed Optimality (DO; Trommer, 2003c), but most of the analysis could be translated into any OT-based approach to spellout, where morphology has crucial access to syntactic structure (as e.g. in Noyer, 1993; Grimshaw, 1997, 2000). In DO, as in DM, syntactic operations manipulate abstract heads without phonological features. Morphology constitutes an independent module of the grammar that takes word-like

units from the output of syntax as its input and assigns to them strings of vocabulary items (VIs), pairings of underspecified syntactic feature structures and phonological matrices. In contrast to DM, this does not happen by language-specific rules, but by evaluating a language-specific ranking of a universal set of morphological constraints. Take as an example the Menominee word form in (24), focusing on the pronominal clitic *ne-*:[+1]:

- (24) *ne-po·se-m* ‘I embark’ (p. 150)  
1-embark-[-3]

The constraint  $L \Leftarrow [+Cl]$  requires that all clitics are adjacent to the left edge of the spellout domain (roughly the morphological word). This is violated once by (25b). PARSE F counts a constraint violation for each input feature which is not realized in the output by a coindexed VI specifying this feature. Since there is no clitic in Menominee realizing -2 it is unavoidable to violate it at least once, however violation is minimized, which leads to selection of (25c) (suffixal agreement is disregarded in (25)):

- (25) **Input:** [+Cl+1-2]<sub>1</sub> [+V]<sub>2</sub>

	$L \Leftarrow [+Cl]$	PRS F
☞ a. <i>ne</i> :[+Cl+1] <sub>1</sub> - <i>po·se</i> :[+V] <sub>2</sub>		*
b. <i>po·se</i> :[+V] <sub>2</sub> - <i>ne</i> :[+Cl+1] <sub>1</sub>	*!	*
c. <i>po·se</i> :[+V]		**!*

*ne-* also appears to express the subject or object of transitive verbs, but if there is another argument which is 2nd person, the [+2] clitic *ke-* appears and *ne-* is suppressed:

- (26) a. *ke-na·tom-enene-m-enaw* ‘we call you (sg./pl.)’ (p. 157)  
2-call-D-[-3]-1pl  
b. *ke-ne·w-e-m-enaw* ‘you (sg./pl.) see you us’ (p. 156)  
2-see-D-[+3]-1pl

Following Gerlach (1998) and Woolford (2003), I analyze suppression of the [+1] clitic as an effect of the alignment constraint. One clitic must be suppressed since it is not possible to align two clitics to the left edge of the spellout domain (27c):

- (27) **Input:** [+Cl+1-2]<sub>1</sub> [+Cl+2-1]<sub>2</sub> [+V]<sub>3</sub>

	PRS [+Cl] <sup>[+2]/[+1]</sup>	$L \Leftarrow [+Cl]$	PRS F
a. <i>ne</i> :[+Cl+1] <sub>1</sub> - <i>po·se</i> :[+V] <sub>3</sub>	*!		****
☞ b. <i>ke</i> :[+Cl+2] <sub>1</sub> - <i>po·se</i> :[+V] <sub>3</sub>			****
c. <i>ne</i> :[+Cl+1] <sub>1</sub> - <i>ke</i> :[+Cl+2] <sub>1</sub> - <i>po·se</i> :[+V] <sub>3</sub>		*!	**



The order of  $L \bowtie [+CI]$  and PRS F is crucial since higher ranking of PRS F would favor (27c) over (27a,b). However, the preference for the 2nd person clitic must be expressed by the additional constraint PARSE  $[+CI]^{[+2]/[+1]}$ . This constraint belongs to the family of relativized PARSE constraints (Trommer, 2002) and is to be read as follows: "If there are adjacent [+2] and [+1] heads in the input, then realize the person feature [+CI] of the [+2] head. Relativized PARSE constraints are related to universal prominence hierarchies by the schema in (28):

- (28) If A is distinct from B, and  $A \geq B$  on a prominence scale  $S$   
then there is a PARSE constraint PARSE  $[F]^{A/B}$

Given the scales in (29) which are justified by extensive crosslinguistic evidence, we get particular constraints as in (30).

- (29) a.  $\left\{ \begin{array}{l} [+1] \\ [+2] \end{array} \right\} > [+3]$       b.  $[+animate] > [-animate]$

(30a) encodes the preference of feature realization for 1st over 3rd person agreement, and (30b) the realization preference for animate arguments over inanimates. Since [+1] and [+2] are not ranked, there are antagonistic constraints for clauses with [+1] and [+2] arguments (30c,d). Actual preference depends on the language-specific ranking.

- (30) a. PARSE  $[PER]^{[+1]/[+3]}$       c. PARSE  $[PER]^{[+1]/[+2]}$   
b. PARSE  $[PER]^{[+an]/[-an]}$       d. PARSE  $[PER]^{[+2]/[+1]}$

In the next subsection, I will show that relativized PARSE constraints allow a straightforward account of direction marking in Menominee.

### 6.3 Hierarchies and Competition in Direction Marking

Recall that direction markers realize only case and the feature [+an]. Actually, direction markers are the only affixes in Menominee to express these features. Hence, PARSE constraints referring to [+an] will have an immediate effect on the distribution of these markers. Now, the schema in (28) can also be applied to [+an] which licenses constraints such as (31):

- (31) PARSE  $[+an]^{[+1]/[+3]}$

This constraint favors *-a·* for (23a) and *-eko* for (23b), i.e. typical cases where the lexical entries for the direction markers do not determine which one will actually appear:

(32) **Input:** [+Nom +1 +an]<sub>1</sub> [+Acc +3 -obv +an]<sub>2</sub>

	PARSE [+an] <sup>[+1]/[+3]</sup>
a. $\rightarrow$ <i>-a</i> :[+Nom+an] <sub>1</sub> [+Acc] <sub>2</sub>	
b. <i>-eko</i> :[+Nom] <sub>1</sub> [+Acc+an] <sub>2</sub>	*!

(33) **Input:** [+Nom +3 -obv +an]<sub>1</sub> [+Acc +1 +an]<sub>2</sub>

	PARSE [+an] <sup>[+1]/[+3]</sup>
a. <i>-a</i> :[+Nom +an] <sub>1</sub> [+Acc] <sub>2</sub>	*!
b. $\rightarrow$ <i>-eko</i> :[+Nom] <sub>1</sub> [+Acc+an] <sub>2</sub>	

Note the crucial role of the case features in the feature structures of the direction markers. In DO, feature structure in VIs may only be coindexed with an input head if they subsume the features of this head. Thus, *-a* [+Nom +an]<sub>2</sub> [+Acc]<sub>1</sub> is not a possible candidate for the input in (33). Since similar constraints as (31) are licensed by the whole prominence hierarchy relevant for direction marking in (16), relativized PARSE constraints predict the correct direction markers for all transitive verb forms.

A final question is what blocks cooccurrence of *-a*· and *-eko* which is otherwise predicted by PARSE F. I will assume that the restriction to one direction markers results from an instance of the constraint family COHERENCE, which is defined as follows (Trommer, 2003a:8):

(34) **COHERENCE (F)** : Count a constraint violation for each VI *V* matched by *F* and containing index *i* preceded by another matched VI *V'* containing index *j* such that  $i \neq j$  and there is no matched VI *V''* between *V'* and *V*.

As alignment constraints, COHERENCE constraints are mainly motivated by universal tendencies in affix order, thus COHERENCE constraints for simple agreement have the effect that affixes expressing features of the same head appear adjacent to each other. However, if we restrict COHERENCE to direction markers, which have by assumption the form [+Nom] [+Acc], we derive the effect that cooccurrence of these markers is disfavored. This is illustrated in (35):

(35) **Indices and Violations for COH [+Nom][+Acc]**

	Relevant Indices	Violations
a. <i>-a</i> :[+Nom +an] <sub>1</sub> [+Acc] <sub>2</sub> - <i>eko</i> :[+Nom] <sub>1</sub> [+Acc+an] <sub>2</sub>	VI <sub>1,2</sub> VI <sub>1,2</sub>	*
b. <i>-eko</i> :[+Nom] <sub>1</sub> [+Acc+an] <sub>2</sub> - <i>a</i> :[+Nom+an] <sub>1</sub> [+Acc] <sub>2</sub>	VI <sub>1,2</sub> VI <sub>1,2</sub>	*
c. <i>-a</i> :[+Nom+an] <sub>1</sub> [+Acc] <sub>2</sub>	VI <sub>1,2</sub>	
d. <i>-eko</i> :[+Nom] <sub>1</sub> [+Acc+an] <sub>2</sub>	VI <sub>1,2</sub>	

The configuration VI<sub>1,2</sub> VI<sub>1,2</sub> violates COHERENCE since the second VI contains the index 1 which is different from the index 2 in the first VI. The same holds true for 2 in the second, and

1 in the first VI. Thus, the only way to avoid a violation of COH [+Nom] [+Acc] is to restrict a word form to maximally one direction marker. If the COHERENCE constraint is ranked above all PARSE constraints, we get the correct interaction of faithfulness and hierarchy effects:

(36) **Input:** [+Nom +1 +an]<sub>1</sub> [+Acc +3 -obv +an]<sub>2</sub>

	COH [+Nom] [+Acc]	PARSE [+an] <sup>[+1]/[+3]</sup>	PRS F
☞ a. <i>-a</i> : [+Nom+an] <sub>1</sub> [+Acc] <sub>2</sub>			***
b. <i>-eko</i> : [+Nom] <sub>1</sub> [+Acc+an] <sub>2</sub>		*!	***
c. <i>-a</i> : [+Nom+an] <sub>1</sub> [+Acc] <sub>2</sub> - <i>eko</i> [+Nom] <sub>1</sub> [+Acc+an] <sub>2</sub>	*!		

The same type of account also carries over to the markers *-e* and *-enenε*, which can now be represented as in (37):

(37) *e* : [+Nom +spec] [+Acc +1]  
*enenε* : [+Nom +spec] [+Acc +2]

This means that these affixes are also subject to COH [+Nom][+Acc], hence cannot coocur with the other direction markers. A full account of the distribution of these markers in terms of relativized PARSE constraints is provided in Trommer (2003d).

## 7 Summary

In this paper, I have shown that direction marking in Menominee cannot be reduced to case or related syntactic devices. This provides evidence that prominence hierarchies play a crucial role in the formal realization of grammatical relations. I have provided an alternative analysis in terms of ranked violable constraints which reconciles the idea that direction marking realizes case with a more general approach to hierarchy effects in inflection. This approach avoids problematic theoretical devices, such as diacritic or three-valued features, but also direct reference to hierarchies in lexical entries as in Wunderlich (1996) or the treatment of direction marking as an irreducible primitive of syntactic theory (Aissen, 1999).<sup>6</sup>

## Notes

1. Page numbers with Menominee examples refer to Bloomfield (1962). The following abbreviations are used in glosses and as feature names: 1(st person), 2(nd person), 3(rd person), Agr = agreement, Acc = accusative case, an = animate, D = direction marker, Nom = nominative case, Neg = negation, Num = number, obv = obviative, Per = person, pl = plural, sg = singular, spec = specified (actor).
2. Note that Bloomfield and Hockett write “Menomini”, while I use the spelling “Menominee”. The latter is the official writing of the Menominee tribe. Thanks to Monica Macaulay (p.c.) for bringing this to my attention.

3. It is unclear to me what the motivation for head fusion in this case is since it does not seem to have any empirical consequences.
4. This could be effected e.g. by local dislocation. see Embick and Noyer (2001) for discussion.
5. See Trommer (2003b) for a critic of recent approaches to direction marking which involve the formalization of hierarchy effects.
6. See Trommer (2003b) for a detailed critique of these approaches.

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