Collateral feature discharge

Daniela Henze and Eva Zimmermann
University of Leipzig

In this paper we take a closer look at the phenomenon of marker-sensitive blocking in Algonquian. We discuss its theoretic significance and its relation to hierarchy-effects and affix order. An analysis for these phenomena is given which is implemented in Distributed Morphology (Halle and Marantz 1993) and based on a.) hierarchy-governed insertion of markers and b.) the concept of collateral feature discharge (CFD). The latter is a new property for vocabulary items we propose, that specifies vocabulary items for discharging more than their substantial features. Finally, we discuss the predictions of collateral feature discharge for language development through a cross-language comparison of marker-sensitive blocking effects in Algonquian.

1 Introduction: mysterious plural suffixes in Potawatomi

Almost all Algonquian languages show cross-referencing of subject and object features on the verb in a transitive context and so does Potawatomi a Central-Algonquian language. But there is an interesting exception to this generalization. There are two sets of suffixes marking first and second person plural. Interestingly, all suffixes of SET I generally block any agreement marker for the other argument after themselves. This is briefly illustrated in (1), where in (1-a) a different first person plural marker is used in the two different contexts (SET II vs. SET I).[1]

(1) *Plural markers in Potawatomi*

a.

3p → 1pe	-nan 1p	-k 3p
2p → 1pe	-mən 1p	?

b.

3p → 2p	-wa 2p	-k 3p
2p → 3p	-wa 2p	-k 3p

The observation that a specific marker blocks subsequent agreement, which is expected since it can be found in quite similar contexts, e.g. (1-b), is especially interesting from the perspective of theoretical morphology. In a realisational theory of morphology, where morphological exponents are inserted to realise the morpho-syntactic feature bundles the syntax provides, such a blocking of an expected marker is standardly attributed to an operation that deletes certain morpho-syntactic features before the insertion process starts: impoverishment rules in the framework of Distributed Morphology (Halle and Marantz 1993). We will discuss such a solution in some more detail below. Another theoretical possibility to account for the absence of certain exponents is to bereave them their realisational position. This is possible in theories assuming slots as positions for exponents – irrespective of whether the exponents result from word formation rules or are listed as entities. Roughly speaking, a zero instruction can be filled in all slots following a certain other slot and no exponent would ever be possible to follow the markers assigned to the preceding slot (Anderson 1992, Stump 2001).

These 'slot' approaches have in common that they fail in accounting for a striking property of the agreement affixes in Algonquian: their order. The affixes are ordered according to a general hierarchy of person features, e.g. affixes realising first person always precede those realising third person. This is an accident in theories that assign affixes arbitrarily to a certain position. And consequently, that the usage of a specific exponent in one slot and the insertion of a zero exponent in any following slot coincide, is an accidental property as well.

[1]The following abbreviations will be used throughout the text: *s* - singular, *pe* - plural exclusive, *pi* - plural inclusive, *p* - plural, *S* - subject of an intransitive verb, *A* - subject of a transitive verb, *P* - object of a transitive verb.

We present an analysis of the Potawatomi agreement suffixes that relies on the concept of hierarchy-governed insertion and predicts the hierarchy effect in the ordering and blocking of affixes from integrating an independently motivated ranking of features in a standard DM system. The marker-sensitive blocking follows from introducing another type of vocabulary item that has the property of 'collateral feature discharge'. We begin in section 2.1 with presenting our background assumptions of DM. An analysis for the Potawatomi facts using those background assumptions is given in section 2.2 for the hierarchy-governed order of affixes and in section 2.3 for the marker-sensitive blocking effect where we present the new concept of 'collateral feature discharge' as well. Finally, we will broaden our view to Algonquian languages in general in section 3 and discuss the phenomenon of marker-sensitive blocking from a perspective of cross-language behaviour and language development.

2 Analysis of the Potawatomi verbal agreement

2.1 Theoretical background: Distributed Morphology

Distributed Morphology (DM) as originally proposed in Halle and Marantz (1993) is a post-syntactic theory of morphology, which assumes that the syntax provides terminal elements ('heads') that consist of fully-specified feature bundles into which the morphology inserts 'vocabulary items' (VI), i.e. pairings of phonological representation and morphological features. These VIs are inserted to realise the features the syntax provides with morphological material. The vocabulary items that are inserted in such a morpho-syntactic head may be *underspecified*, i.e. they must not contain a full feature specification for every relevant morphological feature of the context in which they are inserted. These potentially underspecified morphological markers are inserted into the syntactic contexts in accordance with the *Subset Principle* (2) demanding that the features of the inserted marker must be a subset of the features of the head.

(2) *Subset principle* (Halle 1997)
A vocabulary item V is inserted into a functional morpheme M iff a. and b. hold:
a. The morpho-syntactic features of V are a subset of the morpho-syntactic features of M.
b. V is the most specific vocabulary item that satisfies a.

We assume in accordance with Müller (2006) that the concept of specificity of morphological markers referred to in (2-b) is not only determined by the number of morphological features a marker is specified for. The ranking of feature classes according to a language-specific hierarchy can be inherently more important than the quantity of features. This is clearly the case in the Algonquian languages.

(3) *Specificity* (Müller 2006: 31)
A vocabulary item V_i is more specific than a vocabulary item V_j iff there is a class of features F such that a. and b. hold.
a. V_i bears more features belonging to F than V_j does.
b. There is no higher-ranked class of features F' such that V_i and V_j have a different number of features in F'.

We will illustrate this with a hypothetical example in (4): In a language that ranks number features above person features, a marker realising number features will always be inserted first. If two markers are specified for number, the one with more number features is more specific. And in case two markers are equally specific with respect to number features, the quantity of the next lower-ranked person features will decide specificity – context features included. This is summarized in (4).

(4) *Abstract example for specificity in a language: number features ≻ person features*

	competing markers			more specific:	since:
a.	/-an/	↔	+pl,−sg,+2,+1 / __[+3]	**-an**	it has number features
	/-ib/	↔	+2,+1 / __[+3]		
b.	/-an/	↔	+pl,−sg,+2,+1 / __[+3]	**-an**	it has more number features
	/-uf/	↔	−sg,+2,+1 / __[+3]		
c.	/-an/	↔	+pl,−sg,+2,+1 / __[+3]	**-an**	it has more person(-context) features
	/-os/	↔	+pl,−sg,+2,+1		

The original idea in Halle and Marantz (1993) is that 'terminal elements [...] consist of complexes of grammatical features [that] are supplied with phonological features only after Vocabulary insertion' (Halle and Marantz 1993: 114). From this it follows naturally that only one vocabulary item can be inserted into one syntactic head and that there is a strict one-to-one mapping between terminal elements in the syntax and vocabulary items inserted by the morphology. A departure from this original one-to-one mapping between syntactic heads and vocabulary items is derivable in a framework assuming the notion of *fission*, that is splitting of the feature bundle of one syntactic head into different heads (Noyer (1992), Frampton (2003), Müller (2006)). A version of fission that implements a concept of insertion as feature discharge is given in (5). After insertion of a marker, the features the inserted marker was specified for are unavailable for further insertion, they are *discharged*. But all other features remain on the head and are available for subsequent insertion of further vocabulary items. So it is possible to account for morphologies where more than one marker realises features of one single head. This will become important in the next section.

(5) *Fission* Müller (2006)
If insertion of a vocabulary item V with the morpho-syntactic features β takes place into a fissioned morpheme M with the morpho-syntactic features α, then α is split up into β and $\alpha-\beta$, such that a, and b. hold:

a. $\alpha-\beta$ is available for further vocabulary insertion.
b. β is not available for further vocabulary insertion.

The features a marker discharges after insertion will be termed its 'substantial' features throughout the following – in contrast to context features that must be present for the insertion of a marker but are still present afterwards. The concept of feature discharge is illustrated with the abstract example in (6) where a marker specified for+pl is inserted – the marker realises this feature and the realised +pl on the head is unavailable for further insertion afterwards. Therefore, no other marker realising this feature can be inserted anymore. In the following, we will cross out features that are discharged and will color the unavailable features grey.

(6) *Feature discharge*

/-bu/ ↔ +pl	
fully-specified head:	[+1,−2,−3,+pl]
insertion:	bu + [+1,−2,−3,~~+pl~~]
resulting head:	bu + [+1,−2,−3,+pl]

A last assumption that will be important in the analysis of Algonquian agreement is the operation of *fusion*. It merges two (or more) morphological heads into one (Halle and Marantz 1993). For the Potawatomi case this means that subject and object heads are fused into one complex head. So all features of subject and object are available at the same time. The insertion algorithm can then take all these features into account irrespective of whether they belong to object or subject. This straighforwardly predicts the Algonquian facts: the affixes are not ordered according to their argument status (A(gent) or (P)atient) but according to the features they realise. Therefore, the usage of fusion is crucial for

analysing instances of hierarchy-governed affix order.

It has to be noted, though, that although all the features of subject and object are present on one head, they are still structured according to their original affiliation to one or the other head. Fusion of e.g. a 1sg and a 2pl head will not allow the insertion of a 1pl or 2sg marker, since those feature combinations cannot be found inside one of the single heads, as is briefly illustrated in (7).

(7) *Example for fusion of two agreement heads*

$$\begin{bmatrix} +1 \\ -2 \\ +sg \end{bmatrix} \quad \begin{bmatrix} -1 \\ +2 \\ -sg \end{bmatrix} \quad \longrightarrow \quad \begin{bmatrix} [+1,-2,+sg] \\ [-1,+2,-sg] \end{bmatrix}$$

2.2 Hierarchy-governed insertion of markers

Verbs in Potawatomi agree with their arguments in person and number[2]. In (8) we summarize all the inflectional categories and their decomposition in binary features that are relevant for our purpose here.

(8) *Categories and their decomposition*

Category	Abbreviation	Binary features
1.Ps.Singular	1s	+1,−2,−3,−pl
1.Ps.Plural.excl	1pe	+1,−2,−3,+pl
1.Ps.Plural.incl	1pi	+1,+2,−3,+pl
2.Ps.Singular	2s	−1,+2,−3,−pl
2.Ps.Plural	2p	−1,+2,−3,+pl
3.Ps.Singular	3s	−1,−2,+3,−pl
3.Ps.Plural	3p	−1,−2,+3,+pl

In the following, we will concentrate on the transitive animate (TA) paradigm in the independent order.[3] But everything that will be said for the TA paradigm will hold also – with slight differences – for the other paradigms of the language.

A verb can show up to three agreement suffixes whenever subject and object are plural. These affixes will always appear in a specific order. For illustration find an extract of a transitive animate paradigm in table (9).[4]

(9) *Extract of a transitive animate paradigm for the transitive stem* wapm *'to see'*

(Hockett 1939, Anderson 1992)

A\P	2s	2p	3s	3p
2s			k–*wapm*–a	k–*wapm*–a–k
2p			k–*wapm*–a–wa	k–*wapm*–a–wa–k
3s	k–*wapm*–uko	k–*wapm*–uko–wa		
3p	k–*wapm*–uko–k	k–*wapm*–uko–wa–k		

[2]Verbs also agree in obviation, a discourse related category that is relevant whenever two third persons are involved in one discourse context. One of them is always more salient in the discourse than the other one and this non-salient argument receives the +obviative marking. We will ignore the obviative contexts for reasons of convenience in the following since they add nothing relevant to the point we want to make here.

[3]Verbal stems as well as nominals are inherently marked for animacy. Verbs can only combine with a subject (when intransitive) or an object (when transitive) which have the same value for this feature. This system results in four paradigm types: intransitive with inanimate (II) or animate subject (AI) and transitives with inanimate (TI) or animate object (TA). Notice that animacy is a grammatical category and cannot be mapped one to one to the semantics. In addition, nearly all Algonquian languages show different sets of verb paradigms depending on the clausal type in which the verb is used. There are three of these different orders, or 'modes': independent, conjunct and imperative.

[4]We will follow e.g. Halle and Marantz (1993) in assuming that the 'prefixes' *n-, k-* and *w-* are better analysed as proclitics and disregard them in all the following discussion. They behave dissimilar to the rest of the agreement system and for reasons of space we will concentrate on the suffixes.

The only affixes that change when the argument roles are changed are those directly following the stem *-uko* and *-a*. The others are the same and appear at the same place in the suffix string. In e.g. 3p ↔ 2p contexts *-wa* precedes *-k* in both cases, although it marks the subject in one case and the object in the other case. A widespread formal explanation for this feature in the Algonquian verbal agreement system is that it is an instance of 'template morphology' (e.g. Stump, 1996). That means that there exists an ordered sequence of fixed positions in which only certain affixes can appear (Anderson 1992, Halle and Marantz 1993, Stump 2001). This derives the ordering of different markers to each other as well as the fact that some markers can never cooccur. They are assumed to be marked for insertion into the same slot and since only one affix is allowed in one slot, the language must decide between the affixes specified for this position.

In our work we want to get rid of these stipulated assumptions. We will show that the same effect can be generated much easier through a hierarchy-governed-insertion approach (e.g. Noyer, 1992). If a marker precedes another marker, it means in the DM-system we sketched above that it must have been inserted prior to the other marker. And since we argued that the mechanism that governs insertion is specificity, we know that a marker preceding another marker is more specific than the other. Given that specificity might refer to hierarchies, it is clear that the system automatically predicts that every marker nearer to the stem realises features higher on the hierarchy. We will discuss the suffixes in Potawatomi in some more detail below to make clear that this simple mechanism is exactly what derives their order.

Returning to *-uko* and *-a*, we can see in the full suffix paradigm in (10) that there are two other affixes that also appear directly after the stem, namely *-ən* and *-y*. For sake of completeness we give here also the intransitive forms, which generally take only one agreement suffix.

(10) *Animate transitive and intransitive suffix paradigms (excluding obviative forms)*

A/P	1s	1pe	2s	2p	3s	3p	INTR	
1s			–ən	–ən–m	–a	–a–k	1s	–∅
1p			–ən–mən	–ən–mən	–a–mən	–a–mən	1p	–mən
2s	–∅	–y–mən			–a	–a–k	2s	–∅
2p	–m	–y–mən			–a–wa	–a–wa–k	2p	–m
3s	–uko	–uko–nan	–uko	–uko–wa			3s	–∅
3p	–uko–k	–uko–nan–k	–uko–k	–uko–wa–k			3p	–k

These four affixes have a striking distribution that is summarized in (11) where e.g. 1 → 2 means first person subject (A) and second person object (P).

(11) *Contexts of* -ən, -a, -y *and* -uko

	Context		
	A		P
–ən	1	→	2
–a	1,2	→	3

	Context		
	A		P
–y	2	→	1
–uko	3	→	1,2

Especially the distribution of *-a* and *-uko* often gave reason for assuming hierachies of the sort 1, 2 ≻ 3 and specifying the markers themselves as 'direct' and 'inverse' (Rhodes 1976, Klaiman 1993, Wunderlich 1996) whereas a 'direct' marker always appears when a higher person on this hierarchy acts on one that's lower, and an 'inverse' marker when a person lower on the hierarchy acts on one that's higher. The former can be exemplified through the suffix *-a* which occurs when a first/second person acts upon a third. *-uko* on the other hand stands for the 'inverse' scenario and appears when a third acts upon a first or second. These distributions are summarized in (12).

(12) *The distribution of* -a *and* -uko

A\P	1	2	3
1			–a
2			–a
3	–uko	–uko	

The other two occurring markers are *-ən* and *-y*. They only appear in 1↔2 contexts, which are often referred to as local forms. Whether they are integrated in the direction marking system varies in the existing analyses. Halle and Marantz (1993) do not integrate them but Wunderlich (1996) does.

(13) *The distribution of* -ən *and* -y

A\P	1	2
1		–ən
2	–y	

Generally, it is not clear how to integrate 'inverse' and 'direct' in a DM-like system at all. Instead of trying so and perhaps assuming special features like ±inverse and/or ±direct, we propose that these affixes are simply case markers inserted to realise the subject- or objecthood of one of the arguments. The arguments for the hierarchy based on the assumption of a direction marking system then play no role here anymore. This is illustrated in the lexical entries for the four affixes in (14). 'A' and 'P' are taken here simply as abstract labels for 'Subject' and 'Object'.

(14) *Vocabulary items for the case markers*

a. /-uko / ↔ A, −1,−2
b. /-a/ ↔ P, −1,−2
c. /-y/ ↔ P, −2 / __[A,−3]
d. /-ən/ ↔ P / __[A,−3]

The affix *-uko* marks subject agreement for third person subjects (non-first & non-second)[5]. The other three markers in (14) are all object agreement markers: *-a* for third person objects, *-y* for first person objects in the context of a non-third person subject, and *-ən* as unspecified object marker for all remaining contexts with a non-third person subject. We therefore propose that the often assumed direction marking system can be interpreted as a system of agreement markers realising features of one or the other head. These four affixes appear in a position right after the stem and bear all a CASE feature in their specification.

All other suffixes following these four case markers are plural markers specified for a certain person as well. They are listed in (15) roughly in the order in which they appear after the stem. *-nan* and *-mən* both realise +1,+pl but the former has a more limited distribution and only occurs when the subject is third person. This follows from the marker specification since *-nan* bears the context feature [A,+3], which means that there has to be another head with the features A and +3. Second person plural contexts are marked by *-m* and *-wa*. Whereas the latter only occurs if the other head is third person, the former is a less specific marker without any context feature. And finally *-k* marks third person plural, once again without any context restriction.

(15) *Vocabulary items for the plural markers*

e. /-nan/ ↔ +1,+pl / __[A,+3]
f. /-mən/ ↔ +1,+pl
g. /-wa/ ↔ −1,+pl / __[+3]
h. /-m/ ↔ +2,+pl
i. /-k/ ↔ +3,+pl

The important generalizations regarding the linear order of these suffixes are that person affixes specified for first or second person precede those specified for third person, e.g. *-wa-k* (3pl → 2pl). There are no ordering relations between second and first person markers, simply because those markers

[5]The assumption in DM that every feature can only be marked once and is discharged afterwards, sometimes results in at first glance unintuitive feature specifications. All theme markers have for example negative person features like −1,−2, although they obviously denote a third person. But the feature +3 must remain available since other suffixes realise person as well which will be inserted later on. Obviously, this points to the fundamental problem DM has with true instances of extended exponence. Whether such instances exist and what possible solutions are inside DM, is definitely not our concern here and an arbitrary problem of the whole DM system.

never cooccur. But we can still say something about their hierarchical relationship since we can find some blocking relations between them. Have a look at the local forms shown in (16).

(16) *Local forms*

A\P	1s	1pe	2s	2p
1s			–ən	–ən–m
1pe			–ən–mən	–ən–mən
2s		–y–mən		
2p	–y–m	–y–mən		

In 1p $\leftrightarrow$ 2p forms only the suffix for first person plural *-mən* shows up. The concrete reason and theoretical implementation for this behaviour will be discussed in section 2.3. For now it is enough to notice that first person ranks out second person: There are two arguments present and both could be marked by a person marker on their own and the first person marker is obviously inserted prior to the second person marker.[6] This follows naturally if the hierarchy $1 \succ 2$ is active in Potawatomi. We therefore assume that the order and insertion of suffixes in Potawatomi is governed by the hierarchy CASE $\succ 1 \succ 2 \succ 3$. Given the notion of specificity referring to feature quality, it follows that out of the pool of possible affixes in a given context, the affix which realises a feature highest on the hierarchy is inserted prior to the other ones.

This hierarchy is in contrast to the hierarchy $2 \succ 1 \succ 3$ that is often assumed for Algonquian.[7] The latter hierarchy may describe the observations made for the clitics (c.f. footnote 4), but concerning the order in the suffix-string and the blocking of affixes, only the ranking first person over second is empirically correct.

We will now go through the concrete implementation of this clear hierarchy-effect in our DM-system based on the assumptions of fission as feature discharge. We take the context 3p $\rightarrow$ 1pe given in (17)[8] as an example to show this system at work.

(17) *n-wapm-uko-nan-k*
1-*see*-A.3-1p-3p
'they see us(excl.)'

The only operation that takes place before vocabulary insertion is fusion of both fully specified agreement heads into one as in (18).

(18) *Fusion of the agreement heads*

$$\begin{bmatrix} \text{A} \\ -1,-2,+3 \\ +\text{pl} \end{bmatrix} \quad \begin{bmatrix} \text{P} \\ +1,-2,-3 \\ +\text{pl} \end{bmatrix} \quad \longrightarrow \quad \begin{bmatrix} [\text{A},-1,-2,+3,+\text{pl}] \\ [\text{P},+1,-2,-3,+\text{pl}] \end{bmatrix}$$

After fusion, the vocabulary items are checked for whether their feature specification would qualify for insertion into this head. According to the assumed concept of specificity that relies on feature quality, the consideration of markers for insertion starts with those realising features ordered highest on the hierarchy: CASE in Potawatomi. From the four possible vocabulary items specified for case given in (14), only *-uko* meets the feature specification of the head. There is no competition with one of the other three affixes which denotes the feature CASE. This marker is therefore inserted and the features it realises A,$-1,-2$ become unavailable for further insertion afterwards.

(19) a. *matching vocabulary item*
/-uko/ $\leftrightarrow$ A, $-1,-2$

[6] The remaining mystery we will address in section 2.3 is only why the second person marker is not inserted afterwards.
[7] E.g. in Dechaine (1999). But cf. Zúñiga (2008) for discussion of how many and which hierarchies are active in Algonquian languages.
[8] Remember that we will exclude the preceding clitics in the following.

b. *insertion and feature discharging*

-uko + [[A, ~~+1,~~ ~~−2,~~ +3, +pl] / [P, +1, −2, −3, +pl]]

After insertion of *-uko*, the markers specified for first person (15) are considered since they realise the next higher feature on the hierarchy. There are two possible items which would match: *-nan* and *-mən*. In this case, *-nan* is added since it has additional context features that make it more specific than *-mən*. The context features say that it is only possible to insert *-nan* when the other argument is a third person subject. This is the case here.

(20) a. *matching vocabulary items*

(i) /-nan/ ↔ +1,+pl / __[A,+3]

(ii) /-mən/ ↔ +1,+pl

b. *insertion and feature discharging*

-uko + **-nan** + [[A, −1, −2, +3, +pl] / [P, ~~+1,~~ −2, −3, ~~+pl~~]]

Notice that after insertion of *-nan*, there is no way to insert *-mən*, too. The required context isn't available anymore since inserting *-nan* discharged the features +1,+pl.

The last affix which can match the remaining feature specifications, after insertion of *-nan*, is *-k* for third person plural. In this context, no further affix is possible after this insertion since although there are unrealised features left on the head, there are no appropriate markers left in the set of agreement affixes in Potawatomi whose feature specification is a subset of those unrealised features.

(21) a. *matching vocabulary items*

/-k/ ↔ +3,+pl

b. *insertion and feature discharging*

-uko + *-nan* + **-k** + [A, −1, −2, ~~+3,~~ ~~+pl~~ / P, +1, −2, −3, +pl]

The language-specific hierarchy of morpho-syntactic features is what governs the order of affixes: the most specific marker always precedes the less specific ones. Blocking of markers in such a system follows simply from the concept of feature discharge: insertion of one marker makes all the features it realises unavailable for further insertion and the most specific marker consequently blocks all less specific markers realising one or more of the same features. This seems to be a quite natural process: One marker is inserted to realise certain features it is specified for and insertion of another marker which realises similar features would be redundant and is banned through the system.

2.3 Collateral feature discharge in Potawatomi

Now we can finally return to the mysterious behaviour of the marker *-mən* we already introduced in the beginning. It occurs if a first person plural is involved, regardless whether this is the agent or the patient. Its specification is +1,+pl.

(22) *Distribution of* -mən (Hockett 1939, Anderson 1992)

A\P	1pe	2s/p	3s	3p	INTR	
1pe		–ən–**mən**	–a–**mən**	–a–**mən**	1pe	**–mən**
1pi			–a–**mən**	–a–**men**	1pi	**–mən**
2s	–y–**mən**		–a	–a–k	2s	–∅
2p	–y–**mən**		–a–wa	–a–wa–k	2p	–m

The above mentioned observation is that *-mən* is never followed by any other marker. This would be quite unexpected if vocabulary items could be inserted as long as their feature specification is met, since there are indeed markers whose feature specification should be available after the insertion of *-mən*. For instance in a context with a first person plural subject and a second person plural object, one would expect two plural markers, namely *-mən* + *-m* – the former marking the plurality of the subject and the latter the plurality of the object. The feature specification of both markers is met in the morpho-syntactic context and given all the assumptions about fusion and insertion as feature discharge we made so far, the misprediction in (23) arises.

(23) *Misprediction in the context of -mən*

a. *The fused agreement heads*

$$\begin{bmatrix} [\text{A},+1,-2,-3,+\text{pl}] \\ [\text{P},-1,+2,-3,+\text{pl}] \end{bmatrix}$$

b. *matching vocabulary item for case*

/-ən/ ↔ P / __[A,−3]

c. *insertion and feature discharge*

-ən + $\begin{bmatrix} [\text{A},+1,-2,-3,+\text{pl}] \\ [\cancel{\text{P}}, -1,+2,-3,+\text{pl}] \end{bmatrix}$

d. *matching vocabulary item for first person*

/-mən/ ↔ +1,+pl

e. *insertion and feature discharge*

-*ən* + **-mən** + $\begin{bmatrix} [\text{A},\cancel{+1},-2,-3,\cancel{+\text{pl}}] \\ [\text{P}, -1,+2,-3,+\text{pl}] \end{bmatrix}$

f. **matching vocabulary item for second person*

*/-m/ ↔ +2,+pl

We can only conclude that the plural marker *-m* is blocked by the presence of *-mən*. And this behaviour of *-mən* can be seen throughout the whole paradigm. This is shown in (24), where all expected but never occurring affixes are marked in bold.[9]

(24) -mən *blocks expected number markers*

A\P	1pe	1pi	2p	3p	obv	inanim
1p			–mən*–**m**	–mən*–**k**	–mən*–**n**$_1$	–mən*–**n**$_2$
2p	–mən*–**m**			–wa–k	–wa–n$_1$	–wa–n$_2$

Most interestingly, this is a marker-specific blocking effect: it is not bound to a specific morpho-syntactic context but to the presence of a certain morpheme. Recall that there was another more specific marker for first person plural, namely *-nan* that only appeared in the context of a third person subject.

(25) *Vocabulary item for -nan*

/-nan/ ↔ +1,+pl / __[A,+3]

-nan, in contrast to *-mən*, is indeed followed by other agreement markers as can be seen in (26) and was already derived in the example in section 2.2. This is mysterious since both are specified for the same substantial features and appear in quite similar contexts. The blocking is therefore truely bound to the specific marker *-mən*, not to the syntactic context +1,+pl. Furthermore, regarding the whole verbal agreement system of the independent order, the contexts where *-mən* occurs are the only cells where a

[9]Note the two markers -n_1 and -n_2 we haven't mentioned before: they are markers for obviation and inanimacy of one argument.

blocking of markers can be observed at all.

(26) *No blocking in the context of* -nan

A\P	1pe	1pi	2p	3p
1p			–mən	–mən
2p	–mən			–wa–k
3p	**–nan–k**	**–nan–k**	–wa–k	

Such a divergence of input features and realised output features, is derivable in the DM framework by the application of *impoverishment*. This language-specific operation deletes features of the heads before the insertion process starts. The insertion of markers can therefore be prevented although they would normally qualify for insertion in this context. In the Potawatomi contexts of *-mən*, all features which would lead to the insertion of one of the markers shown in (24), must be deleted through such an impoverishment rule. Since not all first person plural contexts are affected, it is not possible to just add one rule stating that in contexts with a first person plural no other argument can be specified on the verb. Instead one would nearly have to specify each context with a separate rule.

(27) *Needed impoverishment rules*

+2,+pl $\rightarrow \varnothing$ /__[P, +1,+pl]
+pl $\rightarrow \varnothing$ /__[A,+1,+pl]
+obv $\rightarrow \varnothing$ /__[A,+1,+pl]
−anim $\rightarrow \varnothing$ /__[A,+1,+pl]

This of course obscures the easy generalization that the blocking just happens after the first person plural marker *-mən* and nowhere else. Which is supported by the fact that there is another first person plural marker *-nan* which does not have this effect. So the suffix *-mən* itself is directly responsible for the obviation of expected markers and a theory should be capable to account for this fact. We propose here that the phenomenon of marker-sensitive blocking can easily be integrated into the DM system through adding a new property for vocabulary items with respect to their discharging effects. Up to now, two kinds of VIs were possible: The simplest is of the kind of /-k/ $\leftrightarrow$ +3,+pl. It discharges all features it is specified for, i.e. its substantial features, as was exemplified in (21). The second type contains not only substantial but also context features, like /-nan/ $\leftrightarrow$ +1,+pl /__[A,+3]. *-nan* can only be inserted if the context has also the features A,+3. But when it is inserted these context features are not discharged – they remain available. We now assume that there is a third possibility – a VI that does not only discharge its substantial features but additionally collateral features which are not necessary for the insertion of this VI. This property of certain VIs is called collateral feature discharge. In the case of Potawatomi a marker with the CFD property will discharge ALL features that are available at the time the marker is inserted so that no other marker can realise any further features afterwards.[10]

The insertion of markers therefore follows the fission concept of 'insertion as long as possible' except for the case that a lexically marked CFD marker is inserted making all remaining features inaccessible for further insertion. It has to be emphasized that morphological deletion of features cannot apply until a marker with the CFD property is inserted. It could therefore very well be the case (and will be shown for Potawatomi below) that some vocabulary item is inserted prior to such a CFD marker.

We will notate CFD markers as having a feature specification [F...] in square brackets whereas the features of a 'standard' marker are just listed after the double arrow separating features and phonological representation of vocabulary items in DM. The list in (28) now enriches the typology of possible feature discharge from above: the marker in (28-a) only discharges the substantial feature it is specified for and the CFD marker in (28-b) additionally discharges all remaining features. It is clear that all further insertion is blocked after that since no features are available for realisation anymore.

[10]For reasons of space we won't discuss the possibility that CFD markers discharge smaller sets of collateral features. We believe that there is good evidence for such a concept as well. It is e.g. a widespread effect in Kiranti verbal agreement systems that only one number marker is possible and blocks all expected subsequent number markers. However, other markers for e.g. person are not blocked and follow such a number marker. Such a category-sensitive blocking effects straightforwardly follow from 'category-CFDs' that discharge all feature of a certain moprho-syntactic category.

(28) *The two realisational concepts*

	Vocabulary Item		fully-specified head		resulting head
a.	/-bu/ ↔ +pl	→	[+1,−2,−3,+pl]	→	[+1,−2,−3,+pl]
b	/-li/ ↔ [+pl…]	→	[+1,−2,−3,+pl]	→	[+1,−2,−3,+pl]

Assuming that *-mən* is underlyingly specified not only for the features +1 and +pl but is marked for the additional property of collateral feature discharge [+1,+pl,…] derives now the asymmetry between the two first person plural markers in Potawatomi. Insertion of *-mən* makes all remaining features of the head unavailable for further insertion. Given the assumption that the features of both arguments are fused into one head, no insertion for any feature of any argument is possible afterwards.

Consider this example in some more detail below for clarification. First, fusion applies and all features specifying agent and patient are merged into one complex head.

(29) *Example: 1pe → 2pl*

$$\begin{bmatrix} \text{[A,+1,−2,−3,+pl]} \\ \text{[P, −1,+2,−3,+pl]} \end{bmatrix}$$

After fusion, the vocabulary items are checked for whether their feature specification would qualify for insertion into this head. The consideration of markers starts with markers realising CASE. There is only one case marker listed in the lexicon whose feature specification is met in such a context, namely *-ən* marking simply the objecthood of an argument in the context of a non-third person agent. This marker is therefore inserted and the object-features it realises become unavailable for further insertion.

(30) a. *matching vocabulary item*

/-ən / ↔ P / __[A,−3]

b. *insertion and feature discharging*

-ən + $\begin{bmatrix} \text{A,+1,−2,−3,+pl} \\ \cancel{\text{P}}\text{, −1,+2,−3,+pl} \end{bmatrix}$

At this point in the derivation, all markers realising features next highest on the hierarchy are considered: those with a specification for first person. The only vocabulary item that matches the feature specification of one of the arguments is *-mən* expressing first person plural. *-nan* cannot be inserted since its context specification A,+3 is not met. Because *-mən* has the property of collateral feature discharge, it makes all remaining features that are unrealised up to this point unavailable for any further insertion.

(31) a. *matching vocabulary item*

/-mən/ ↔ [+1,+pl …]

b. *insertion and feature discharging*

-ən + **-men** + $\begin{bmatrix} \cancel{\text{A,+1,−2, −3,+pl}} \\ \text{P, } \cancel{\text{−1, +2, −3, +pl}} \end{bmatrix}$

Note that this was the crucial point in ordering first person above second person in the hierarchy for Potawatomi (discussed in section 2.2). The reverse ranking would mispredict Σ-*ən-m-mən*, since the second person plural marker *-m* would be inserted before *-mən* (and the head would be made unavailable for further insertion afterwards). And it is clear that the insertion of a CFD marker not necessarily results in a one-to-one-mapping between syntactic head and marker: because markers can be inserted before a CFD-marker but not afterwards. Note that in an impoverishment approach it is purely accidental that only following markers are blocked. Impoverishment rules apply before the insertion process starts and are consequently blind to the presence of certain markers and their position into the affix string. The CFD analysis clearly predicts the cyclic inside-out effect of the blocking since the morphological deletion does not happen until a marker with this property is inserted and consequently it cannot affect

the insertion of preceding markers which were already inserted.

To sum up the main points of the analysis: we argued that a clear hierarchy-effect in the order of suffixes follows in a DM system where *first* both agreement heads are merged into a single head so that all features are visible at the same time, *second* markers are inserted to realise the features of the syntactic head and are inserted in order of their specificity that refers to the hierarchy of morpho-syntactic features and *third* that marker insertion discharges features: the substantial features of every marker and additionally all remaining features of the head in case a marker is inserted that has the CFD property.

3 The broader picture: Cross-Algonquian

To show that the assumption of a CFD property is not an ad-hoc solution for a single problem in one language, we want to take a closer look at other Algonquian languages. It will be shown that most of them make a distinction between blocking and non-blocking markers as seen in Potawatomi.

Furthermore, the concept of CFD markers makes a strong prediction with respect to language development. When the blocking of subsequent affixes is indeed bound to the presence of a specific marker, a redistribution of this marker should imply a redistribution of the blocking effect as well. This prediction is borne out in the Algonquian languages.

In this section we want to take a look at some more languages of this family and the blocking patterns and marker distributions which can be found there. At first, some historical details should be mentioned to show how the patterns in the languages are related to each other.

3.1 Historical background

Since Bloomfield (1946), a lot of work was done in reconstructing the Algonquian Proto language and especially the verbal agreement system (Goddard 1967, 1974, 2007, Proulx 1982, 1984, 1990, Teeter 1965, Weggelaar 1974). We don't want to discuss this reconstruction of the Proto language in any detail here and will only concentrate on one important aspect regarding the inventory of plural markers. All Algonquian languages show two sets of plural suffixes for first and second persons, a fact that was already noted by Bloomfield (1946) and was shown in the previous section for Potawatomi (1p: *-mən* / *-nan*). This fact has long been discussed in the literature, especially the question which of both has to be reconstructed for the Proto language. Relevant for the present purpose is only the fact that these two sets exist in most Algonquian languages and did so for a long time in the past. Goddard (1967, 1974) reconstructs the two sets as in (32). The outcomes in Potawatomi are given in brackets.

(32) *Two sets of plural markers*

	Set I	Set II
1p	*hmena (> Pot. *-mən*)	*enaːn (> Pot. *-nan*)
2p	*hmwa (> Pot. *-m*)	*waːw (> Pot. *-wa*)

Although most languages show these two sets of suffixes (modified through the respective sound changes), they have different strategies in using the two sets. In all language, the set I suffixes occur in the intransitive forms and in the local forms ($1 \leftrightarrow 2$) of transitive verbs. But the distribution of plural markers in the direct and inverse forms vary depending on the language. There are basically three types, which are shown in (33). The grey cells mark the usage of set I suffixes and the white cells the usage of set II suffixes.

(33) *Data taken from Goddard (1967)*

		Intransitive		Transitive Animate paradigms					
		Animate		local		direct		inverse	
		1p	2p	1p	2p	1p	2p	1p	2p
1	Fox	-pena	-pwa	-pena	-pwa	-pena	-pwa	-enaːn	-wa
	Abenaki	-bena	-ba	-bena	-ba	-bena	-ba	-nna	-wo
2	Miami-Illinois	-məna	-mwa	-məna	-mwa	-məna	-wa	-enaːn	-wa
	Shawnee	-pe	-pwa	-pe	-pwa	-pe	-waː	-na	-wa
	Potawatomi	-mən	-m	-mən	-m	-mən	-wa	-nan	-wa
3	Ojibwe	-min	-m	-min	-m	-naːn	-waː	-naːn	-waː
	Delaware	-hima	-hina	-hima	-hina	-na	-wo	-na	-wa
	Cheyenne	-məno	-me	-məno	-me	-one	-ovo	-one	-ovo
	Passamaquoddy	-pən	-pa	-pən	-pa	-n	-wa	-n	-wa

What will be shown in the next sections is that the usage of one of the two sets has consequences for the realisation of subsequent markers. We will look at one example for each type and show how the blocking patterns and the usage of the suffix sets coincide.

3.2 Distribution of suffixes and blocking of subsequent markers

3.2.1 Type 1 – Fox

The first type can be exemplified with Fox (Bloomfield 1925, 1927), a Central-Algonquian language. The forms of the respective sets are given in (34). Set I suffixes come up with an initial element *p* in Fox. This regularly corresponds to the *m* (*-mən*) in Potawatomi.

(34) *Set I and set II suffixes in Fox*

	set I	set II
1p	*-pena*	*-naːn*
2p	*-pwa*	*-waː*

In most cells of the paradigm, set I suffixes are used. Only in the inverse forms, i.e. contexts with a third person subject in the transitive paradigm, set II suffixes occur. In the paradigms in (35), only the number agreement markers are given, which means that theme marking and prefixes are omitted for convenience. (36) lists the relevant markers with their meaning.

(35) *Number agreement in Fox* (Bloomfield 1925, 1927)

A\P	1s	1pe	1pi	2s	2p	3s	3p	INTR	
1s				–∅	–pwa	–wa	–wa–gi	1s	–∅
1pe				–pena	–pena	–pena	–pena	1pe	–pena
1pi						–pena	–pena	1pi	–pena
2s	–∅	–pena				–wa	–wa–gi	2s	–∅
2p	–pwa	–pena				–pwa	–pwa	2p	–pwa
3s	–wa	–enaːn–wa	–enaːn–wa	–wa	–waː–wa			3s	–wa
3p	–wa–gi	–enaːn–wa–gi	–enaːn–wa–gi	–wa–gi	–waː–wa–gi			3p	–wa–gi

(36) *Number agreement markers in Fox*

/-pena /$_{\text{I}}$ ↔ [+1,+pl . . .]
/-pwa /$_{\text{I}}$ ↔ [+2,+pl . . .]
/-enaːn/$_{\text{II}}$ ↔ +1,+pl / __A,+3
/-waː/$_{\text{II}}$ ↔ +2,+pl / __A,+3
/-wa / ↔ +3
/- gi/ ↔ +3,+pl

In all cases where a set II suffix is used, we find cross-referencing of subject and object features on the verb. Let's take the context 3s → 1pe with a third person singular subject and a first person plural object as an example. The suffix string we find is *-enaːn-wa* whereas *-enaːn* marks first person plural and *-wa* the third person of the agent. If the third person agent is plural, we even find a third agreement suffix *-gi*, marking the plurality of a third person: *-enaːn-wa-gi*.

In Fox, the set I suffixes have a broader distribution then in Potawatomi. They occur not only in the local forms, but in all direct forms as well, i.e. first and second person plural in the context of a third person object. As in the inverse forms, agreement markers for subject and object would be expected. With first and second person singular subjects, this could indeed be the case when one abstracts away from the fact that there are no overt singular exponents. Let's take again an example: in 1s → 3s, i.e. a first person singular subject and a third person singular object, we could analyse the form as *–∅–wa* with a zero exponent for the subject and the general third person exponent *–wa* denoting the object. This would fit the pattern of biactantial agreement which was already shown for the inverse contexts.

The irregular non-appearing of expected markers, i.e. a deviation of the agreement with both arguments, can now be found in 1p → 3 and 2p → 3 contexts and in all local forms (1 ↔ 2). In these cases we see only cross-referencing of one argument's features on the verb, although there are two suffixes expected. We know, for example, that there exists a general third person marker *–wa* in Fox. In the context 2p → 3s we would therefore expect something like **–pwa–wa* where the former suffix marks the plurality of the agent and the latter the third person object. But this is not the empirical situation: only *–pwa* surfaces in this context. This is summarized in (37) where the expected but non-occuring agreement markers are given in boldface.

(37) *Blocked agreement suffixes in Fox*

A\P	1s	1pe	1pi	2s	2p	3s	3p
1s				–∅	–pwa	–wa	–wa–gi
1pe				–pena	–pena*–**pwa**	–pena*–**wa**	–pena*–**wa***–**gi**
1pi						–pena*–**wa**	–pena*–**wa***–**gi**
2s	–∅	–pena				–wa	–wa–gi
2p	–pwa	–pena*–**pwa**				–pwa*–**wa**	–pwa*–**wa***–**gi**
3s	–wa	–enaːn–wa	–enaːn–wa	–wa	–waː–wa		
3p	–wa–gi	–enaːn–wa–gi	–enaːn–wa–gi	–wa–gi	–waː–wa–gi		

The table in (38) summarizes this morphological blocking of expected markers and the usage of the respective suffixes in these cells. The grey cells in the first row of the following table mark the cells where suffixes are missing, i.e. instances of morphological blocking. The second row shows which suffix set is used and in the last row the actual markers for these cells are given.

(38) *Blocking of expected markers in Fox*

	local		direct		inverse	
	1p	2p	1p → 3	2p → 3	3 → 1p	3 → 2p
Blocking						
Marker Set	I	I	I	I	II	II
	pena	**pwa**	**pena**	**pwa**	naːn-wa(–gi)	waː-wa(–gi)

It can easily be seen that the distribution of morphological blocking coincides with the usage of set I suffixes (*-pena* and *-pwa*) whereas in all contexts with set II suffixes, all expected suffixes occur.

As was already mentioned, the set I suffixes in Fox are etymologically related to the set I suffixes in Potawatomi. The difference is that in Fox they are used in far more contexts than in Potawatomi. At the same time, the non-appearance of expected markers does also occur in far more cells and both things coincide (as table (38) shows). The blocking effect comes and goes with the suffix. If the distribution of set I and set II suffixes changes, the distribution of the blocking does also. This clearly supports the assumption that the reason for this lies in the markers themselves rather than in the morphological context. Assuming that the set I affixes in Fox do also have a CFD property, as *-mən* in Potawatomi,

than this can easily be explained and derived.

3.2.2 Type 2 – Shawnee

The second type is represented by Shawnee (Berardo 2001).[11] At first, the respective forms of the two suffix sets are given in (39). The exponents are very similar to the ones seen in Fox, they only went through a shortening process (c.f. Goddard 1967: 106).

(39) *Set I and set II suffixes in Shawnee*

	set I	set II
1p	*–pe*	*–na*
2p	*–pwa*	*–wa:*

The suffix *-ki* marks a third person plural. Singular is in this language generally unmarked (-∅) and we do not find a general third person marker like the *–wa* in Fox. So certain cells in the paradigm do not exhibit number agreement at all.[12]

(40) *Number agreement in Shawnee* (Berardo 2001)

A\P	1s	1pe	1pi	2s	2p	3s	3p
1s				–∅	–pwa	–∅	–ki
1pe				–pe	–pe	–pe	–pe
1pi						–pe	–pe
2s	–∅	–pe				–∅	–ki
2p	–pwa	–pwa				–wa:	–wa:–ki
3s	–∅	–na	–na	–∅	–wa:		
3p	–ki	–na–ki	–na–ki	–ki	–wa:–ki		

INTR	
1s	–∅
1pe	–pe
1pi	–pe
2s	–∅
2p	–pwa
3s	–∅
3p	–ki

In the inverse forms, we see again the regular agreement with both arguments, e.g. 1p → 3p *–na–ki*. But in the direct forms, the distribution of set I suffixes is more limited than in Fox. Only first person plural arguments take set I suffixes (*–pe*), but second person plural takes set II forms (*–wa:*). At the same time, the blocking of expected markers is also limited, i.e. it is only present in the first person plural cells. In the local forms, there is no difference between the two languages, i.e. both use only set I suffixes there. This is summarized in (41).

(41) *Blocking of expected markers in Shawnee*

	local		direct		inverse	
	1p	2p	1p → 3	2p → 3	3 → 1p	3 → 2p
Blocking						
Marker Set	I	I	I	II	II	II
	pe	**pwa**	**pe**	wa:	na	wa:

Table (41) shows again that the blocking of markers, i.e. single argument agreement, coincides with the usage of set I suffixes. This is exactly what is predicted from the assumption that all set I suffixes have the CFD property and block all expected subsequent markers. Compared to the languages of type I, Shawnee shows a limited distribution of the set I suffixes and with the disappearing of these suffixes in certain cells, the blocking of suffixes also vanishes. This, again, implies that the blocking effect is bound to the special behaviour of the suffixes of set I.

[11] Note that Potawatomi also belongs in this group.

[12] This does not mean that only the bare stem is used in these forms. As mentioned above, the paradigms presented here omit prefixes and theme marking.

3.2.3 Type 3 – Ojibwa

In this last type, exemplified with Ojibwa (Rhodes 1976), we will see that the distribution of set I suffixes is again more limited and so is the blocking effect as well. We start with the respective suffixes of each set in (42).

(42) *Set I and set II suffixes in Ojibwa*

	set I	set II
1p	*–min*	*–naːn*
2p	*–m*	*–waː*

Ojibwa differs from the other two languages seen before in that the initial element comes now up as *m* and not as *p*. This was also the case for Potawatomi. Some Algonquian languages have *hm* or *hp* in this position (Delaware, Blackfoot). This is why these forms are reconstructed with an initial element **hm*.

In the following paradigm, *-ag* is the marker for third person plural. Singular arguments again do not take any suffix and contexts where both arguments are singular consequently show no person-number agreement markers (∅).

(43) *Number agreement in Ojibwa* (Rhodes 1976)

A\P	1s	1pe	1pi	2s	2p	3s	3p	INTR	
1s				–∅	–m	–∅	–ag	1s	–∅
1pe				–min	–min	–naːn	–naːn–ag	1pe	–min
1pi						–naːn	–naːn–ag	1pi	–min
2s	–∅	–min				–∅	–ag	2s	–∅
2p	–m	–min				–waː	–waː –ag	2p	–m
3s	–∅	–naːn	–naːn	–∅	–waː			3s	–∅
3p	–ag	–naːn–ag	–naːn–ag	–ag	–waː–ag			3p	–ag

In Ojibwa, the set I suffixes are only used in intransitive and local forms. In all other cells, set II suffixes occur. Again the blocking related to the used suffixes is shown in the next table.

(44) *Blocking of expected markers in Ojibwa*

	local		direct		inverse	
	1p	2p	1p → 3	2p → 3	3 → 1p	3 → 2p
Blocking						
Marker Set	I	I	II	II	II	II
	min	**m**	naːn	waː	na	waː

The same picture as in the other two types arises, namely that the blocking coincides with the usage of set I suffixes. Their distribution is in Ojibwa maximally limited.

3.3 Summary

Table (45) sums up the different distributions of suffix sets and blocking in the respective languages. It is obvious that the blocking effect goes along with the usage of set I suffixes. Whenever set II suffixes are used regular agreement with both arguments occurs.

(45) *Distribution of blocking and suffix sets*

	local		direct		inverse	
	1p	2p	1p → 3	2p → 3	3 → 1p	3 → 2p
1	I	I	I	I	II	II
2	I	I	I	II	II	II
3	I	I	II	II	II	II

The explanation for the coincidence of these two aspects lies in the markers themselves. All set I suffixes have the CFD property, i.e. they prevent the usage of suffixes after them, and are therefore directly responsible for the deviation of the biactantial agreement pattern. If now the distribution of these suffixes changes (for whatever reasons), the blocking effect had to change as well since it is triggered by the presence of the markers and does not occur in the absence of these elements. An impoverishment approach which assumes that deletion rules are responsible for the blocking, wouldn't explain why a changed distribution of one of both phenomena has consequences for the other.

This implies that it is more likely for such a marker (at least in this family) to change its distribution in language development than to loose its CFD property. This feature seems therefore to be a property that is intrinsically bound to a morpheme, similarly as its status as prefix or suffix.

4 Conclusion

We presented a morphological realisational analysis of the suffix agreement system of Potawatomi. Our focus was *first*, the derivation of the order of suffixes and their competition for insertion and *second*, the phenomenon of marker-sensitive blocking. The latter was found in Potawatomi with the plural marker *-mən* that generally prohibits another agreement marker behind it although markers realising features of the other argument are expected. Our analysis is a hierarchy-governed insertion approach inside DM, based on the hierarchy: CASE $\succ$ 1 $\succ$ 2 $\succ$ 3 that derived the order of suffixes. The second theoretical main ingredient was the introduction of the so called CFD property that specifies markers for discharging more than their substantial features. Supporting evidence for this new theoretical assumption was given on the basis of a cross-Algonquian comparison of the distribution of certain markers and the blocking effect. It became evident, that the redistribution of a morphological blocking effect in different languages always coincides with a redistribution of a certain marker: this is straightforwardly predicted if the morphological blocking is bound to the presence of a marker and is part of its intrinsic properties. Further research has to show where this concept is active in other languages.

References

Anderson, Stephen R. (1992), *A-Morphous Morphology*, Cambridge: Cambridge University Press.

Berardo, Marcelino (2001), Animacy and Shawnee verbal inflection, PhD thesis, University of Kansas.

Bloomfield, Leonard (1925), 'Notes on the fox language', *International Journal of American Linguistics* **3**(2), 219–232.

Bloomfield, Leonard (1927), 'Notes on the Fox language', *International Journal of American Linguistics* **4**(2), 181–219.

Bloomfield, Leonard (1946), Algonquian, *in* H.Hoijer, ed., 'Linguistic Structures of native America', Viking Fund, pp. 85–129.

Dechaine, Rose-Marie (1999), What Algonquian morphology is really like: Hockett revisited, *in* L.Barel, R.-M.Dechaine and C.Reinholtz, eds, 'Papers from the Workshop on Structure and Constituency in Native American Languages (WSCLA 1)', MITOPL 17 (MIT Occasional Papers in Linguistics):.

Frampton, John (2003), Syncretism, impoverishment, and the structure of person features, *in* 'CLS 38', papers from the 2002 Chicago Linguistic Society Meeting.

Goddard, Ives (1967), The Algonquian independent indicative, *in* 'Contributions to anthroplogy: Linguistics I (Algonquian)', National Museum of Canada.

Goddard, Ives (1974), 'Remarks on the algonquian independent indicative', *International Journal of American Linguistics* **40**(4), 317–327.

Goddard, Ives (2007), Reconstruction and history of the independent indicative, *in* H.Wolfart, ed., 'Papers of the Thirty-Eighth Algonquian Conference'.

Halle, Morris (1997), Distributed Morphology: Impoverishment and fission, *in* Y. K.Benjamin Bruening and M.McGinnis, eds, 'Papers at the Interface', Vol. 30 of *MIT Working Papers in Linguistics*, Cambridge MA: MITWPL, pp. 425–449.

Halle, Morris and Alec Marantz (1993), Distributed Morphology and the pieces of inflection, *in* K.Hale and S. J.Keyser, eds, 'The View from Building 20', Cambridge MA: MIT Press, pp. 111–176.

Hockett, Charles F. (1939), The Potawatomi language. A descriptive grammar, PhD thesis, Yale University.

Klaiman, M H (1993), 'Inverse languages', *Lingua* **88**, 227–261.

Müller, Gereon (2006), Global impoverishment in Sierra Popoluca, *in* G.Müller and J.Trommer, eds, 'Linguistische Arbeits Berichte Leipzig', Vol. 84, Leipzig, pp. 23–42.

Noyer, Robert R. (1992), Features, Positions and Affixes in Autonomous Morphological Structure, PhD thesis, MIT.

Proulx, Paul (1982), 'The origin of the absolute verbs of the algonquian independent order', *International Journal of American Linguistics* **48**(4), 394–411.

Proulx, Paul (1984), 'Algonquian objective verbs', *International Journal of American Linguistics* **50**(4), 403–423.

Proulx, Paul (1990), 'Proto-algonquian verb inflection', *Kansas Working Papers in Linguistics* **15**(2), 100–145.

Rhodes, Richard A. (1976), The morphosyntax of the Central Ojibwa verb, PhD thesis, University of Michigan.

Stump, Gregory T. (1996), Template morphology and inflectional morphology, *in* G.Booij and J.van der Marle, eds, 'Yearbook of Morphology 1996', Dordrecht: Kluwer, pp. 217–241.

Stump, Gregory T. (2001), *Inflectional Morphology*, Cambridge: Cambridge University Press.

Teeter, Karl V. (1965), 'The algonquian verb: Notes toward a reconsideration', *International Journal of American Linguistics* **31**(221-225).

Weggelaar, C. (1974), 'The algonquian verb: Another reconsideration', *International Journal of American Linguistics* **40**(3), 249–253.

Wunderlich, Dieter (1996), A minimalist model of inflectional morphology, *in* C.Wilder, M.Bierwisch and H.-M.Gärtner, eds, 'The role of economy principles in linguistic theory', Berlin: Akademie-Verlag, pp. 267–298.

Zúñiga, Fernando (2008), How many hierarchies, really? Evidence from several Algonquian languages, *in* M.Richards and A. L.Malchukov, eds, 'Scales', Vol. 86, Linguistische Arbeits Berichte, pp. 277–294.