The challenge by inverse morphology
Dieter Wunderlich (Düsseldorf and Berlin)

1. Introduction

The idea of abstract case relies on the assumption that the lexical asymmetry of transitive verbs is preserved in both the morphology and syntax. A transitive verb has two structural arguments being ordered: the higher argument (the lexical subject) likely shows agent properties (i.e., instigates and controls the event denoted by the verb), and the lower argument (the lexical object) likely shows patient properties (i.e., can be affected by the event denoted by the verb). This lexical asymmetry is preserved in the morphology if there is a specific marker (or a pronominal affix) indicating the element that functions as the object (called accusative) or a marker indicating the element that functions as the subject (called ergative). Both types of markers realize abstract case: they characterize one of the arguments of a transitive verb differently from the way in which the argument of an intransitive verb is realized. Likewise, lexical asymmetry is preserved in the syntax if there is a verb-adjacent position indicating the object so that the subject c-commands the object.

Could one imagine a language in which the lexical asymmetry of transitive verbs is not preserved in the morphology or the syntax? As long as one believes that the realization of abstract case is necessary for human languages, probably not. However, I will argue in this paper that a language with so-called inverse morphology violates this idea, and thus refutes the assumption that subject-object asymmetries have to show up also in the morphology and syntax.

A system that can be described by abstract case can nevertheless be sensitive to semantic or discourse factors such as animacy, definiteness, or topicality of the arguments. When the choice of accusative depends on such a salience factor, the system is said do display differential object marking: only if the object is relatively high in salience (contrary to what one expects for objects), the object is marked accusative. Likewise, differential subject marking reflects salience of the subject: If the subject is relatively low in salience, contrary to what one expects, the subject is marked ergative. The combined forces of both differential object and differential subject marking can lead to a four-way case split, illustrated in (1), actually found in various languages, among them Dyirbal (Australian), Udi (NE Caucasian) and Hindi (Wunderlich to appear). Differential case marking has been accounted for by the assumption that the abstract case hierarchy and each of the salience hierarchies are aligned harmonically (Aissen 1999, 2003, Stiebels 2000, 2002).

(1)   Four-way case split.

	low-salient objects	high-salient objects
high-salient subjects	NOM NOM	NOM ACC
low-salient subjects	ERG NOM	ERG ACC

To be more concrete, the first or second person (called 'local') obviously is more salient than the third (non-local) person from the perspective of speech act participation. A possible distribution of person that correlates with the distribution of case in (1) is shown in (2).

(2)   Possible person settings

	low-salient objects	high-salient objects
high-salient subjects	1→3 or 2→3 (direct)	1→2 or 2→1 (local)
low-salient subjects	3→3 (symmetric)	3→1 or 3→2 (inverse)

'x→y' (or 'x/y') symbolizes that x is the value of the subject, and y the value of the object. In the direct setting, a first (or second) person agent 'works upon' a third person patient (such as 'we see the man'), which is the most natural setting from the perspective of egoistic and engaged people ("Me first!"). According to the view of differential case marking, the role of the two arguments can still be disambiguated if both these arguments are realized by nominative. Of course, it is also

possible that in a more symmetric setting the two participants of a transitive event are local persons or non-local persons. Differential case marking then predicts the use of either accusative or ergative for disambiguation: accusative identifies a high-salient patient, while ergative identifies a low-salient agent. Moreover, it is not excluded that the speaker wants to communicate an event with inverse setting (such as 'the man sees us'), in which the role of local and non-local person are inversed. Here, differential case marking predicts the occurrence of both accusative and ergative, i.e. maximal marking.

It is important to note that morpho-syntax based on case encodes subjects and objects mainly independent of each other, according to absolute contextual values. By contrast, inverse morphology encodes relative salience. The direct marker encodes the more natural setting in which the subject is more salient than the object. Conversely, the inverse marker encodes the setting in which the object is more salient than the subject. Therefore, these markers, encoding a certain subject-object relation, are necessarily head markers, they have to be realized on the verb itself rather than on the dependents of the verb. The effects of the direct marker can be compared with the distribution NOM NOM in (1), and those of the inverse marker with the distribution ERG ACC. This already shows that neither ERG nor ACC alone are capable of conveying the information of an inverse marker. As we will see below, inverse morphology is a rather ingenious invention, in its purest form only found in the Algonquian languages. However, many more indigenous languages of the Americas, as well as some Asian languages, show some relics of inverse morphology. Without an adequate knowledge of Algonquian we would probably be unable to analyze these relics adequately.

The questions I am going to discuss include the following:
- How general is inverse morphology?
- How can inverse morphology be developed?
- Can inverse morphology undergo the change to accusative or ergative morphology?
- Does an inverse system exhibit structural asymmetries (such as subject-object asymmetry)?

It is in particular the last question that deserves the interest of linguists. In the Algonquian languages, which exhibit inverse morphology, sentences such as those in (3) with the annotated cross-references are possible. In English, one would have instead to say 'Mary$_i$'s sister helped her$_i$' and 'John$_i$ knows he$_i$ is sick' in order to convey the intended meaning, because an anaphora must be c-commanded by its antecedent.

(3)   Unexpected cross-references in Ojibwe (Bailin & Grafstein 1991: 407).
    a. o-miseez-an   o-gii-wiidookaw-igw-an   Mary.
         3-sister-OBV   3-PAST-help-INV-OBV   Mary
         'Her$_i$ sister helped Mary$_i$.'
    b. o-gikeendaan a:kozi-d   John.
         3-know   sick-3   John
         'He$_i$ knows John$_i$ is sick.'

What is different in Ojibwe such that those obvious c-command violations are tolerated?

2. Some basic facts about Algonquian

In the verbal system of the Algonquian languages, animacy plays a central role. Intransitive verbs have different stems for animate vs. inanimate subjects, mostly marked by derivational (or thematic) suffixes. Likewise, transitive verbs have different stems for animate vs. inanimate objects. The different classes of verbs are abbreviated as VAI vs. VII in the intransitives, and as VTA vs. VTI in the transitives. (4) shows some possible derivations from the root *biin* 'clean'.

(4)   Some thematic endings of stems in Ojibwe, derived from *biin* 'clean'[1]

	animate	inanimate	
The subject of the intr. verb is	biin-zi (VAI)	biin-ad (VII)	'be clean'
The object of the trans. verb is	biin-ih (VTA)	biin-toon (VTI)	'make clean'

The examples in (5) illustrate some of the inflectional possibilities based on these stems. Usually, the affixes applicable on these stems are different, one reason, of course, is that first and second person are only possible for animate entities. The independent forms are characteristic for main clauses, while the conjunct forms are mostly found in subordinated clauses.

(5)   Some inflected forms with the four 'clean'-stems in Ojibwe; the additional inflectional
        affixes are glossed in parentheses
        a. Independent order, indicative, positive
            biin-zi-wag.   (3pl.anim)   'They are clean.'
            biin-ad-wan.   (pl.inan)   'They (inanimate) are clean.'
            w-biin-toon-naawaan.   (3-V-3pl)   'They make it clean.'
            w-biin-ih-igo-naawaa.   (3-V-inverse-3pl)   'It makes them clean.'
            biin-ih-aa-wag   (direct-3pl.anim)   'Someone makes them clean.'
                                                            (= 'They are made clean.')

        b. Conjunct order, neutral, positive
            biin-zi-waad   (3pl.anim)   'that they are clean'
            biin-ad-k   (pl.inan)   'that they (inanimate) are clean'
            biin-toon-waad   (3pl.anim)   'that they make it clean'
            biin-ih-igo-waad   (inverse-3pl.anim) 'that it makes them clean'
            biin-ih-ind-waa   (pass-3pl.anim)   'that they are made clean'

Our first observation about the inflectional system of Algonquian concerns the fact that all transitive forms are sensitive to the relative ranking of arguments. The first set of examples, given in (6), shows that, considering the inclusive plural in the prefixes, 2nd person has preference over 1st person, while both have preference over third person. Ojibwe inflection is thus sensitive to the salience scale 2 > 1 > 3. The prefix marks the more salient person, regardless of whether it instantiates the subject or the object. The choice of subject and object only depends on the voice suffixes /aa/ or /igo/: with the direct suffix /aa/ the more salient argument is subject, while with the inverse suffix /igo/ the more salient argument is object. (All examples in (6) to (8) are from the dialect of Parry Island, Ontario, see Valentine 2001.)

(6)   Direct and inverse forms in Ojibwe
        n-waabm-aa-min   'We(encl) see him/them.'   (1-see-DIR-1pl)
        g-waabm-aa-min   'We(incl) see him/them.'   (2-see-DIR-1pl)
        g-waabm-aa-waa-g   'You(pl) see them.'   (2-see-DIR-2pl-3pl)
        n-waabm-igo-min   'They see us(excl).'   (1-see-INV-1pl)
        g-waabm-igo-min   'They see us(incl).'   (2-see-INV-1pl)
        g-waabm-igo-waa-g   'They see you(pl).'   (2-see-INV-2pl-3pl)

The examples in (7) show that /i/ is the direct suffix if both subject and object are local persons (so that the more salient second person realizes the subject), while /iN/ is the corresponding inverse suffix, with the second person realizing the object. Moreover, with regard to the plural suffixes, one

---

[1]   Ojibwe is the traditional name of the language now called Nishnaabemwin. Most examples are taken from the
        extensive grammar by Valentine (2001).

finds that the expression of 1st person plural takes preference. (It is, of course, more informative to mark plural together with the person that is not already marked by means of a prefix.) We can thus postulate another scale, namely pl/1 > pl/2, pl/3.

(7)   Direct and inverse forms in the local settings
      g-waabm-i-min   'You(sg/pl) see us(excl).'   (2-see-DIR-1pl)
      g-waabm-ini-min   'We(excl) see you(sg/pl).'   (2-see-INV-1pl)

Even more remarkable is the additional fact that the asymmetry of person is generalized to all persons. If there are more than one third person arguments, they must be ranked to each other. Only one proximate third person is possible in a clause, all others must be obviative (sometimes also called fourth person). Number is marked only on the proximate person (whereas gender is always unmarked). The use of the voice markers /aa/ and /igo/ (which we know already from (6)) in the following examples is consistent with the ranking 3 > obv.

(8) Direct and inverse forms in the non-local settings
      w-waabm-aa-n   'She sees him/them$_{obv}$.'   (3-see-DIR-3)
      w-waabm-aa-waan   'They see him/them$_{obv}$.'   (3-see-DIR-3pl)
      w-waabm-igo-on   'He/they$_{obv}$ see her.'   (3-see-INV-3)
      w-waabm-igo-waan   'He/they$_{obv}$ see them.'   (3-see-DIR-3pl)

It has been assumed that the direct forms are similar to active and the inverse forms similar to passive. However, the distinction between direct and inverse voice must not be identified with that between active and passive because (unlike the passive) no argument is demoted or existentially bound in the inverse voice, and, moreover, an additional (impersonal) passive exists. It takes person-number suffixes of intransitive verbs. It is special for Ojibwe that this passive is fused with the voice suffixes, as shown in (9). These examples also indicate that the full person scale of Ojibwe is 2 > 1 > X (unspecific) > 3 > obv: An unspecific argument is less salient than a local person (therefore /igoo/, a variant of the inverse morpheme, is used), but it is more salient than the third person (therefore the direct marker /aa/ is used).

(9)   Unspecific subject (corresponding to passive) in Ojibwe
      n-waabm-igoo-min   'Someone sees us (= we are seen).'   (1-see-INV.PASS-1pl)
      waabm-aa-wag   'Someone sees them (= they are seen).'   (see-DIR-3pl)

Although nouns can be ordered inherently, e.g., people are usually more salient than animals, this does not need to be the case in general. Therefore, obviative is also marked on the noun for disambiguation. The following example is cited from Valentine (2001:183).

(10)   W-gii-waabm-aa-n   dash   niw   zhiishiib-an   niibna bbaa-gom-nid.
      3-PAST-see-DIR-OBV   then   that.OBV   duck-OBV   many   go.around-float-OBV
      'Then he saw many ducks swimming about.'

The obviative marking opens four possibilities for a transitive verb: each argument can be proximate or obviative, and it can be subject or object. As a rule, the proximate argument is subject in the direct voice, while the obviative argument is subject in the inverse voice. This is illustrated in (11) with examples from two different languages (which also show some amount of lexical similarity).

(11)   Obviative in Plains Cree and Ojibwe (Wolfart & Carroll 1981:30, Valentine 2001)
     a. wąpam-ę-w   nąpęw   sįsip-a.   'The man sees the duck (obv)'
         wwaabm-aa-n   nini   zhiishiib-an.
         see-DIR-OBV   man   duck-OBV

    b. wạpam-ik   nạpẹw-a sịsịp.   'The man (obv) sees the duck'
        wwaabm-igoo-n ninw-an   zhiishiib.   [≈'The duck is seen by the man']
        see-INV-(OBV)   man-OBV duck

    c. wạpam-ẹ-w   nạpẹw-a sịsịp.   'The duck sees the man (obv)'
        wwaabm-aa-n   ninw-an   zhiishiib.
        see-DIR-OBV   man-OBV duck

    d. wạpam-ik   nạpẹw   sịsịp-a.   'The duck (obv) sees the man'
        wwaabm-igoo-n nini   zhiishiib-an. [≈'The man is seen by the duck']
        see-INV-(OBV)   man   duck-OBV

As said above, it is not possible to combine two proximates in a transitive clause, and if two obviatives are combined (which is possible in principle), they are nevertheless understood as being ranked with respect to each other. Thus, the four possible values for subject and object only yield four possible combinations, as shown in (12).

(12)   Four possible states for two arguments

S\O	duck-OBV	duck.PROX	man-OBV	man.PROX
man.PROX	direct			
man-OBV		inverse		
duck.PROX			direct	
duck-OBV				inverse

A particular advantage of the obviative marking is that it automatically establishes clause-internal and clause-external co-references ('reference tracking'). Co-reference between two arguments requires the same obviation status, be it proximate or obviative. Clause-internal co-reference concerns the identity of a possessor. Usually, the possessor is more prominent than the possessum; however, an additional obviative marking with /**iý**/ can invert this relationship, as shown in (13b).

(13)   Clause-internal co-reference in Plains Cree (Wolfart & Carroll 1981).
    a. cạn wạpam-ẹew o-stẹs-a   w-ịk-ihk
        John see-DIR   3P-brother-OBV 3P-house-at
        'John$_{prox}$ saw his$_{prox}$ older brother$_{obv}$ at his$_{prox}$ house.'
        ('John$_1$ saw his$_1$ older brother$_2$ at his$_1$ house.')
    b. cạn wạpam-ẹw   o-stẹs-a   w-ịk-**iý**-ihk
        John see-DIR   3P-brother-OBV 3P-house-OBV.POSS-at
        'John saw his older brother$_{obv}$ at his$_{obv}$ house'

Clause-external co-reference concerns the identity of arguments in the dependent clause.

(14)   Clause-external co-reference in Plains Cree (Wolfart & Carroll 1981)
    a. nạpẹw   atimw-a wạpam-ẹw ẹ-sipwẹhtẹ-t   [≈ SS]
        man   dog-OBV see-DIR   CONJ-leave-3
        'The man$_{prox}$ saw the dog as he$_{prox}$ left'
    b. nạpew   atimw-a wạpam-ẹw ẹ-sipwẹhtẹ-**yit**   [≈ DS]
        man   dog-OBV see-DIR   CONJ-leave-3OBV
        'The man saw the dog$_{obv}$ as he$_{obv}$ left'

I will come back to this issue in section 4. Here, I only would like to draw the reader's attention to the following suggestion. Given certain circumstances, a *cross-referencing* system such as that exhibited in (14) can be reanalyzed as a switch-reference system: the obviative marking on the

dependent verb in (14b) can be re-interpreted as a different subject (DS) marker, and, consequently, the marking on the dependent verb in (14a) as a same subject (SS) marker.

Let us briefly consider how the inverse morphology deals with ditransitive verbs. As we have seen, the inflectional system accounts only for two, but possibly *animate* arguments. It is, therefore, the recipient of ditransitive verbs which is treated like the patient of transitive verbs. Some inflectional forms of miin 'give' are given in (15, 16), and further illustrated by the examples in (17).

(15) Transitive animate inflection (VTA) of ditransitives in Ojibwe
    a. direct: n-miin-aa   'I give her something.'   (1-give-DIR)
                         n-miin-aa-g   'I give them something.'   (1-give-DIR-3pl)
    b. inverse: n-miin-ig   'She gives me something.' (1-give-INV)
                         n-miin-igo-og 'They give me something.' (1-give-INV-3pl)

(16) Passive of ditransitives with animate intransitive inflection (VAI)
    miin-aa   'She is given something.'   (give-DIR)
    miin-aa-wag   'They are given something.'   (give-DIR-3pl)
    n-miin-igoo   'I am given something.'   (1-give-INV.PASS)

(17) Inverse (a) and passive (b) of ditransitive verbs (Valentine 2001: 656, 688).
    a. N-gii-bgidnamaa-g aw nini   w-baashkzig-an.
        1-PAST-let.have-INV that man 3-rifle-OBV
        'That man let me have his gun.'
    b. Semaa-n   gii-miin-aa-wag   giw   kiwenziin-yag   gaa-bi-zhaajig.
        tobacco-OBV PAST-give-DIR-3pl those old.man-pl   who-hither- come.PART.CONJ
        'The old men who had come were given tobacco.'

Besides various intransitive and transitive markers, Algonquian also exhibits a rich system of valency-increasing markers, which yield a ditransitive verb if they are applied on a transitive one. However, only one object can be marked on the verb, and one expects it to be the argument that more likely is animate. In the causative it is the causee that is co-indexed on the verb (18a), while in the applicative (e.g., the comitative or benefactive) it is the applied object (18b,c).

(18) Some derived verbs in Ojibwe (Valentine 2001: 435, 463, 465)
    a. Causative
        baak-nam-oo-h
        open-TRANS.ANIM-epenth-CAUS
        'get/cause someone to open something'
    b. Comitative   c. Benefactive
        wiid-oopo-m   dkw-aabiit-maw
        WITH-eat-WITH   short-stringlike.object-BEN
        'eat with someone'   'shorten something (stringlike) for someone'

(19) shows an example with inverse marking because here the beneficiary is more salient than the subject.

(19) 1st person beneficiary marked on the verb (Valentine 2001:700)
    Aw kwe   n-dazht-amaa-g   n-babgiwyaan.
    that woman   1-make-BEN-INV   1P-shirt
    'That woman is making me a shirt.' (literally: my shirt)

Summarizing, the voice morphemes align the argument hierarchy with the person hierarchy (either directly or inversely) and thus neutralize lexical asymmetry, and since essentially there is only one set of person-number morphemes, underspecified for their grammatical function, this type of argument linking morphology is rightly characterized as 'symmetric'.

3. How inverse systems come about and how they can be changed

Let us briefly speculate about the origin of the direct and inverse voice markers. The Algonquian languages exhibit a rich system of classifiers on verbs. Generally, the root can be followed by a semantic and a categorical classifier in that order. This is illustrated in (20), where the root-adjacent suffix classifies the form or the material of the object which is said to be short, whereas the outward suffix determines whether it is animate or not.

(20)   Some verbs with *dko* 'short' (Valentine 2001:342 ff)

VAI	VII	
dko-ozi	dkow-aa	'be short'
dkw-aabiig-zi	dkw-aabiig-ad	'be short' (of a string-like obj.)
dkw-aabk-izi	dkw-aabk-ad	'be short' (of a metal/stone-like obj.)
dkw-aak-zi	dkw-aak-od	'be short' (of a wooden/pole-like obj.)

One possible suggestion is that the voice markers function similar to classifiers on verbs, but, of course, they belong more to the categorical or inflectional type. Let us compare (21a) and (b).

(21)   a. n-waabn-daan   jiimaan.   b. n-waabm-aa nin.
           1-see-VTI   boat   1-see-DIR   man
           'I see the boat.'   'I see the man.'

In (21a),   the suffix /-daan/ is an absolute classifier, it belongs to the various transitive suffixes that signal inanimate object. One could as well say that the scale animate > inanimate is aligned here with the scale subject > object, and 'the boat' fulfils the condition exerted on the object. In (21b), however, the suffix /-aa/ is a relative classifier competing with /i/, /iN/ and /igw/. /i/ and /iN/ classify verbs with two local arguments so that the scale 2 > 1 is aligned with the scale subject > object, either directly or inversely. In the remaining transitive verbs, /aa/ singles out the class of verbs in which some segment of the scale 2,1 > X > 3 > obv is aligned with the scale subject > object, while (underlying) /igw/ characterizes the case in which such a segment is aligned inversely. Under this perspective, the grammaticalization of a classifier suffix to perform the function of an inverse or direct marker is not really surprising. Note also that there are inverse-only verbs such as 'make someone thirsty/drunk/sick', 'give someone a headache', which truly have a classifying function regarding bodily states.

It is, however, not clear how the complex classifying function of the voice suffixes comes about. For this purpose, one can regard the voice markers to be generalized from former portmanteau morphemes, which encode subject and object properties simultaneously. The diagram (22) presumes that the cells are occupied by portmanteau morphemes, one morpheme for 1.subject/ 2.object, another one for 3.subject/2.object, a third one for 3.subject/1.object, and so on. Then, by stepwise generalization, case morphemes could emerge as indicated in (22). Generalization along columns yields accusative morphemes, while generalization along rows yields ergative morphemes. Of course, segmentation into subject and object features is more effective than portmanteaus.

(22) Generalization to case markers from portmanteaus

S\O	2	1	3	
2		2→1	2→3	
1	1→2		1→3	
3	3→2	3→1	3→3	→ 3.ERG
	↓ 2.ACC	↓ 1.ACC		

In the presence of a strong person hierarchy, however, generalization can group portmanteaus slightly differently, e.g., above and below the shadowed cells, as shown in (23). Such a generalization could then yield voice morphemes.

(23) Generalization to theme markers from portmanteaus

S\O	2	1	3	obv	
2		2→1	2→3	???	→ generalization: direct
1	1→2		1→3		
3	3→2	3→1		3→obv	
obv	???		obv→3		
	↓ generalization: inverse				

Inverse morphology is most effective if more groups than one are formed, as indeed is the case in Algonquian. In the independent order of Ojibwe, *g-V-aa* (2-V-DIR) encodes just one cell, namely 2→3, and *g-V-in* (2-V-INV.LOC) encodes 1→2. It doesn't need more than six morphemes to express 8 different subject-object constellations. A precondition is that the person prefixes (such as /g-/ and /n-/) are not specified for either subject or object. In other words, inverse morphology and case morphology exclude each other. This suggests that they are rigid alternatives, and no shift between the types is possible.

The real situation is a little more complex. Besides person, also number must be marked. Algonquian always uses number suffixes specific for a particular person. In the conjunct order, the prefix position is occupied by a subordinating element, or remains empty. The use of inverse and direct markers is therefore less economical here because it leaves too much ambiguity. Moreover, a string of suffixes can undergo various phonological alternations due to prosodic and phonological conditions, so that the single morphemes are often not easy identifiable. (Valentine's grammar 2001 mostly does without segmentation.)

As Dahlstrom (1988) observed for Plains Cree (on the basis of documented bible translations), the inverse and direct marker in the conjunct order have been established not before the second half of the 19th century. Before that, most constellations were expressed by portmanteaus, and only few generalizations had been made. However, in modern Plains Cree, and even more in modern Ojibwe, the number of idiosyncrasies, as well as the number of dialectal varieties, in the conjunct order is still much greater than in the independent order.

In the conjunct order of the dialect of Manitoulin Island (Lake Huron), the direct marker /i/ seems to have been generalized from 2→1 also to 3→1, so that /i/ has adopted properties of an accusative marker for the 1st person. Similarly, /inin/ (a variant of the inverse marker /iN/) now covers both 1→2 and 3→2 cells, so that it could be regarded as 2.ACC. Table (24) gives a paradigmatic overview of the conjunct order suffixes in Ojibwe, which shows several dialectal variants in the cells under question, including those forms that have turned to accusative. (All segmentation in (24) is mine.)

(24) Ojibwe: Transitive animate verbs, conjunct order, neutral mode, positive (Valentine 2001: 276, 295)

S\O	2sg	2pl	1sg	1pl	3sg	3pl	obv
2sg			i-yan	i-yaang	ad	ad-waa	
2pl			i-yeg	i-yaang	eg	eg-waa	
1sg	in-aan inin-aa	inin-agog			ag	ag-waa	
1pl	igoo-yan in-aang	igoo-yeg in-aang			aa-ngid angid	aa-ngid-waa angid-wa	
3sg	ik igo-yan	igo-yeg inin-eg	id igo-yaanh	igo-yaan-gid i-yan-gid			aa-d
3pl	ik-waa igo-yan	igo-yeg-waa inin-eg-waa igo-yeg	i-waad igo-yaanh	igo-yaan-gid-waa i-yan-gid-waa i-yamin-gid-waa igo-yaang			aa-waad
obv	ig		ig	i-yamin-gid igo-yaang	igo-d	igo-waad	

However, these sporadic tendencies of generalizing to accusative would have to be complemented by the change of other morphemes, too. It is, however, rather improbable that within Ojibwe's conjunct order some general sort of case will develop. A clear barrier against it is the fact that the person-number endings of verbs with a single animate person as the subject (animate intransitives and transitive inanimate verbs) are identical with those of inverse verbs in which the single animate person is the object, as shown in (25). Such a rigid constellation is very unlikely broken off. (Recall that *-igo* represents the inverse morpheme, and *-igoo* the passive morpheme.)

(25) Identical person-number morphemes for objects and subjects in the conjunct order, neutral mode, positive in Ojibwe (Valentine 2001: 295, 236, 260).

	2sg	2pl	1sg	1pl.excl	1pl.incl	3sg	3pl
Object of VTA with inanimate subject	-igo-yan	-igo-yeg	-igo-yaanh	-igo-yaang	-igo-yang	-igo-d	-igo-waad
Object of VTA with unspecified subject	-igoo-yan	-igoo-yeg	-igoo-yaanh	-igoo-yaang	-igoo-yang	-ind	-ind-waa
Subject of VAI or VTI (after vowel)	-yan	-yeg	-yaanh	-yaang	-yang	-d	-waad

Summarizing, inverse morphology can only emerge under very specific circumstances, including head marking, a rigid classificatory system of verbs related to argument properties, a strong person hierarchy, and the existence of person-number morphemes that are not specified for grammatical functions. Such a system lacks subject-object asymmetries in the morphology, and is therefore incompatible with case. A change into a case system is improbable, even if sporadic generalization to accusative may occur. (It is interesting that, according to Dahlstrom 1988, Goddard 1979 attributed the above-mentioned accusative suffixes – /i/ and /inin/ – already to Proto-Algonquian; they do not appear in Cree and other Algonquian languages, but may have survived or revitalized in Ojibwe.)

4. How morphological generalizations determine other domains of grammar

An important question is whether, and how much, a system with morphological subject-object symmetry has influence on other domains of the grammar.

Semantic roles only play a minor part in Algonquian. According to Valentine (2001: 729, 794ff.)[2], agent sensitivity is only shown by two preverbs, the aspectual preverb *booni-* 'stop' and the directional preverb *bi-* 'hither', which relate to the agent regardless of whether it functions as the subject or the object – presumably for purely semantic reasons.

More important is the question of whether there are grammatical constructions specialized for either lexical subject or lexical object. There is indeed one construction specific for objects: only objects allow quantifier floating, which is illustrated in (3). Floated quantifiers are realized in the preverbal focus position, and since it is more natural to focus on objects than on subjects, a semantic explanation for this asymmetry lies at hand.

(26) Quantifier floating in Plains Cree (a) and Ojibwe (b) (Dahlstrom 1991: 83, Valentine 2001: 573)
   a. Nisto nipah-ẹ-w-ak mọsw-a nạpẹw-ak
      three kill-DIR-3-pl moose-OBV man-pl
      'The men killed THREE moose.' / *'Three men killed moose.'
   b. Gnabaj niibna w-gii-ns-aa-dg-enan ninw-an.
      perhaps many 3-PAST-kill-DIR-DUB-OBV men-OBV
      'He must have killed MANY men.'

A clear subject-oriented construction is raising to object, illustrated in (27), where the matrix verbs are used transitively. As observed in many other languages, too, verbs of mental activity, which embed a proposition, can mark the subject of the dependent verb as their object. A semantic explanation is that the embedded proposition is split into pivot + predication, and lexical subjects are the most natural pivots of a mental activity.

(27) Raising to object in Ojibwe (Valentine 2001:683)
   a. G-nandwenm-in da-miij-yan
      2-want-INV FUT-eat-2sg.CONJ
      'I want you to eat it.'
   b. Weweni ka-naagzowaabam ezhchige-yaanh
      carefully 2.FUT-observe.1sg what.one.does-1sg.CONJ
      'You will watch me carefully how I do it.'

No further grammaticalised subject-object asymmetries can be found in Algonquian. In the contrary, typical asymmetries such as weak crossover effects, known from other languages, do not exist. If the lexical subject-object asymmetry is preserved in the syntax, the subject asymmetrically c-commands the object. This structural relation leads us to predict that the subject can bind the possessor of the object, but not conversely, that is, the object cannot bind the possessor of the subject – which is true for English as well as for many other languages. However, such an asymmetry does not occur within the inverse system. The two sentences (28a, b) are identical except the direct vs. inverse morpheme on the verb, the latter being sufficient to exchange the role of subject. (28b) shows that the object *can* bind the possessor of the subject if inversion takes place.

---

[2] Based on Rhodes (1994), cited in Valentine, but not identifiable in the reference list.

(28)   Subject-object symmetry in Plains Cree (Dahlstrom 1991: 99).
    a. kahkiyaw iskwęw-ak   sąkih-**ę**-w-ak   o-tąnis-iwąw-a.
        all   woman-pl   love-DIR-3-pl   3P-daughter-3plP-OBV
        'All$_i$ women love their$_i$ daughters.'
    b. kahkiyaw iskwęw-ak   sąkih-**ik**-w-ak   o-tąnis-iwąw-a.
        all   woman-pl   love-INV-3-pl   3P-daughter-3plP-OBV
        'Their$_i$ daughters love all$_i$ women.' [≈ all women are loved by their daughters.]

This possibility of binding is independent of position, so that the linear position of antecedent and anaphora obviously is irrelevant.

(29)   Positional variants of (28b) (Dahlstrom 1991: 99,87).
    a. o-tąnis-iwąw-a   sąkih-**ik**-w-ak   kahkiyaw iskwęw-ak.
        3P-daughter-3plP-OBV   love-INV-3-pl   all   woman-pl
        'Their$_i$ daughters love all$_i$ women.' [≈ all women are loved by their daughters.]
    b. kahkiyaw sąkih-**ik**-w-ak   o-tąnis-iwąw-a   iskwęw-ak.
        all   love-INV-3-pl   3P-daughter-3plP-OBV   woman-pl
        'Their$_i$ daughters love all$_i$ women.' [≈ all women are loved by their daughters.]

(30) shows a further example of subject-object symmetry in Plains Cree, while (31) shows similar examples of Ojibwe from two different sources.

(30)   Subject-object symmetry in Plains Cree (Dahlstrom 1991: 99)
    a. namoya   awiyak   wanikiskisitotaw-**ę**-w   o-tawąsimis-a
        no   one   forget-DIR-3   3P-child-OBV
        'No one$_i$ forgets his$_i$ child.'
    b. namoya   awiyak   wanikiskisitotawą-**k** o-tawąsimis-a
        no   one   forget-INV   3P-child-OBV
        'His$_i$ children forget no one$_i$.' [≈ nobody is forgotten by his children]

(31)   Inverse binding in Ojibwe (Valentine 2001: 633, Bailin & Grafstein 1991: 407)
    a. w-gwisa-n   w-gii-waabm-igo-n John.
        3P-son-OBV   3-PAST-see-INV-OBV John
        'His$_i$ son saw John$_i$.'
    b. o-miseez-an o-gii-wiidookaw-igw-an   Mary.
        3-sister-OBV 3-PAST-help-INV-OBV   Mary
        'Her$_i$ sister helped Mary$_i$.'

Even if the subject is raised to the matrix, the object of the dependent verb can bind the possessor of the subject, as illustrated in (32b).

(32)   Raising to object in Plains Cree (Dahlstrom 1991: 72f.)
    a. ni-kiskęyim-ą-w   George   ę-sąkih-ą-t   o-kosis-a.
        1-know-DIR-3   George   CONJ-love-DIR-3 3P-son-OBV
        'I know (that) George$_i$ loves his$_i$ sons.'
    b. ni-kiskęyim-**im**-ą-wa   George   ę-sąkih-**iko**-t   o-kosis-a.
        1-know-OBV-DIR-3   George   CONJ-love-INV-3 3P-son-OBV
        'I know (that) his$_i$ sons love George$_i$.'

How is the unexpected inverse binding as, for example, in (31a) to be explained? One has to note that the possessor counts as more salient than the possessed (unless a special marking states

different things), so that the possessed usually receives obviative marking. The following principle, then, regulates coreference:

(33)   Co-indexation within symmetric morphology.
       Only elements of the same obviation status, that is, either proximate or obviative elements, can be co-indexed.

This principle establishes what Bailin & Grafstein (1991) have called morphological chains. In (31a), the proximate possessor must be identical with 'John' because only one proximate nominal referent can exist within a clause, and similar in all other examples cited above. This relationship is independent of whether the full noun linearly precedes the anaphora or not, or whether it is syntactically embedded or not. The following ungrammatical sentences of Ojibwe (Valentine 2001: 633) violate the principle in (33). In (34a), 'John' is obviative and thus had to be identical with 'son' rather than its possessor, which is unthinkable, and for similar reasons the interpretation of (34b) fails.

(34)   Violations of the co-indexation principle
       a. *w-gwisa-n   w-gii-waabm-aa-n   John-an.
          3P-son-OBV   3-PAST-see-DIR-OBV   John-OBV
          'His$_i$ son saw John$_i$.'
       b. *John w-gwisa-n   w-gii-waabm-aa-n   oosa-n.
          John 3P-son-OBV   3-PAST-see-DIR-OBV   3P.father-OBV
          'John$_k$'s son$_i$ saw his$_i$ father$_k$.'

The span in which a particular obviation status remains constant usually exceeds the simple clause, comprising also more complex sentences such as combinations of matrix and dependent clause. The co-indexation principle (33) therefore covers also data such as those in (35). In both examples, 'John' is co-indexed with the 3rd person affix on the dependent verb, which itself is co-indexed with the 3rd person affix on the matrix verb. If they were not co-indexed, another third person would be involved, which, however, would have to be obviative, contrary to what the morphology indicates. Under this respect, the matrix-adjunct relationship in (35a) and the matrix-argument relationship in (35) do not differ. Of course, there exists also the alternative of 'John' being element of the matrix clause, which would be unproblematic for asymmetric syntax.

(35)   Co-indexation between dependent and matrix clause.
       a. da-andabagizo-w   giispin wiiba John   goskozi-d.
          FUT-go.swimming-3 [if   early John   get.up-3.CONJ]
          'He$_i$ will go swimming if John$_i$ gets up early.'
       b. o-gikeendaan aakozi-d John.
          3-know   [sick-3   John]
          'He$_i$ knows John$_i$ is sick.'

Summarizing, we have seen that the co-indexiation principle (33) constitutes a typological alternative to the syntax-based principle according to which an anaphora must be c-commanded by its antecedent.

5. Conclusion

The lexical asymmetry of transitive verbs is a universal property of language: the arguments of a verb are always ordered. Agents are higher-ranked than non-agents, recipients are higher-ranked

than exchanged objects, and so on. Some of these lexical asymmetries can be made visible (and thus explained) by means of lexical decomposition.

The arguments of a verb are instantiated by entities that have certain independent properties, i.e. certain values of animacy or person. Inverse morphology is sensitive to the fact of whether these independent properties are in line with argument hierarchy or not. In order for inverse morphology to be effective, all further person-number morphology must be symmetric, with no bias for subject or object. Therefore, inverse morphology leads to morphological symmetry, and, as it seems, also to syntactic subject-object symmetry.

By contrast, case morphology is asymmetric, and therefore incompatible with inverse morphology. A case-determined grammar projects lexical asymmetry into morphology *and* into syntax, and because of this homomorphism it is the preferred option.

It needs a special mechanism, as well as special circumstances, to block lexical asymmetry so that inverse morphology can emerge, which, for this reason, is a rare option.

However, what we can learn from the existence of this option: neither morphological asymmetry ('case') nor syntactic asymmetry (syntactic 'subject-object') are universal.

References

Aissen, Judith (1999) Markedness and subject choice in Optimality Theory. *Natural Language and Linguistic Theory* 17, 673-711.

Aissen, Judith (2003) Differential object marking: Iconicity vs. economy. *Natural Language and Linguistic Theory 21*, 453-483.

Bailin, Alan & Ann Grafstein (1991) The assignment of thematic roles in Ojibwa. *Linguistics* 29, 397-422.

Dahlstrom, Amy (1988) Morphological change in Plains Cree verb inflection. *Folia Linguistica Historica* 9/2, 59-71.

Dahlstrom, Amy (1991) *Plains Cree Morphosyntax*. New York: Garland.

Goddard, Ives (1979) *Delaware verbal morphology*. New York: Garland.

Stiebels, Barbara (2000) Linker inventories, linking splits and lexical economy. In Barbara Stiebels & Dieter Wunderlich (eds.) *Lexicon in Focus*, 211-245. Berlin: Akademie Verlag.

Stiebels, Barbara (2002) *Typologie des Argumentlinkings: Ökonomie und Expressivität*. Berlin: Akademie Verlag.

Valentine, J. Randolph (2001) *Nishnaabemwin reference grammar*. Univ. of Toronto Press.

Wolfart, H. Christoph (1973) *Plains Cree: A grammatical study*. Transactions of the American Philosophical Society, New Series, Vol.63, Part 5.

Wolfart, H. Christoph & Janet F. Carroll (1981) *Meet Cree. A guide to the language*. Lincoln: Univ. of Nebraska Press.

Wunderlich, Dieter (to appear) Argument hierarchy and other factors of argument realization. In Ina Bornkessel et al. (eds.) *Semantic role universals: perspectives from linguistic theory, language typology and psycho-/neurolinguistics*. Berlin: Mouton de Gruyter.

address:
Prof. Dr. Dieter Wunderlich
Lückhoffstr.9
D-14129 Berlin
email: Dieterwdl@aol.com