Chapter I

Ditransitive constructions: a typological overview

Andrej Malchukov, Martin Haspelmath and Bernard Comrie

1. A definition of *ditransitive construction*

A ditransitive construction is defined here as a construction consisting of a (ditransitive) verb, an agent argument (A), a recipient-like argument (R), and a theme argument (T) (as in Conti 2008). Typical ditransitive constructions are shown in (1a–c).

(1) a. English

Mary	*gave*	*John*	*a*	*pen.*
A		R	T	

b. Modern Greek

O	*Pétr-os*	*éstile*	*tis*	*María-s*	*ta*	*xrímata.*
the.NOM	Petros-NOM	sent	the.GEN	Maria-GEN	the.ACC	money.ACC
A			R		T	

'Petros sent Maria the money.'

c. Huichol (Comrie 1982: 108)

Nee	*tumiini*	*uukari*	*ne-wa-ruzeiyastïa.*
I	money	girls	1SG.SBJ-3PL.OBJ-show
A	T	R	

'I showed the money to the girls.'

This definition thus makes crucial reference to the meaning of the construction, while the formal manifestation of the arguments is irrelevant. This is the only way to formulate a cross-linguistically applicable definition, because formal properties of languages are too heterogeneous to serve as a basis for a definition.[1] Ditransitive constructions are the most typical three-argument constructions, just as (mono-) transitive constructions are the most typical two-argument constructions. Other three-argument

[1] Language-particular definitions of "ditransitive construction" may of course make reference to formal properties. In this paper, we are primarily concerned with ditransitive constructions in languages in general (i.e. with "ditransitive" as a *comparative concept* in Haspelmath's (2010) sense).

constructions in which the two non-agent arguments are not R and T (e.g. *I put the pen in the box; They accused me of the crime; They replaced the worker by a robot; They called her Vera*) are not ditransitive constructions and are not considered here.

The most typical ditransitive constructions contain a verb of physical transfer such as 'give', 'lend', 'hand', 'sell', 'return', describing a scene in which an agent participant causes an object to pass into the possession of an animate receiver (= recipient). It appears that in most languages, some verbs denoting a mental transfer such as 'show' or 'tell' behave in a very similar way, which leads us to include these verbs in our definition of *ditransitive* as well. The animate argument of 'show' and 'tell' is not a recipient in the narrow sense, but we also regard it as an R-argument (i.e. a recipient-like argument). Likewise, we include less central transfer verbs such as 'offer', 'bequeath' and 'promise'.

All languages have far fewer ditransitive verbs than transitive verbs, and the ditransitive verbs of a language do not necessarily behave uniformly. While all languages have a substantial class of transitive verbs (at least several dozen) that behave uniformly, some languages only have a handful of ditransitive verbs, and not uncommonly these do not behave alike. Thus, we will not assume that there is necessarily a single major ditransitive construction in a language.

A closely related construction type is the **benefactive construction**, which in many languages is expressed like the ditransitive construction (cf. Kittilä 2005). In some cases, it is not even clear whether we are dealing with a transfer situation (i.e. a ditransitive) or a benefactive situation (e.g. *She brought me a coffee*, which can be paraphrased as *She brought a coffee to me* or *She brought a coffee for me*). The key difference between benefactives and ditransitives is that beneficiaries may also occur with intransitive verbs (as in *She sang for me*). So while noting that benefactives and ditransitives are often similar, we do not subsume the former under the latter.

Another way in which the term *ditransitive* is sometimes extended is by including **derived ditransitives** such as **causatives** and **applicatives**. In causative constructions, the causee often behaves like an R of ditransitive constructions, and the applicative object is often a beneficiary. The argument configuration of both causatives (of transitive verbs) and applicatives (of transitive verbs) is often very similar to that of ditransitive verbs. This is of course not an accident, because the meanings of transfer verbs contain a 'cause' element: 'Give' can be paraphrased as 'cause to have'. However, in this overview we will limit ourselves to constructions with underived ditransitive verbs for reasons of space, and when we say simply *ditransitive*, we do not include derived ditransitives (but see Malchukov, Haspelmath & Comrie (2010+) for discussion of ditransitive constructions formed by derived ditransitives).

2. Basic alignment types

The most salient way in which the encoding of transitive and ditransitive constructions differs across languages is captured by the notion of **alignment**. Alignment refers to the comparison of the properties of arguments across constructions. Monotransitive constructions (with an agent or agent-like argument A and a patient or patient-like argument P) are usually compared to intransitive constructions (with a single argument S), and in this way one arrives at the classification into three major alignment types: accusative alignment ($A = S \neq P$), ergative alignment ($A \neq S = P$), and neutral alignment ($A = S = P$). Since the 1980s, several authors (Comrie 1982; Blansitt 1984; Dryer 1986; Croft 1990; Siewierska 2003; Haspelmath 2005a,b) have extended this approach to the study of ditransitive constructions. The following basic alignment types of ditransitive constructions are distinguished in terms of the encoding of T (theme) and R (recipient) compared to the monotransitive P (patient):

(i) Indirect object alignment, or **indirective alignment**: The R is treated differently from the P and the T ($T = P \neq R$). Such constructions are also called "dative constructions", or "indirect object constructions".[2] An example comes from German, which has Dative case on the R and Accusative case on the P and the T.

(2) German

a. (monotransitive)

Ich *aß* *den* *Apfel.*
I.NOM ate the.ACC apple
'I ate the apple.'

b. (ditransitive)

Ich *gab* *dem* *Kind* *den* *Apfel.*
I.NOM gave the.DAT child the.ACC apple
'I gave the child the apple.'

(ii) Secondary object alignment, or **secundative alignment**: The T is treated differently from the P and the R ($T \neq P = R$). Such constructions are also

[2] However, the term *indirect object* is also sometimes used in a notional sense, to refer to what we call R (the recipient, or recipient-like argument). Thus, in English *Mary gave John a pen*, *John* is sometimes called the "indirect object". Note that our use of *indirect object* is close to the original one: In French grammar since the 18th century, the prepositional object introduced by *à* (e.g. *Marie a donné une plume à Jean* 'Mary gave a pen to John') has been called *complément d'objet indirect*, because the object is introduced by a preposition (as opposed to the *direct object*, which bears no marker).

called *primary object constructions*. This type is illustrated by West Greenlandic, which has Instrumental case on the T, and Absolutive case on the R and the P.

(3) West Greenlandic (Fortescue 1984: 193, 88)

a. (monotransitive)

Piita-p *takurnarta-q* *tuqup-paa?*
Peter-ERG.SG stranger-ABS.SG kill-INT.3SG>3SG
'Did Peter kill the stranger?'

b. (ditransitive)

(*Uuma*) *Niisi* *aningaasa-nik* *tuni-vaa.*
(that.ERG) Nisi money-INSTR.PL give-IND.3SG>3SG
'He gave Nisi money.'

(iii) **Neutral alignment**: The P, the R and the T are encoded in the same way (T = P = R). Such constructions are also often called *double object constructions*.[3] An example comes from Dagaare (Gur; Ghana), and of course the English translations of (2b), (3b) and (4b) also exemplify this type.

(4) Dagaare (Bodomo 1997: 41–42)

a. (monotransitive)

O *na* *ngmɛ* *ma* *la.*
he FUT beat me FACTUAL
'He will beat me.'

b. (ditransitive)

O *ko* *ma* *la* *a* *gane.*
he give.PRF me FACTUAL DEF book
'He gave me the book.'

A schematic representation of these alignment types is given in Figure 1 (cf. Croft 2003; Siewierska 2004; Haspelmath 2005a,b; Dryer 2007).

These three patterns are predicted to be the most frequent types as they comply with the functional principles of economy and distinguishability which apply to case marking in general. The indirective and secundative patterns are both economical in

[3] Confusingly, some authors use the term *ditransitive construction* in the same sense as *double-object construction* or *neutral alignment* (e.g. Kittilä 2006b). This usage is found especially in English linguistics, where some authors contrast the "prepositional construction" (*Mary gave a pen to John*) with the "ditransitive construction" (*Mary gave John a pen*) (e.g. Goldberg 1995).

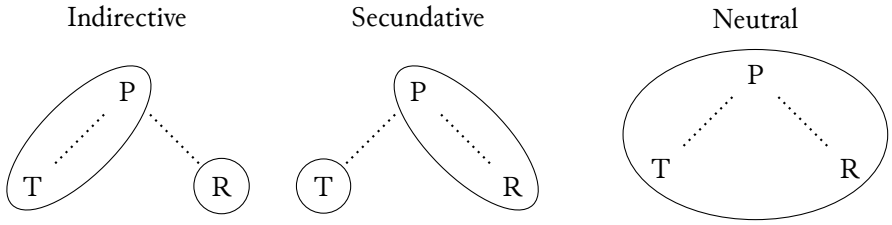

Figure 1: Ditransitive alignment maps

that they have at most two markers but still satisfy distinguishability between the R and T arguments. The neutral pattern is most economical because it needs no marker, and it is possible because distinguishability can also be ensured by other clues such as word order.

Croft (2001: 147) proposes the semantic map in Figure 2 for the encoding of core arguments, which unifies both transitive and ditransitive construction in a single conceptual space. (Croft uses "G" for our R.)

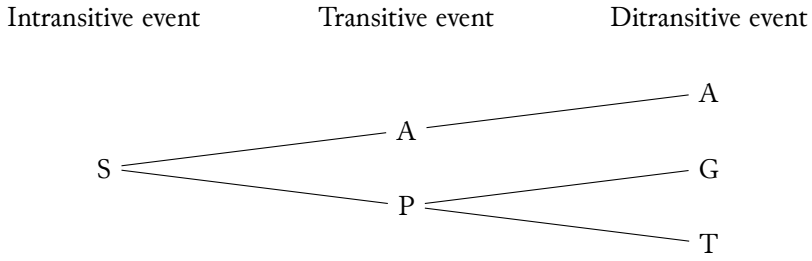

Figure 2: Croft's conceptual space for core arguments (participant roles)

Given standard assumptions about well-formedness of semantic maps (in particular, the contiguity requirement), this semantic map correctly predicts the marginality of alignment types which would display discontinuous segments on the map (such as the semantically anomalous S ≠ A = P pattern).[4] All types that are representable by contiguous sections on the map are robustly attested (cf. Dryer 2007): Accusative-indirective (A = S ≠ P = T ≠ R; e.g. German), accusative-secundative (A = S ≠ P = R ≠ T; e.g. Huichol), ergative-indirective (A ≠ S = P = T ≠ R; e.g. Lezgian),

[4] Vafsi (Stilo, this volume) is a rare example of a language with the pattern S ≠ A = P. Vafsi, like a number of other Iranian languages, has an impoverished case system, distinguishing between direct and oblique case. Now the oblique case is used for A (functioning as an ergative marker in the perfective domain), R (as a dative marker), but also on prominent (definite/animate) P arguments. This leads to an anomalous map (since S is in the direct case), but also to an unusual pattern where all the three arguments of a ditransitive construction bear the same case (see Stilo, this volume). This is, however, just one of the possible patterns of ditransitives in Vafsi (Stilo, this volume).

and ergative-secundative (A ≠ S = P = R ≠ T; e.g. West Greenlandic).[5]

There are two further patterns that are logically possible: The **tripartite alignment** pattern, in which T and R differ from the P and from each other, and the **horizontal alignment** pattern, in which T and R are coded in the same way, but differently from the P. Tripartite alignment is not economical and hence rare (an example from Kayardild is given in (28)). Horizontal alignment is uneconomical and fails to distinguish precisely the two roles that need to be distinguished, and thus it is even rarer than tripartite alignment (it is absent in Siewierska (2004) and Haspelmath (2005b,a)).

In fact, we do not know a single clear case of horizontal alignment. One pattern which comes close to a horizontal alignment is the "linker"-construction in !Xun (König & Heine, this volume). In !Xun (as in some other Khoisan languages), ditransitive predicates can occur in two alternative patterns where either R or T is introduced by a linking particle. Interestingly, in both cases the same linker *kē* is used to introduce the second NP irrespective of its role; in example (5), *kē* introduces R in (a) and T in (b):

(5) !Xun (König & Heine, this volume)

a. *Mí* *má* *kē* *|à'ā* *càūn* *k* *dàbà.*
1.SG TOP PAST give child TR porridge
'I gave the child porridge.'

b. *Mí* *má* *kē* *éà'ā* *dàbà* *k* *càūn.*
1.SG TOP PAST give porridge TR child
'I gave the child porridge.'

Now, since P is normally unmarked (as are other postverbal objects), this yields a pattern where R and T can be flagged by the same marker *kē*, which is unavailable for P. Yet, this pattern does not qualify as a horizontal alignment, since T and R are never **simultaneously** marked in this way; rather T is introduced by the linker in a secundative pattern, and R is introduced by the linker in an indirective pattern.[6] Thus, the two versions of the linker construction are reminiscent of alignment **alternations** between indirective and secundative patterns (cf. §3.4) with the qualification that the same marker is used in both cases (see König & Heine, this volume, for an alternative analysis as well as extensive discussion of this interesting pattern).

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[5] Note that Croft's map predicts that there should be languages where ditransitive A patterns differently from monotransitive A. Such cases have indeed occasionally been attested in the literature; thus, Bickel & Nichols (2009: 307) cite an example from Gyarong, where the ditransitive agent unexpectedly lacks an ergative case. A similar pattern is attested in Tlapanec (Wichmann, this volume), where ditransitive verbs do not follow the ergative pattern of indexing found with canonical (mono)transitive verbs (see §4.10 on direct-inverse marking).

[6] Some other Khoisan languages, however, seem to allow for the use of the same preposition/linker with both R and T, and thus come closer to the pattern of horizontal alignment (Güldemann 2007).

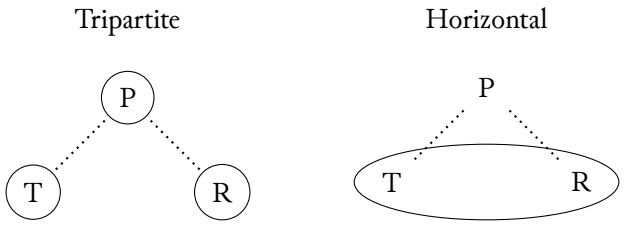

Figure 3: Unusual alignment maps

The identification of ditransitive alignment patterns requires that we identify a major monotransitive construction, so that we know what the monotransitive P is that we compare the ditransitive T and R with. This is not straightforward if there is a major split in the coding of monotransitives, e.g. when there is "differential object marking" (cf. Bossong 1985). Thus, in Spanish, inanimate P is zero-coded (cf. (6a)), but animate P is coded with the preposition *a* (cf. (6b)). The R of ditransitives is also coded with *a* (cf. (6c)), and depending on which of the two monotransitive patterns count as major monotransitive construction, we get two different alignments.

(6) a. *El jefe busca una solución.*
the boss seeks a solution
'The boss is looking for a solution.'

b. *El jefe busca a su mujer.*
the boss seeks a his wife
'The boss is looking for his wife.'

c. *El jefe (le) pide una solución a su mujer.*
the boss (DAT.CL) asks a solution to his wife
'The boss asks his wife for a solution.'

Here our practice is to adopt the most typical transitive construction, with an inanimate, indefinite P as the major monotransitive construction, because it seems to be most in line with common practice in monotransitive alignment (where A and P are usually compared with the most typical S, not with atypical S, e.g. an experiencer that is coded in a special way). Thus, we say that Spanish has indirective alignment of flagging.[7]

A similar case of monotransitive alignment splits is found in languages with TAM-based split ergativity (as in Vafsi, where the pattern is ergative or neutral in the perfective domain, and accusative or neutral in the imperfective domain; Stilo, this volume). The latter cases, however, are less problematic, as ditransitive alignment

[7] Interestingly, and simplifying slightly, the R is always marked by the preposition *a*, even in the unusual case when it is inanimate, and the T is normally not marked by *a* (in the presence of an R marked by *a*), even in the unusual case when T is animate:

can be determined separately for each of the domains (perfective vs. imperfective). There may be some other multiple monotransitive patterns, determined by the lexical class of the verb, as in Mian (Fedden, this volume). An especially challenging case is Tlapanec (Wichmann, this volume), where ditransitive verbs do not pattern with canonical (mono)transitives, and therefore cannot be straightforwardly analyzed in terms of ditransitive alignment (see §4.10 on inverse patterns). Rather, ditransitives pattern with less canonical two-argument verbs ("extended intransitives", in terms of Dixon (1994: 122–124)). Compared to the latter, the alignment pattern of Tlapanec is straightforwardly secundative: The recipient of 'give' is encoded like the object of the verbs like 'meet', which similarly show a 'pegative-dative' pattern.

3. Coding properties of ditransitive constructions

3.1. Alignment in flagging, indexing, and word order

Although alignment types are often associated with entire languages (as when we say that "Tsez is an ergative language"), they in fact apply to particular constructions. The most salient constructions are case or adpositional marking (or **flagging**, to use a more general term) and person(-number) cross-referencing or agreement (or **indexing**, to use a more general term).[8] The examples seen so far show different alignment types in flagging, but the types can also be seen in indexing. Thus, Tzutujil shows ergative alignment in monotransitive indexing, and indirective alignment in ditransitive indexing (the P and the T are indexed in the same way, as opposed to the R, which is not indexed at all).

(7) Tzutujil (Dayley 1985: 63, 156)

a. *x-at-wari*
CPL-2SG.ABS-sleep
'You slept.'

(i) Spanish (Company-Company 2003: 234)

El	*maestro*	*presentó*	*Ø*	*su*	*mujer*	*a*	*sus*	*alumnos.*
the	teacher	introduced		his	wife	to	his	pupils

'The teacher introduced his wife to his pupils.'

Malchukov (2008) attributes the fact that differential object marking (DOM) is suspended in the ditransitive construction in Spanish to the avoidance of ambiguity: extension of DOM to ditransitives would have resulted in doubling of the same case marker, hence in a potential ambiguity.

[8] There are cases where the distinction between indexing and flagging is problematic. For example, in Tima (Dimmendaal, this volume), (dative) pronominal arguments are enclitics (or, rather, enclitic complexes), so a construction with a pronominal R can be analyzed as either involving indirective flagging or indirective indexing. In general, we regard bound (affixal and clitic) person forms as indexes, but whether a person form is bound or non-bound is not always fully clear.

b. *x-at-kee-ch'ey*
CPL-2SG.ABS-3PL.ERG-hit
'They hit you.'

c. *N-Ø-kee-ya7* *paq* *cha-qe.*
INCPL-3SG.ABS-3PL.ERG-give money to-1PL
'They will give money to us.'

Flagging and indexing together with **word order** are generally seen as the primary means of **argument encoding**. In flagging and indexing constructions, an alignment type can always be identified, while in word order, this is typically problematic. One might be tempted to say that the word order alignment of the English Double-Object Construction (*Mary gave John a pen*) is secundative, because the R behaves like the monotransitive P (*Mary kissed John*) in that it is immediately postverbal. However, one might also say that the alignment is indirective because both the T and the P are in the final position.[9] Thus, the ordering of T and R with respect to the verb gives rise to a clear alignment pattern only if the T and the R are on different sides of the verb. An example of such a language is cited by Blansitt (1984: 138):

(8) Tarahumara (Blansitt 1984: 138)

a. A-P-V

Siríame *muní* *go'áre.*
chief beans ate
'The chief ate beans.'

b. A-T-V-R

Siríame *muní* *áre* *mukí.*
chief beans gave woman
'The chief gave the woman beans.'

Thus, we can assess the alignment type for each coding pattern separately, and the coding patterns are logically independent of each other,[10] so that the possibility of

[9] This view receives support from some facts about the placement of particles. According to Hudson (1992: 259), only the T can follow the particle with the ditransitive verb *send out*, just like the P. The R cannot follow the particle:

(i) a. *The secretary sent out a schedule.*
b. *The secretary sent the stockholders out a schedule.*
c. * *The secretary sent out the stockholders a schedule.*

[10] Note, however, that some languages show complementarity of coding strategies insofar as nominal arguments are flagged, while pronominal arguments are indexed. Such a situation yields multiple splits in ditransitive constructions, as described, for example, for Neo-Aramaic (Coghill, this volume), and Vafsi (Stilo, this volume).

mismatches arises. And indeed, such mismatches are not uncommon. We may refer to them as **mixed alignment.** For example, one can find languages where flagging is indirective, while indexing is secundative. Consider example (9) from Amharic, where R is introduced by the dative prefix (indicating indirective alignment of flagging), yet R rather than T controls suffixal person-number indexing on the verb:

(9) Amharic (Amberber 2009: 747)

ləmma	*lə-lǐǰ-u*	*məsʾhaf*	*sətʾtʾ-ə-(w).*
Lemma	to-child-DEF	book	give.PRF-3M-3M.O

'Lemma gave the book to the child.'

Neo-Aramaic also has a ditransitive construction of the mixed type as one of the options (Coghill, this volume). Such cases are apparently infrequent, but the combination of secundative indexing with neutral flagging is rather common, as illustrated in (10) for Manam (Oceanic; Papua New Guinea):

(10) Manam (Lichtenberk 1983: 159)

tanépwa	*bóro*	*téʔe-Ø*	*dí-an-i.*
chief	pig	one-3SG.ADN	3PL.RL-give-3SG.OBJ

'They gave one pig to the chief.'

Importantly, there is a certain pattern of alignment mismatches. Generally, in the case of mismatches, indexing is secundative while flagging is indirective, rather than the other way around (Haspelmath 2005a; Siewierska 2003). The usual explanation for this correlation proposed in the literature (Dryer 1986: 841; Siewierska 2004: 137) is that case and adpositional marking is more sensitive to role properties, while cross-referencing and agreement is more sensitive to inherent prominence (animacy, definiteness).[11] Note that on the first count P is more similar to T (both can be construed as undergoers), while on the second count P is more similar to R (both can be animate, while T is normally inanimate).

In addition to argument encoding constructions, there are a fair number of other constructions for which alignment patterns can be established. Constructions such as passivization, relativization, and nominalization may treat the R, the T, or both in the same way as the monotransitive P. It is customary to contrast **(en)coding patterns** (flagging, indexing, ordering) with **behavioural patterns** of this kind. Behavioural patterns will be discussed further in §4 below.

[11] This generalization holds for person agreement, but not for gender/class agreement, which is more commonly indirective (see Daniel et al., this volume, on Daghestanian, and Fedden, this volume, on Mian).

3.2. Encoding strategies

3.2.1. Alignment types vs. encoding strategies

The alignment types that we have distinguished are highly abstract concepts and correspond to fairly diverse encoding patterns. Languages may have several quite distinct patterns that fall under the same alignment type. For instance, Tsez (Daghestanian) uses the Lative case with 'give' (also the Poss-lative case, for temporary transfer of ownership), the Poss-essive case with 'tell', and the Super-lative with 'write' (Radžabov 1999: 55–57). Itelmen (Chukotko-Kamchatkan; Russian Far East) also shows two indirective ditransitive patterns, but with respect to indexing rather than flagging:

(11) Itelmen (Georg & Volodin 1999: 78; 77)

a. *Neʔn babu-nke ən'ç-eʔn t-ənkɬ-aɬ-çeʔn.*
now grandmother-DAT fish-PL 1SG-send-FUT-3PL.T
'Now I will send fish to the grandmother.'

b. *T'sal-aj heni-s-kinen: zaq salke əɬçku-ka-q!*
fox-PEJ say-PRS-3SG.A>3SG.OBL PROH around look-CCM-NEG
'The fox said to him: don't have a look-around!'

In the construction in (11a), the R is in the dative, and the object person-number marker indexes the T. The construction in (11b) is also indirective both in case-marking and in indexing, but in a different way: It uses special dative person-number markers for the R. Thus, this pattern involves a dedicated "dative" indexing[12] in the absence of P/T indexing, which seems to be quite exceptional cross-linguistically[13] (it is unattested in Haspelmath's (2005a) sample).

In their recent study on the cross-linguistic expression of three-participant events, Margetts & Austin (2007: 402–403), distinguish between the following types of strategies:

(i) three-place predicate (direct-argument) strategy

(ii) oblique strategies
(ii a) R-type oblique
(ii b) T-type oblique

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[12] In some cases indirective indexing is difficult to distinguish from an indexing pattern with an applicative marker. This is the case in Hupa (Campbell, this volume), where pronominal R gets incorporated together with the postposition; Campbell qualifies these markers as either "incorporated postpositions" or "preverbs".

[13] The opposite case of a dedicated T-marking is found in Shimaore, mentioned by Creissels (2006: 61), and in Ojibwe, where a verb takes a special "secondary object agreement" when the primary object is unexpressed (Rhodes, this volume).

(iii) serial verb strategy

(iv) incorporation strategy

(v) adnominal strategy

(vi) directional strategy

(vii) absorption strategy[14]

Their classification bears some obvious resemblances to our classification in terms of alignment, in that the two oblique types correspond fairly directly to the indirective and secundative flagging types. And judging from their examples, their three-place predicate strategy corresponds to our neutral alignment pattern. However, it is defined in such a way that it would also include indirective constructions in which a dative case is used to encode the R (such as (2b) from German) (in their terms, the notion of a three-place predicate is limited to predicates with "direct arguments", i.e. arguments with no marking or nominative, accusative, absolutive, ergative, or dative marking). Similarly, Faltz (1978) distinguishes between a "double-object" type (as in *Mary gave John a pen*), an "oblique type" (as in (12)), and a "dative type" (as in (13)).

(12) Tamazight

L-ša	*urgaz*	*lešθaβ*	*i*	*θməṭṭuṭṭ.*
3SG.M-give	man	book	to	woman

'The man gave the book to the woman.'

(13) Japanese

Otoko	*ga*	*hon*	*o*	*onna*	*ni*	*age-ta.*
man	NOM	book	ACC	woman	DAT	give-PRET

'The man gave the book to the woman.'

The problem with this approach is that it assumes that a notion like "dative" can be defined cross-linguistically. But if *dative* is defined as the marker for the recipient of 'give', then of course the Tamazight marker *i* or the English preposition *to* would also count as dative markers, and there could be no R-type oblique strategy.[15] Our classification of alignment types has the advantage of not presupposing that a notion such as "dative" or "direct argument" is cross-linguistically applicable.

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[14] The "absorption strategy" where the verb takes two overt arguments, but a third conceptual argument is implied by its lexical meaning (e.g. *kick*, *shelve*) will not be considered here.

[15] One could perhaps say that one should only include dative cases, not dative adpositions, but that would create the problem of distinguishing between cases and adpositions. This problem has not even been solved for a well-studied language such as Japanese (where *ni* is sometimes regarded as a dative case affix and sometimes as a dative postposition), so we do not want to make a major classificatory decision dependent on it.

Thus, we would prefer to say that ditransitive constructions are typically encoded by argument flagging (case and adpositional marking), argument indexing (not mentioned by Margetts & Austin), and word order, and that these three encoding types can appear with different kinds of alignment. However, Margetts & Austin are right to point out that in addition to these three major means for argument encoding, there are also some minor strategies, and it is these that we now turn to.

The discussion of the incorporating strategy will be postponed to §4.9 (the directional strategy is briefly mentioned in §3.6, where Saliba is discussed in fn. 18). Both strategies are basically indirective in alignment: incorporation targets the P and T arguments, while directional markers obviate the explicit use of a noun phrase for the R. Let us now look at serial verb constructions and adnominal ditransitive constructions.

3.2.2. Serial verb constructions

Like most serial verb constructions (SVCs), ditransitive serial constructions contain one serial verb (the **co-verb**) that is semantically attenuated and primarily serves to mark the semantic role of a participant. Margetts & Austin (2007) introduce a useful distinction between T-type and R-type SVCs, depending on whether the co-verb introduces a T argument or an R argument. In terms of alignment, R-type constructions are indirective, while T-type constructions are secundative. The two patterns are illustrated by examples from Fongbe and Thai, respectively (diacritics omitted in the following Thai examples):

(14) Fongbe (Lefebvre 1994: 3)

Kòkú só asón ó ná Àsíbá.
Koku take crab DET give Asiba
'Koku gave the crab to Asiba.'

(15) Thai (Natchanan Yaowapat, p.c.)

Song cotmaay hay chan.
send letter give 1SG
'(S/he) sent me a letter.'

These examples are representative insofar as T-type serial verb patterns generally involve a verb like 'take' (Margetts & Austin also mention 'use'), and R-type serial verb patterns generally involve a verb like 'give'. Both types are frequent: the former is found, for example, in Baule (Creissels & Kouadio, this volume), and the latter in !Xun (König & Heine, this volume). For the R-type serial verb, however, another common possibility is directional verbs, as can also be found in Thai:

(16) Thai (Natchanan Yaowapat, p.c.)

Song	*cotmaay*	*pay*	*Krungthep.*
send	letter	go	Bangkok

'(S/he) sent a letter to Bangkok.'

Predictably, 'go' serialization involves more goal-like recipients, while 'give' serialization involves recipients that are more like beneficiaries. Interestingly, certain patterns involve both serial verbs, as in the following examples:

(17) Thai (Natchanan Yaowapat, p.c.)

Khwaang	*luukbɔn*	*pay*	*hay*	*khaw.*
throw	ball	go	give	3SG

'(S/he) threw him a ball.'

Thus, languages like Thai give insight into the semantic structure of the different types of ditransitive constructions, providing perhaps some empirical evidence for the analyses relying on lexical decomposition, as proposed in the literature (Rappaport Hovav & Levin 2008; Wunderlich 2006). Complex SVCs are also attested elsewhere (see, e.g., Klamer, this volume, on Teiwa, and Schaefer & Egbokhare, this volume, on Emai).

It should be noted that just as we cannot always distinguish easily between adpositions and cases, it is often difficult to distinguish between serial verbs and adpositions.[16] Clearly, identification of ditransitive alignment in SVCs is straightforward to the extent they are grammaticalized and border on adpositions; less grammaticalized SVCs, by contrast, border on paratactic multiverbal constructions (cf. the situation in Baule; Creissels & Kouadio, this volume), and thus are beyond the scope of this classification (cf. Schaefer & Egbokhare, this volume; Heine & König 2010).

3.2.3. Adnominal ditransitive constructions

The adnominal strategy as defined by Margetts & Austin comes in two types: In the **possessive adnominal strategy**, the R is expressed as the possessor of the T ('gave R's T' = 'gave T to R'), while in the **proprietive adnominal strategy**, the T is expressed as an adnominal modifier of the R ('gave R having T' = 'gave R T'). With respect to alignment, the first strategy is indirective, while the second is secundative. Yet an important qualification should be made here. These cases are a distinct encoding type as long as the two arguments belong to a single noun phrase.[17] But for the proprietive strategy, as illustrated from Kayardild, this is not obvious:

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[16] On the other hand, there also occur borderline phenomena between serial verbs constructions and applicative formation; e.g. "root-serialization" involving 'give' in Mian (Fedden, this volume).

[17] Cf. the term "monotransitive give-verbs" used by Creissels & Daniel (2006).

(18) Kayardild (Evans 1995: 336)

Maku	*dun-maru-tha*	*wuu-ja*	*nguku-wuru.*
woman.NOM	husband-(v)DAT-ACT	give-ACT	water-PROP

'A woman gives water to her husband.'

While the proprietive is often used adnominally, it can also be used for clause-level arguments, and it should perhaps be regarded as an instance of the oblique-T strategy (this is also a possibility mentioned by Margetts & Austin).

More interesting are cases where the R is unmistakably NP-internal, as found in Samoyedic and Tungusic (cf. Daniel & Malchukov 2010+; Creissels 1979). This pattern of NP-internal recipient is exemplified here from Even and Nganasan:

(19) Nganasan (Creissels & Daniel 2006)

Təʔə,	*ŋəmsu-δi-ńüʔ*	*təδaʔa.*
here	food-DEST-1PL.ACC.PL	bring:PF

'Here, he brought us some food.'

(20) Even (Malchukov 1995: 13, and field notes)

Etiken	*kunga*	*turki-ga-n*	*emu.n.*
old.man	child	sledge-DES-3SG.POSS	bring.AOR.3SG

'The old man brought a sledge to/for the child.'

In both cases the possessor is clearly NP-internal: it occurs in the possessor position, and is cross-referenced by possessive agreement on the head. Yet it is interpreted as a recipient or beneficiary rather than a regular possessor due to a special marking on the head: designative agreement in Nganasan and designative case in Even. It is instructive to compare the designative construction in Even to the construction with an accusative object containing a possessive phrase:

(21) Even

Etiken	*kunga*	*turki-va-n*	*emu.n.*
old.man	child	sledge-ACC-3SG.POSS	bring.AOR.3SG

'The old man brought the child's sledge.'

In the latter construction the formal possessor is interpreted – in the absence of designative marking – as a regular possessor, not as a beneficiary. (See Malchukov & Nedjalkov, this volume, for further discussion of this pattern in Tungusic languages).

It should be noted that possessive/genitive encoding of a recipient does not always imply that it is NP-internal. Thus, on an earlier analysis, Baule was analyzed as having an adnominal strategy (Creissels 1979), yet later work has shown that syntactically the recipient is NP-external after all (Creissels & Kouadio, this volume).

3.3. Word order

Generalizations about the ordering of the verb and the direct object (= the P) in the world's languages have long been known and studied extensively (e.g. Dryer 1997), but after the early work by Blansitt (1973) and Sedlak (1975), the ordering of the R and the T with respect to each other received little attention until recently (see Primus (1997) for the languages of Europe, Heine & König (2010) for an extensive world-wide study; and Gensler (2003), Siewierska & Bakker (2007) for the ordering of bound pronouns).

A first generalization that can be formulated is that the R and the T show a strong tendency to occur on the same side of the verb, next to each other. Thus, Table 1 shows that corresponding to each of the basic order types SVO, SOV, VSO and VOS, there are ditransitive order types with R-T order and T-R order. (However, for the rarer VOS order, we do not yet have examples for T-R order.)

Table 1: Different orders of R and T in SVO, SOV VSO languages

basic order type	R-T order	example	T-R order	example
SVO	S V O_R O_T	Tswana	S V O_T O_R	Fongbe
SOV	S O_R O_T V	Uzbek	S O_T O_R V	Ijo
VSO	V S O_R O_T	So	V S O_T O_R	Tahitian
VOS	V O_R O_T S	Q'eqchi'	V O_T O_R S	?

While one might have expected the orders S O_R V O_T, S O_T V O_R, V O_R S O_T, and V O_T S O_R to occur with comparable frequency, this is in fact not the case. Only the order S O_T V O_R, which we already saw in the Tarahumara example in (8b), is occasionally attested, primarily in languages with the order S-(Aux-)O-V-other, which cluster in an area in western Africa (cf. Dryer & Gensler 2005). In particular, all languages of the Mande family seem to exhibit this order:

(22) Jeli (Mande; Cote d'Ivoire; Tröbs 1998: 199)

Na	*wa*	*waro*	*sɔŋ*	*na*	*seŋ*	*munu.*
I	PERF	money.DEF	give	1SG	father	to

'I gave my father money.'

The ordering of the T and the R with respect to each other is far from being random, too, and interestingly, it seems to depend on the flagging of the two nominal arguments. If both T and R are unflagged, the R generally precedes the T (as in Dagaare, example (4b)). This probably derives from the fact that the R is generally human (and often definite) and thus tends to be more topical than the T, which is typically inanimate (and often indefinite). Based on this consideration, one might expect that the R-T order occurs as overwhelmingly as S-O (= A-P) order, and that T-R order is quite marginal. However, the T-R order is the overwhelmingly dominant order in indirective

constructions when the R is flagged by an adposition (Primus 1997; Heine & König 2010). This order is favoured under these circumstances in SVO and VSO languages because of the Early Immediate Constituents principle (Hawkins 1994). Similarly, in secundative constructions in SVO/VSO languages where the T is flagged by a preposition, the order is invariably R-T. But the order S O_T O_R V is also attested (e.g. in Burushaski, Chukchi, Evenki, Kalkatungu, according to Heine & König (2010)). The S V O_T O_R order also occurs; it is relatively widespread in South-East Asia, for example, in Thai (Thepkanjana, this volume), but also occurs elsewhere (e.g., it is the preferred order in Itonama; Crevels, this volume). This order cannot be motivated by parsing considerations, but Dik (1997) proposes that the order T-R is more iconic than the order R-T, because in the unfolding of the event the T is first involved in the action, which reaches the R only in a second step. So iconicity could be a motivation that competes with topicality and parsing ease.

Of course, many languages have considerable word order flexibility, and in quite a few languages it is difficult to establish even a dominant order. In such languages, topicality and definiteness often play a role in determining the order. In German, for instance, while the neutral order seems to be R-T (cf. (23a) with two definite arguments), the order T-R is normal if the T is definite and the R is indefinite (cf. (23b)). This order is not possible if the T is indefinite and the R is definite ((23c) is possible only with contrastive focus on *dem Kind* and requires a very unusual context).

(23) German

a. *Ich gab dem Kind den Apfel.*

b. *Ich gab den Apfel einem Kind.*
'I gave the apple to a child.'

c. *# Ich gab einen Apfel dem Kind.*
'I gave an apple to the child.'

In other languages, animacy is a determinant factor. Thus, in Jóola Banjal (Bassène, this volume), word order depends on the animacy hierarchy: It is strictly V T R if T is higher than R on the animacy hierarchy; otherwise the order is variable. Many languages also show different positional possibilities for nominal vs. pronominal arguments; when we have this contrast, "weight" considerations predict that nominal arguments follow pronominal ones. This is observed, for example, in Tima (Dimmendaal, this volume), where dative NPs follow T, while pronominals encliticize to the V.

The ordering of bound R and T forms is less predictable, as one would expect from more grammaticalized constructions. Gensler (2003) found no clear trends, but Siewierska & Bakker (2007) note that when one takes the alignment into account, a generalization emerges: In secundative and neutral alignment, the R tends to be

closer to the verb stem than the T (i.e. T-R-V or V-R-T), but the opposite tendency is found in indirective alignment (i.e. R-T-V or V-T-R). Siewierska & Bakker relate this finding to the order of grammaticalization of the bound markers.

3.4. Ditransitive construction alternations

3.4.1. Kinds of alternations

In the simplest case, a language has just a single ditransitive construction, but not uncommonly languages show splits or alternations. A lexical split is the situation where different verbs use different constructions, while an alternation is the situation where one and the same verb can occur with different constructions with roughly the same meaning. Lexical splits will be considered further below in §5. The notion of a ditransitive construction alternation is familiar from English, where the alternation between the double-object construction as in (24a) and the prepositional dative construction as in (24b) has been extensively studied (e.g. Mukherjee (2005); Bresnan et al. (2007); Rappaport Hovav & Levin (2008), and much earlier work).

(24) a. *Mary gave John a pen.*

b. *Mary gave a pen to John.*

This type of alternation (generally called "dative alternation", earlier "dative shift" or "dative movement") occurs also in other languages (especially in Western Nilotic, Bantu, and Western Malayo-Polynesian, cf. Siewierska (1998)), but it is not very frequent in the world's languages. Siewierska (1998: 179) only finds it in 12 out of 219 languages in her sample (about 6%). We also do not know what determines whether a language exhibits such an alternation. Siewierska (1998) suggests a number of typological correlations, using 16 independent cases. For instance, she considers the possibility that an alternation is correlated with the existence of a V-P and T-R order of the language. But the correlation is clearly not bidirectional: One cannot say that V-P languages with adpositional R-encoding and T-R order generally tend to have an alternation.

The best-known alternation is that between a double-object construction and an indirective construction, but alternations between indirective and secundative constructions are also found in European languages, and in fact are more widespread. However, they tend to be limited to relatively few verbs. In (25) we see an example from Serbo-Croatian (Zovko Dinković 2007).

(25) a. *Lena je poslužila gost-ima čaj i keks-e.*
Lena AUX served guest-DAT.PL tea.ACC and biscuit-ACC.PL
'Lena served tea and biscuits to the guests.'

b. *Lena je poslužila gost-e čaj-em i keks-ima.*
Lena AUX served guest-ACC.PL tea-INS and biscuit-INS.PL
'Lena served the guests (with) tea and biscuits.'

English also has an alternation of this kind, but only with a handful of verbs (*provide, supply, present, entrust, credit,* and a few others). In Yupik (Miyaoka, this volume), basic ditransitives have either a secundative or an indirective pattern, but derived ditransitives allow both patterns in alternation.

Some languages allow still more diversity here. Thus, Kayardild has no less than five different patterns with the verb *wuu-* 'give' (three patterns are illustrated below):

(i) In the Dative Construction, the R is expressed by the "verbal dative", and the T and P by "modal cases":

(26) Kayardild (Evans 1995: 336)

Wuu-ja wirrin-da ngijn-waru-th!
give-IMP money-NOM 1SG-VDAT-IMP
'Give me money!'

(ii) In the Instrumental Construction, the T is expressed by the proprietive-instrumental case, and the R and P by modal cases:

(27) Kayardild (Evans 1995: 336)

Nguku-wuru wuu-ja dangka-y.
water-PROP give-ACT person-MLOC
'(I) will provide mankind with water.'

(iii) In the Dative-Instrumental Construction, R expressed by the "verbal dative", T by the "proprietive"-instrumental case:

(28) Kayardild (Evans 1995: 336)

Maku dun-maru-tha wuu-ja nguku-wuru.
woman.NOM husband-VDAT-ACT give-ACT water-PROP
'A woman gives water to her husband.'

The first two patterns are straightforward manifestations of indirective and secundative alignment, respectively, as familiar from the previous discussion. The third pattern represents a less common **tripartite** structure, where T and R are marked distinctly from each other and from P. The third pattern is uneconomical, hence rare cross-linguistically (Haspelmath 2005a); yet as illustrated for Kayardild it can develop

through analogical extension (instrumental-marked Ts and allative-marked Rs are attested elsewhere).

3.4.2. Factors determining the choice of construction

Now let us consider what factors condition the choice between the alternating constructions in a language which allows for several ditransitive constructions. Several factors have been implicated in this connection. On the one hand, there may be semantic differences between alternating patterns. Thus, for English the dative alternation has been related to the degree of affectedness of the recipient (following the 'cause to have' vs. 'cause to go to' contrast), although by no means all the verbs carry this implication (see Rappaport Hovav & Levin 2008). Similarly, affectedness has been implicated in the case of some Bantu languages, such as Zulu (Taylor 1998). Other semantic differences that are reported for some languages can hardly be generalized: For example, for Kayardild, the Dative Construction (as in (26)) is reported to stress a beneficial effect ("for immediate benefit of R"), the Instrumental Constructions (as in (27)) is used "for important gifts/contractual exchange"; while the Dative-Instrumental Construction (as in (28)) is used "for small gifts".

On the other hand, alignment alternations have been related to distinctions between the objects in prominence (animacy/topicality, etc). This is, of course, well known from the literature on dative alternation in English. The Double Object Construction is favoured in cases where R outranks T on the prominence scales and is disfavoured otherwise (cf. Haspelmath 2007; Bresnan et al. 2007). "Prominence" actually includes different dimensions factored out by Bresnan et al. 2007 as separate constraints, including animacy, nominal/pronominal status, discourse status (topicality), and the choice of one of the patterns is often due to interaction of two or more of these factors.

The alternation above can be conceived of in terms of competition between the R and T arguments for the position of the P-like object, which is resolved on the basis of role and prominence features. Another way to look at this alternation is in terms of markedness and frequency (cf. Haspelmath 2004, 2007). As is well known in the literature (cf. Sedlak 1975), the most frequent type of a ditransitive construction is the one where R is more prominent than T: in particular, R is normally animate and T is not. And deviations from this scenario lead to a marked pattern which can be observed both in the domain of case and agreement (Kittilä 2006a,c; Haspelmath 2005a). One manifestation of this tendency is a shift to a different construction (as above), another is a ban on animate themes as observed for example in Mohawk (Baker 1996), or on pronominal (1st, 2nd person) themes as in Ojibwe (Rhodes, this volume); in still other languages there is a ban on inanimate recipients (see Gerdts (1982; this volume) on Halkomelem).

In other languages, the choice between the patterns is related to topicality rather than animacy. To some extent topicality effects are observed also in English; cf. Van Valin's (2007) examples: *Leslie gave the girl a book*; *??Leslie gave a girl the book*. Khanty is instructive in this respect. In Khanty (Nikolaeva 1999, 2001), the choice between the two patterns depends on which object is more topical (which object is a secondary topic, in the terms of Nikolaeva (2001)). If T is more topical, the construction is indirective: R is introduced by the dative postposition, while T is unmarked and controls object agreement (just as P).

(29) Khanty (Nikolaeva 1999: 40)

Ma a:n Juwan e:lti ma-s-e:m.
I cup John to give-PST-SG/O+1SG
'I gave the cup to John.'

If R is more topical, the construction is secundative: now T is introduced by a locative-instrumental postposition, while R is unmarked and triggers agreement (Nikolaeva 1999: 40).

(30) *Ma Juwan a:n-na ma-s-e:m.*
I John cup-LOC give-PST-SG/O+1SG
'I gave John a cup.'

There is still another pattern, which is used when neither T nor R is topical; this construction is indirective as far as flagging is concerned, but is neutral in indexing (as there is no object agreement with the "VP-internal object"; Nikolaeva 1999: 40).

(31) *Ma Juwan e:lti a:n ma-s-ə-m.*
I John to cup give-PST-EP-1SG
'I gave John a cup.'

Thus, in Khanty, the construction alternation is driven by topicality; interestingly it affects both indexing and flagging. Yet this option is permitted by the pattern of alignment splits in §2: prominence-related alternations are predicted to affect agreement prior to case; and if case is affected agreement should be affected as well.

3.5. Ditransitive construction splits

While a construction alternation refers to a situation where two different constructions are possible in the same grammatical and lexical environment (with only subtle semantic/pragmatic differences), a **construction split** describes a situation where under a specific set of grammatical and lexical conditions, only one or the other construction is possible. Ditransitive construction splits are not uncommon, and they are most

typically conditioned by the difference between personal pronouns and full NPs. In French, for example, nominal recipients are coded by the preposition *à* 'to', but when they are personal pronouns, a special dative form is used (in pre-verbal position):

(32) a. *Elle a donné le livre* ***à Kim****.*
'She gave the book to Kim.'

b. *Elle* ***lui*** *a donné le livre.*
'She gave the book to him.'

(32a) and (32b) are clearly distinct constructions, which occur in complementary distribution. They thus represent a split, rather than an alternation. An example of a split where the contrast is between pronouns and proper names on the one hand, and other NPs on the other, is Drehu (Oceanic; New Caledonia):

(33) Drehu (Moyse-Faurie 1983: 161–2)

a. *Eni a hamëë Wasinemu la itus.*
I PRS give Wasinemu the book
'I give Wasinemu the book.'

b. *Eni a hamëën la itus* ***kowe*** *la nekönatr.*
I PRS give the book to the child
'I give the book to the child.'

The factors determining splits are very similar to the factors determining alternations. In general, we can say that the higher the R is on the animacy, definiteness, and person scales, the greater the chance that it will not need special marking.

Construction splits may also be determined in relative terms, i.e. by the relative position of the T and the R on one of the prominence scales (cf. Haspelmath 2007). For example, in Jamul Tiipay (Yuman; California, Mexico), the basic alignment pattern is secundative (in indexing) (see (34a)), but changes to indirective if T outranks R on the person scale (see (34b)):

(34) Jamul Tiipay (Miller 2001: 162)

a. *Puu-ch xiikay nye-iny-x-a.*
that.one-SUBJ some 3>1-give-IRR-EMP
'He will give me some.'

b. *Nyaach map Goodwill ny-iny-x.*
I-SUBJ you.ABS Goodwill 1>2-give-IRR
'I am going to give you to Goodwill.'

The same pattern is observed in Jóola Banjal (Bassène, this volume), where a T can be pronominal, but cannot be higher than R on the person hierarchy (1>2>3). Similarly in Chukchi (Dunn 1999: 207), the only ditransitive verb *-jl-* 'give' agrees with R if it is 1st/2nd person, and agrees with T if both R and T are 3rd person. In both cases flagging remains indirective (R is in the allative case), so the construction split affects indexing only. In Ket, however, both flagging and indexing are affected in constructions with pronominal (1st or 2nd person) themes: the basic double object construction switches to a dative construction with the theme indexed (Nefedov et al., this volume).

A very frequent kind of split based on relative prominence is conditioned by an unusual alignment of the person and role scales: most commonly, 1st/2nd person are R and 3rd person is T. When this is inverted, or both R and T are 1st/2nd person, many languages have a construction split: The ordinary bound-pronoun construction is impossible and a construction with full pronouns has to be used (this is called the Ditransitive Person-Role Constraint; see Haspelmath (2004)):

(35) Bulgarian (Hauge 1999 [1976])

a. *Az im ja preporâčvam.*
I 3PL.REC 3SG.F.THM recommend.PRES.1SG
'I recommend her to them.' (3>3)

b. **Az im te preporâčvam.*
I 3PL.REC 2SG.THM recommend.PRES.1SG
'I recommend you to them.' (3>2)

c. *Az te preporâčvam na tjah.*
I 2SG.THM recommend.PRES.1SG to them
'I recommend you to them.'

3.6. Suppletion

A number of languages have distinct forms of the verb 'give' depending on the person (-number) of the R. We refer to this phenomenon as suppletion – though without entering into theoretical debates as to whether this would count as suppletion, in the strict sense, in particular morphological theories, some of which would regard the forms as distinct lexical items. In some cases, the different forms are completely unrelated phonologically, whereas in other cases they seem to be at least diachronically related. The phenomenon is, incidentally, found sporadically but in many different parts of the world; see Comrie (2003) for more details.

The most frequent suppletion pattern is binary, with a distinction between one form for third-person R and another for first- or second-person R being by the far

the most frequent, as in Malayalam *koTukkuka* 'give (to 3)' versus *taruka/tarika* 'give (to 1/2)'. In Malayalam, the forms are phonologically unrelated; contrast Tsez *teƛ* 'give (to 3)' versus *neƛ* 'give (to 1/2)', where the initial consonants are etymologically deictic prefixes. Less frequently, there is a binary opposition between one form for first-person R and another for second- and third-person R, as in Kenuzi-Dongola *tír* 'give (to 2/3)' versus *dɛ́n* 'give (to 1)'.

Occasionally, number is also involved, as in !Xun, where the form *nà* is used only with a first person singular R, *|à'ā* for all other person-numbers (König & Heine, this volume). In some cases, person-number combinations lead to a richer set of oppositions, as in Waskia, where there are four forms: *tuiy-/tuw-* 'give (to 3SG)', *kisi-* 'give (to 2SG)', *asi-* 'give (to 1SG)', and *idi-* 'give (to PL)'; this seems to be an areal and/or genealogical feature of languages spoken around Madang in Papua New Guinea.

Usually, the different verb forms have identical argument structures, but in at least one instance this is not the case. In Saliba, the form *le* 'give (to 1/2)' indexes T in the verb and expresses R by means of a postpositional phrase (indirective alignment); *mosei* 'give (to 3)' takes either this construction or indexes R in the verb and expresses T by means of a bare noun phrase not indexed in the verb (secundative alignment).[18]

Although the suppletion is most widely attested for 'give', it is also attested for 'tell' in some Otomanguean languages (Smith Stark 2001).

This kind of suppletion seems to be an independent phenomenon, occurring for instance in languages that otherwise lack indexing of person-number in the verb completely (e.g. Malayalam), or that otherwise lack person indexing in the verb completely (e.g. Tsez), or that otherwise lack indexing of the person-number of objects (e.g. Waskia). Comrie (2003) hypothesizes that the binary oppositions derive historically from the increasing grammaticalization of originally purely lexical deictic oppositions, and this finds some support in the existence of intermediate systems, such as that of Japanese, where one set of verbs (*kureru/kudasaru*) indicates that R is socially closer to the speaker (thus including, but not being restricted to, a first person R) than is A, while the other set (*ageru/yaru*) indicates that R is socially more distant. Richer systems like that of Waskia seem to have a different origin, namely in the reinterpretation of originally more productive object affixes attached to a zero-stem verb.

There seem to be no comparable instances of suppletion according to the person of the T of 'give', although in some languages 'give' may show suppletion according to other features of T, such as shape and size, features that are known to be likely controllers of object suppletion in monotransitive verbs (cf. ditransitives built on "classificatory verbs" in Hupa; Campbell, this volume). For instance, in Huichol we

[18] Another peculiarity of Saliba, somewhat reminiscent of suppletion, is the use of directional suffixes (*-ma* 'towards the speaker' vs. *-wa* 'towards the addressee'), which with ditransitive verbs refer to a (pronominal) R. This is an example of a "directional strategy" of encoding of three-participant events, in terms of Margetts & Austin (2007).

find such forms as *k*^{w}*eitïarika* 'give (something long)' versus *'ïitïarika* 'give (something flat)'. This distinction makes sense in terms of frequency: T of 'give' is usually third person, so it would make little sense to have distinct forms for different grammatical persons (see Golluscio, this volume, for a rare exception, in Mapudungun); R is usually human, so grammatical person distinctions make sense, but not distinctions according to shape and size.

4. Behavioural properties of ditransitive constructions

4.1. Introduction

In this section we will consider behavioural properties of ditransitive constructions. We will ask which of the objects behaves in the same way as the monotransitive patient with regard to a number of syntactic constructions such as passivization, relativization, and incorporation. This is basically the same question we addressed in the section concerning encoding properties, and the classification of alignment types will be the same: Behavioural patterns, like coding patterns, can be divided into indirective, secundative, and neutral.

These behavioural properties are often called "tests" or "diagnostics", because in the generative literature (including the literature in Relational Grammar and Lexical-Functional Grammar), the guiding question has typically been which of the two objects, the R or the T, is the "direct object" (or occupies the relevant slot in the syntactic tree), and in particular there is an extensive literature discussing the nature of double object constructions (where encoding does not distinguish between the two objects). The problem that this approach runs into is that it is not clear how the different criteria should be weighted in case of mismatches (see Hudson (1992) for discussion), and that often the choice of criteria seems arbitrary or opportunistic (Croft 2001: 30).[19] Moreover, there is no good reason for making the presupposition that all languages should have a "direct object" (or that all languages should have abstract underlying trees of the same kind), so we are not asking this question.

Instead, we are simply asking how the T and the R behave, and how they compare with the P, i.e. what alignment patterns the behavioural properties exhibit. In a next step, we would like to know what preferences (or predilections, or biases) particular behavioural properties have with respect to the alignment types, and eventually we would like to know why this is the case. It is in the light of this research programme that many of the following remarks should be seen.

A problem that sometimes arises for the typologist is the language-specific nature of the behavioural properties. Thus, for example, the property of particle verb placement

[19] For example, as Haspelmath (2008) points out, Role and Reference Grammar (Van Valin 2007: e.g.) seems to have made the arbitrary decision that passivization is more important than other criteria for determining undergoer status (which is roughly equivalent to the notion of "direct object" in RRG).

used by Hudson (1992) as one of his diagnostics for English has limited cross-linguistic application. For Ojibwe, it is reported that obviation is a relevant test insofar as the primary object controls obviation of the clause mate secondary object, but again, few languages have comparable obviation phenomena. In Ewe, there is a special "*nya*-construction" promoting an object to a subject position (which incidentally functions on an indirective basis), but which differs from passive in implying that the subject is "pleasant" for the agent. It is clear that these behavioural properties do not readily translate into other languages.

And even when we find analogous constructions, they may be subtly but crucially different in different languages. Let us illustrate this with passivization, the most widely discussed behavioural property of ditransitive objects. Usually, if P is passivized, either R or T can be passivized as well. Yet in Even (Tungusic) it is awkward to passivize either of the object arguments:

(36) Even (Malchukov (1995) and field notes)

a. *Etiken* *kunga-du* *turki-v* *bön.*
old_man child-DAT sledge-ACC give.AOR.3SG
'The old man gave a sledge to the child.'

b. ? *Kunga* *turki-v* *bö-v-re-n.*
child sledge-ACC give-PASS-AOR-3SG
'The child was given a sledge.'

c. ? *Turki* *kunga-du* *bö-v-re-n.*
sledge child-DAT give-PASS-AOR-3SG
'The sledge was given a child.'

The explanation for these restrictions is that the passive construction in Even is of the adversative passive type (Malchukov 1993, 1995). In the adversative construction the subject corresponds to a person adversely affected by the event. Now, since the T argument is inanimate it cannot be selected as the subject (hence the unacceptability of (36b)); R can hardly be a subject either except in special contexts, since the verbs of giving normally imply a beneficial rather than an adverse effect on the recipient (hence the unacceptability of (36c)). Some other types of trivalent verbs, like verbs of dispossession, allow for promotion of the (Ablative) object in an adversative passive construction:

(37) *Kunga* *turki-v* *tie-v-re-n.*
child sledge-ACC take_away-PASS-AOR-3SG
'The child was taken away a sledge (against his will).'

In this case, the properties of the passive construction preclude its use with ditransitive verbs (cf. also Bickel et al., this volume, for discussion of a similar restriction in Belhare).

The same point can be made with respect to other behavioural properties as well. Thus, relativization that makes use of relative pronouns is most often neutral, permitting relativization of different kinds of arguments and adjuncts, while relativization that makes use of non-finite forms is more likely to be restricted in application.

In what follows we will address the most important behavioural properties discussed in the literature: passivization, antipassivization, relativization, constituent questions, reflexivization, reciprocalization, nominalization, incorporation, inversion. We discuss how behavioural properties correlate with morphosyntactic coding. The general conclusion will be that the behavioural properties often show the same alignment as the coding properties, but may also show mismatches. In the latter case we can detect certain tendencies concerning preferences of individual constructions for certain alignment types.

4.2. Passivization

As with argument encoding, we can distinguish three primary alignment types in passive formation: (i) indirective, (ii) secundative, and (iii) neutral.

(i) Indirective passivization (the T and P passivize, but R does not) is illustrated by passivization from the Yaqui indirective construction.

(38) Yaqui (Guerrero & Van Valin 2004: 291)

a. *Aurelia-Ø* *Karmen-ta-u* *toto'i-ta* *nenka-k.*
Aurelia-NOM Carmen-ACC-DIR hen-ACC sell-PAST.P
'Aurelia sold the hen to Carmen.'

b. *U* *toto'i-Ø* *Karmen-ta-u* *nenka-wa-k.*
the hen-NOM Carmen-ACC-DIR sell-PASS-PAST.P
'The hen was sold to Carmen.'

c. * *Karmen* *u-ka* *toto'i-ta* *nenka-wa-k.*
Carmen the-ACC hen-ACC sell-PASS-PAST.P
'Carmen was sold the hen.'

(ii) Secundative passivization (the R and P passivize, but T does not) is illustrated by passivization from a double object construction in Swahili.

(39) Swahili (Vitale 1981: 130)

a. *Halima* *a-li-m-pa* *zawadi* *Fatuma.*
Halima she-PST-her-give gift Fatuma
'Halima gave a gift to Fatuma.'

b. *Fatuma a-li-p-ew-a zawadi na Halima.*
Fatuma she-PST-give-PASS gift by Halima
'Fatuma was given a gift by Halima.'

(iii) Neutral alignment (both R and T passivize) is illustrated by passivization from a double object construction in Tukang Besi (both objects are marked by the oblique marker *te*):

(40) Tukang Besi (Donohue 1999: 278)

a. *No-to-hu'u-mo na kamba te mo'ane mandawulu.*
3R-PASS-make-PFV NOM flower OBL man beautiful
'The flower was given to the beautiful man.'

b. *No-to-hu'u-mo na mo'ane mandawulu te kamba.*
3R-PASS-make-PFV NOM man beautiful OBL flower
'The beautiful man was given a flower.'

It is perhaps not surprising that in many cases, the alignment of passivization follows the alignment of encoding. Thus, the same indirective alignment as in Yaqui is found in many languages with an indirective encoding pattern, such as Hungarian, Yukaghir, Koyra Chiini, Oriya, and Kazakh. The same point (behavioural alignment matching coding alignment) can be made for Swahili, which has secundative indexing and secundative passivization. Also other languages with secundative alignment show a preference for R-passivization, e.g. Ojibwe, where passivization of R is possible, while passivization of T is not:

(41) Ojibwe (Rhodes 1990; ex. (17b, 24a))

a. * *Gii-adaawed-ige-de-w odaminowin.*
PST-sell-PASS-INAN.ABS-3SUBJ toy
'The toy was sold.'

b. *Mazinahigan ni-gii-mii-n-igoo(-n).*
book 1SUBJ-PST-lend-AN.ABS-PASS(-N.INAN)
'I was given a book.'

A connection between the alignment of passivization and the encoding is also obvious in languages which allow alignment alternations. Some languages require a matching between encoding and passivization insofar as only the P-like object can be passivized from a ditransitive pattern. Thus in Khanty, R-passivization is apparently possible only from the secundative pattern:

(42) Khanty (Nikolaeva 1999: 31)

P:etra:j-na *xo:p-na* *mo:jl-ɔs-a.*
Peter-LOC boat-LOC give-EP-PST-PASS.3SG
'He was given a boat by Peter.'

(In this example the T argument is in the Locative-Instrumental case, which indicates that the corresponding active pattern is secundative; the agentive nominal is also incidentally in the same case).

Yet, it is not always the case that passivization of R is restricted to languages with secundative coding alignment, as it is also frequently found in languages with neutral alignment. For example, in Mapudungun (Golluscio, this volume), only R can be passivized in a double object construction, but here it can also be attributed to secundative indexing. The Yaqui Double Object Construction, however, is neutral in terms of both flagging and indexing, yet passivization is secundative:

(43) Yaqui (Guerrero & Van Valin 2004)

a. *Karmen-Ø* *toto'i-ta* *miika-wa-k.*
Carmen-NOM hen-ACC give-PASS-PASTP
'Carmen was given the hen.'

b. * *U toto'i-Ø Karmen-ta miika-wa-k.*
'The hen was given [to] Carmen.'

Of course, the same point can be made for English, where R passivizes more easily than T from the Double Object Construction.

(44) *The children were given sweets.*

(45) ? *The sweets were given children.*

In Japanese, both R and T can passivize from the Dative Construction:

(46) Japanese (Miyagawa & Tsujioka 2004: 16, 19)

a. *Taroo-ga* *Hanako-ni* *nimotu-o* *okutta.*
Taro-NOM Hanako-DAT package-ACC sent
'Taro sent Hanako a package.'

b. *Taroo-ga* *nimotu-o* *okur-are-ta.*
Taro-NOM package-ACC send-PASS-PAST
'Taro was sent a package.'

c. *Nimotu-ga* *Taroo-ni* (*yotte*) *Hanako-ni* *okur-are-ta.*
package-NOM Taro-DAT by Hanako-DAT send-PASS-PAST
'The package was sent to Hanako by Taro.'

Thus, passivization can follow a secundative pattern even if coding is neutral, and a neutral pattern even if the coding is indirective. What is unattested is a language with secundative coding but strictly indirective passivization. Thus, R-passivization is generally preferred over T-passivization. This would make sense given that the function of passives is to topicalize the object, because the R tends to be more topical in the ditransitive construction (cf. Polinsky 1998).

However, apart from topicalizing "foregrounding passives" (in Van Valin's terms), there are also passives whose primary function seems to be to express the affectedness of the P (in particular passives deriving from patient resultatives such as *it is broken*). Since in ditransitives affectedness is primarily a property of the T rather than the R, is not surprising that such passives (as attested in Hungarian, Yaqui, Koyra Chiini, and many Indo-European languages) tend to be indirective (see also Bassène, this volume, on Jóola Banjal).

4.3. Antipassivization

While passivization promotes the P and demotes the A, antipassivization promotes the A (from ergative to nominative/absolutive) and demotes the P. Antipassives have a fairly strong bias with respect to ditransitives, targeting T in preference to R for demotion. This bias can be seen in languages of different alignment types. Thus, in Dyirbal, which has an indirective alignment pattern with nonderived ditransitive verbs, the antipassive predictably demotes the T to an oblique, coded by Dative case.

(47) Dyirbal (Dixon 1972: 91)

Bayi *wugal-ŋaŋu* *bagum* *ḍiga-gu.*
he.ABS give-ANTIP DET.DAT cigarette-DAT
'He is giving out cigarettes.'

This is expected, given that the basic ditransitive pattern is indirective, and T is coded in the Absolutive case. However, the same pattern has been observed for West Greenlandic where the basic alignment is secundative:

(48) West Greenlandic (Fortescue 1984: 267)

Uni-si-vuq.
give-ANTIP-IND.3SG
'(He) gave things.' (not: 'He gave people.')

Note that the antipassive *-si-* form suppressing an object applies here to T rather than R.

Similarly, in Chinantec only T can be antipassivized (demoted) from a secundative ditransitive pattern (Foris 1998: 222). Also in Northern Paiute, the antipassive demotes P/T, not R:

(49) Northern Paiute (Thornes 2003: 286,287)

a. *Nɪ midɪ kuhani.*
I meat cook
'I am cooking meat.'

b. *Nɪ tɪ-kuhani.*
I ANTIP-cook
'I am cooking.'

c. *Usu i-tɪ-kuhani-kɪ.*
s/he 1SG-ANTIP-cook
'S/he cooks for me.'

However, some other languages with secundative alignment allow antipassivization of R arguments (often in addition to T). Thus, according to Cooreman (1987), this is possible for some ditransitive verbs in Chamorro (although most ditransitive do not allow this):

(50) Chamorro (Cooreman 1987: 122)

a. *Ha-offresi hao si Juan ni salape'.*
ERG.3SG-offer ABS.2SG the Juan OBL money
'Juan offered you the money.'

b. *Man-offresi si Juan nu hagu ni salape'.*
ANTIP-offer the Juan OBL EMPH.2SG OBL money
'Juan offered the money to you.'

Note that the use of the antipassive form in (50b) triggers demotion of the primary object ('you') to oblique coding (the secondary object 'money' is oblique already in the basic construction), resulting in a double oblique pattern.

Another antipassive construction with double oblique coding is found in Kalkatungu (without the use of dedicated antipassive morphology though), contrasted here with the basic double object pattern:

(51) Kalkatungu (Blake 1990: 57)

a. *Nyin-ti anya-ngi ngai maa?*
you-ERG gave-me 1SG food
'Did you give me some food?'

b. *Nyini anyi-minhan-n nga-tyi maa-tyi?*
you gave-IMPFV-you 1SG-DAT food-DAT
'Are you giving me any food?'

Newman (1996: 114) finds is difficult to explain the appearance of the dative on the T-argument, but this pattern makes sense if we regard this construction as involving antipassivization which applies simultaneously to both objects. Note that the double object construction in Kalkatungu, while neutral in terms of flagging, is secundative with respect to indexing.

In the case of Chamorro, Ojibwe and Kalkatungu, the alignment of antipassivization follows the secundative alignment of the encoding. The same dependency of the behavioural properties on the coding properties can be observed in Yupik (Miyaoka, this volume), where some ditransitives have a secundative pattern while others have an indirective pattern. In both cases only the P-like (absolutive) object can be demoted/deleted by antipassivization. Yet, as mentioned earlier, not all languages with secundative alignment behave in this way. Some, like West Greenlandic, Chinantec, and Northern Paiute, target T in spite of its being the secondary object. In still other languages with secundative coding, such as Halkomelem, antipassives are impossible from ditransitives (Gerdts (1982: 155); but see Gerdts, this volume, for some exceptions). Also in Tzotzil, ditransitive verbs, which obligatorily take the applicative *-be-* marker, cannot take an antipassive form (Aissen 1987: 292). Such cases can perhaps be attributed to a "clash" between the secundative alignment type and the intrinsic indirective bias of the antipassive formation.

The general indirective bias of antipassives is understandable, given that the antipassive derivation typically has an aspectual impact, and it is T rather than R that plays the most prominent aspectual role (in measuring out the event; it is T rather than R that is an "incremental theme" in the sense of Dowty and Krifka).

4.4. Relativization

With respect to relativization, two main questions arise relating to the accessibility of positions in the relative clause to relativization. First, which of P, T, and R can be relativized at all in the language concerned, and in particular: Are there differences among P, T, and R with respect to accessibility to relativization? Second, assuming that they are all relativizable, in what way are they relativized, in particular: Is there any difference in the way of relativizing P, T, and R?

Inability to relativize all or some of P, T, and R is rare cross-linguistically, although some examples do occur. In Malagasy, for instance, only subjects are directly relativizable, so P, T, and R can only be relativized by presenting them in subject position, in which case all are relativizable. Dyirbal has a somewhat similar system, though on an ergative basis, in that only S and P are relativizable (Dixon 1972: 99–105, though without any examples involving 'give'). In the case of ditransitive predicates, either T is coded like P (with R marked with Dative or Genitive case), or R is coded like P (with T marked with Instrumental case). In both cases only the P-like object is relativizable in Dyirbal.

In some languages where all of P, T, and R are accessible to relativization, the same relative clause construction is used for all three, for instance in Japanese, which uses a prenominal gap strategy (i.e. the relative clause precedes the head noun, and the role of the notional head noun in the relative clause is not indicated overtly).

(52) Japanese

a. *gakusei ga kat-ta hon*
student NOM buy-PST book
'the book that the student bought' (P relativized)

b. *gakusei ga kyoozyu ni age-ta hon*
student NOM professor to give-PST book
'the book that the student gave to the professor' (T relativized)

c. *gakusei ga hon o age-ta kyoozyu*
student NOM book ACC give-PST professor
'the professor to whom the student gave the book' (R relativized)

In Japanese, this relative clause construction is used for relativizing all positions, but even in some languages that have different constructions for relativizing different positions, all of P, T, and R are relativized in the same way. In Turkish, for instance, different verb forms are used in relative clauses depending roughly on whether the position relativized is subject (with the verb in a participial form) or non-subject (with the verb in a nominalized form), and the non-subject version is possible for all of P, T, and R.

(53) Turkish

a. *kitab-ı al-an çocuk*
book-ACC take-PRS.PTCP child
'the child who took the book' (Subject relativized)

b. *çocuğ-un al-dığ-ı kitap*
child-GEN take-NMLZ-3SG book
'the book that the child took' (P relativized)

c. *çocuğ-un kadın-a ver-diğ-i kitap*
child-GEN woman-DAT give-NMLZ-3SG book
'the book that the child gave to the woman' (T relativized)

d. *çocuğ-un kitab-ı ver-diğ-i kadın*
child-GEN book-ACC give-NMLZ-3SG woman
'the woman to whom the child gave the book' (R relativized)

Turkish has an indirective ditransitive construction, but the same pattern is also found in some languages with different ditransitive constructions. For instance, Kinyarwanda has a double-object construction, and all of P, T, and R are relativizable in the same way.

(54) Kinyarwanda (Hurel 1951: 134; Kimenyi 1980: 67–68)

a. *inkoko* *n-a-guz-e*
chicken 1SG-PST-buy.REL-ASP
'the chicken that I bought' (P relativized)

b. *igitabo* *umuhûungu* *y-a-háa-ye* *umukôobwa*
book boy he-PST-give.REL-ASP girl
'the book that the boy gave to the girl' (T relativized)

c. *umukôobwa* *umuhûungu* *y-a-háa-ye* *igitabo*
girl boy he-PST-give.REL-ASP book
'the girl to whom the boy gave the book' (R relativized)

With respect to relativization, the languages mentioned in this paragraph thus all have neutral alignment.

Other languages allow relativization of all of P, T, and R, but require or allow different relative clause constructions for relativizing different positions among these three, thus giving rise to indirective and secundative alignment. Indirective alignment can be illustrated by Italian, where P and T are relativized using the invariable relativizer/complementizer *che*, while relativization of R requires the preposition *a* (used also for full noun phrase Rs) and the relative pronoun *cui*.

(55) Italian

a. *il* *libro* *che* *ho* *comprato*
the book that have.PRS.1SG buy.PST.PTCP
'the book that I have bought' (P relativized)

b. *il* *libro* *che* *ho* *dato* *a-l* *professore*
the book that have.PRS.1SG give.PST.PTCP to-the professor
'the book that I have given to the professor' (T relativized)

c. *il* *professore* *a* *cui* *ho* *dato* *il* *libro*
the professor to who have.PRS.1SG give.PST.PTCP the book
'the professor to whom I have given the book' (R relativized)

Secundative alignment is found in Zulu relative clauses, where P and R require a pronominal prefix on the verb of the relative clause coreferential with the head, while T requires a full pronoun in the relative clause coreferential with the head.

(56) Zulu (Poulos & Msimang 1998: 161; Taylor 1998)

a. *insimu* *umfana* *a-zo-yi-lima*
field boy RELCON-FUT-it-plough
'the field which the boy will plough' (P relativized)

b. *indaba* *o-b-e-wu-ngi-tshela* *yona*
story RELCON.2SG-be-ASP-2SG-1SG-tell it
'the story that you were telling me' (T relativized)

c. *izinsizwa* *ubaba* *a-zi-nik-e* *incwadi*
young.men my.father RELCON-them-gave-ASP letter
'the young men to whom my father gave the letter' (R relativized)

Some languages combine a more general relative clause construction that allows relativization of all of P, T, and R with a more restricted construction that differentiates between P and T. In Finnish, for instance, the postnominal relative pronoun construction (i.e. with the relative clause after the head noun, and a case-marked relative pronoun at the beginning of the relative clause) allows relativization of all of P, T, and R, while the prenominal gap strategy allows relativization of P and T but not of R.

(57) Finnish (Karlsson 1983: 169–170, slightly modified)

a. *kaupa-sta* *oste-ttu* *kirja*
shop-from buy-PST.PTCP.PASS book
'a book bought in a shop' (P relativized)

b. *opiskelija-lle* *anne-ttu* *lahja*
student-to give-PST.PTCP.PASS present
'a present given to a student' (T relativized)

c. * *lahja-n* *anne-ttu* *opiskelija*
present-ACC give-PST.PTCP.PASS student
'a student to whom a present has been given' (R relativized)

Often, the different relative clause constructions correspond to differences in clause structure logically independent of relative clause formation. For instance, in Italian the *che/cui* opposition corresponds to that between a bare noun phrase and a prepositional phrase. In Zulu, the full pronoun for T corresponds to the impossibility of a pronominal prefix, with pronominal prefixes being possible for P and R. In this, Zulu contrasts with Kinyarwanda, although both are Bantu languages. This seems to correlate with another distinction between the two languages: Although both languages have neutral alignment with respect to flagging (with all of P, T, and R being bare noun phrases),

there is a difference with respect to indexing, since Zulu allows only one object to be indexed – in the ditransitive construction this is usually R (Taylor 1998: 84–85) – while Kinyarwanda allows indexing of both T and R simultaneously (Kimenyi 1980: 66). However, this correlation does not always hold. English, for instance, has a double-object construction with no overt flagging of T or R and no indexing of either, so one might have expected both T and R to have been equally relativizable. But while this is possible for T, acceptability drops when the attempt is made to relativize R.

(58) English

a. *the book that the student buys* (P relativized)
b. *the book that the student gives the professor* (T relativized)
c. ? *the professor that the student gives the book* (R relativized)

4.5. Constituent questions

Compared to the formation of passives and antipassives, the formation of constituent questions seems to be subject to few restrictions: Both objects can generally be questioned within a ditransitive pattern. This is certainly true for the languages/ constructions with asymmetric (non-neutral) alignment. The following examples show the questioning of R and T from an indirective construction in Malayalam:

(59) Malayalam (Asher & Kumari 1997: 14)

a. *Peena* *aarkkE* *koTuttu?*
pen who.DAT give.PAST
'Whom did he give the pens to?'

b. *EntE* *koTuttu?*
what give.PAST
'What did he give?'

The same is true for languages with a secundative pattern, such as Wari' (Everett & Kern 1997: 22). Also in a double object construction, both objects can usually be questioned, as reported, for example, for Koromfe (Rennison 1997: 18) and Yaqui:

(60) Yaqui (Zarina Estrada, p.c.)

a. *Jabe* *ili* *usi-ta* *mobei-ta* *maka-k* *u* *yoeme?*
QWORD DIM boy-ACC hat-ACC give-PFV DET.NOM man
'Which boy did the man give the hat to?'

b. *Jita* *a* *maka-k* *u* *ili* *usi* *a* *mala-wa?*
QWORD 3SG.ACC give-PRF DET.NOM DIM boy 3SG.POSS mother-POSS
'What did the boy give to her mother?'

Against this background, the well-known restriction on the question formation in English is unexpected:

(61) *What did Mary give the boy?*

(62) ? *Who did Mary give the book?*

Thus, the formation of *wh*-questions in English seems to follow an indirective pattern, treating R differently from both T and P, which do not show any restrictions in this respect (Hudson 1992). Somewhat similarly, in the Ewe double object construction, R can be questioned only from the V-T-R pattern, not from the shifted V-R-T (Essegbey 1999: 148). One important fact to be noted in this connection is that, unlike Yaqui and Koromfe, English allows an alignment alternation, and such alternations are likely to reflect differences in information structure.

Restrictions on questioning certain arguments are also often found in languages where question formation belongs to a class of "extraction" constructions (on a par with relativization, topicalization or focalization), which often show restrictions as to which argument can be questioned (extracted). Thus, in Halkomelem, only direct arguments (S, A, P, R) can be questioned/extracted directly, while extraction of obliques (including Ts) involves nominalization (Gerdts, this volume). In this case, then, question formation straightforwardly follows the alignment pattern of coding (i.e., alignment is secundative both in terms of coding and extraction).

4.6. Reflexivization

Reflexivization may involve either pronominal argument-like marking or verbal voice-like marking. When the reflexive marker is argument-like, there are normally no particular restrictions in ditransitive constructions (cf. *She showed herself to me, She showed it to herself*).[20]

However, Tzotzil shows special treatment of R in its reflexive construction with the reflexive pronoun *-ba*: In a ditransitive reflexive clause, A can antecede R, but not T (this matches the secundative alignment of coding).

[20] Note that in this paper, we are only looking at reflexivization constructions expressing coreference with the A. Constructions in which the R is coreferential with the T or vice versa (*I showed him himself, I showed him to himself)* are also interesting, but we have too little cross-linguistic data on them.

(63) Tzotzil (Aissen 1987: 113)

7i-y-ak'-be *s-ba* *li* *mayoletik-e.*
ASP-3ERG-give-APPL 3-self DET police-CL
'The police gave it to themselves.'
not: 'He gave himself to the police.'

This is unusual, and such restrictions would be more expected with voice-like reflexivization strategies. But not uncommonly, we find alignment inheritance, i.e. the behavioural alignment follows the coding alignment. In Sahaptin (Rude 1997), there are two basic ditransitive constructions: the Allative construction with indirective alignment, and the Double Object construction with secundative indexing. As expected on the basis of the coding alignment, only T can be reflexivized in the Allative construction, while R is reflexivized in the Double Object construction:

(64) Sahaptin (Rude 1997: 335)

a. *Piná-ni-ya* *muyuux-mí-yaw.*
SG.REFL-give-PST chief-GEN-ALL
'He gave himself to the chief.'

b. *Piná-ni-ya* *xaxákw.*
SG.REFL-give-PST money
'He gave himself the money.'

Is there any bias associated with reflexive constructions? It seems that there should be a bias towards R-reflexives, since R arguments are normally animate, while T-arguments are not. While this is true, it seems that R-reflexives are dispreferred at least for canonical ditransitives (such as 'give') for pragmatic reasons: Reflexive expression of beneficiaries ('built himself (a house)') is more natural than reflexive expression of recipients ('gave himself (a present)'). This may explain why in some languages, canonical ditransitives do not take reflexives at all. According to Bruce (1984: 233, 228), in Alamblak some three-place verbs allow for reflexives with the reflexive pronoun *tukia* 'self' ('rub oneself'), but 'give' verbs do not (*'give oneself'). Some other languages, however, do allow for R-reflexives in a ditransitive construction; this seems to be characteristic of languages with secundative indexing (cf. the "reflexive object prefix" replacing R-agreement in Hupa; Campbell, this volume).

4.7. Reciprocalization

Reciprocal constructions are similar to reflexives in a number of respects. Here too one needs to distinguish between reciprocal pronouns and indexes on the one hand (which show no peculiarities in ditransitive constructions) and reciprocal voice markers on the

other. The use of a voice marker does not exclude the use of (optional) reciprocal pronouns in some languages, such as Even:

(65) Even (Malchukov field notes; cf. Malchukov 2007: 1653, 1665)

Nimekel *d'eple-v* (*meen* *meen-du-r*) *bö-met-kere-r.*
neighbours food-ACC (each other-DAT.REFL.PL) give-RECP-HAB-AOR.3PL
'The neighbours used to share food with each other (lit. give food to each other).'

Sometimes we find alignment inheritance in reciprocal voice markers as well, as is clearest in languages with an alignment alternation. Above we saw that in Sahaptin, the reflexivization pattern varies with the alignment of coding. The same is true for reciprocalization: In the Allative construction, T stands in a reciprocal relation with the subject, while in the Double Object construction, R stands in a reciprocal relation with the subject:

(66) Sahaptin (Rude 1997: 336)

a. *Pápa-ni-ya=taš* *miyuux-mí-yaw.*
RECP-give-PST=1PL.EXCL chief-GEN-ALL
'We gave each other to the chief.'

b. *Pápa-ni-ya=taš* *xaxáykw*
RECP-give-PST=1PL.EXCL money
'We gave each other money.'

Yet on balance, reciprocals seem to have a general secundative bias irrespective of the alignment of the basic ditransitive construction. This is of course related to the fact that a reciprocal relation normally presupposes animacy on the part of the subject and object, which makes the R a better choice than T. Differently from reflexives, the secundative type is pragmatically natural here ('give to each other'), which would account for a pronounced secundative bias of reciprocal constructions. Indeed, even in languages where ditransitives follow an indirective pattern, it is highly probable that reciprocals based on ditransitive verbs will mark cross-coreferentiality of the subject and the recipient ('give to each other'). For example, in Turkic languages, where the verbal reflexive is restricted to Ps, the reciprocal form of ditransitive verbs is used for cross-coreference with Rs (cf., e.g., *ber-is-* [give-RECP-] 'to give to each other' in Kazakh; Talant Mawkanuli, p.c.). The same holds for Even, where the alignment of coding is indirective, and reciprocalization is the only construction which consistently shows secundative alignment, targeting (animate) P and R (cf. *ma-mat-* 'kill each other' and *bö-met-* 'give each other' in (65) above).

On the other hand, it is less plausible that in a language with secundative coding alignment, T can be in a reciprocal relation to the subject. Thus, in Alamblak, which

has a secundative pattern, R can stand in a reciprocal relation to the subject while T is retained as a secondary object, which unlike the primary object is not cross-referenced on the verb:

(67) Alamblak (Bruce 1984: 160)

Maruham *na-hay-më-f.*
money RECP-give-PAST-3DU
'They (two) gave money to each other.'

Yet, this generalization should be relativized insofar as it pertains to canonical reciprocals; it is less true for verbs with a goal argument (like 'send'). In the latter case the reciprocal alignment is more likely to be indirective or neutral, as in the following example from Kazakh, where the reciprocal form is ambiguous:

(68) Kazakh (Talant Mawkanuli, p.c.)

a. *Olar* *bir.biri-ne* *körset-is-ti.*
they each.other-DAT send-RECP-PAST.3PL
'They sent something to each other.'

b. *Olar* *bir.biri-n* *körset-is-ti.*
they each.other-ACC send-RECP-PAST.3PL
'They sent each other (to somebody).'

4.8. Nominalization

With respect to nominalization, the relevant question is which of the two objects can be genitivized (i.e. expressed like a possessor) in action nominals derived from ditransitives. Thus, in English, T can be genitivized in an action nominal construction while R cannot. For example, the English construction *Mary gave the book to the boy* gives rise to *Mary's gift of the book to the boy*, with replacement of the bare post-head noun phrase by an *of* prepositional phrase, as is usual in English nominalizations. The construction *Mary gave the boy the book* does not form a nominalization (**Mary's gift of the boy (of) the book*).

Many nominalization constructions are neutral in this respect. In particular, this holds for "weak nominalizations", where only the subject is genitivized while objects are coded as in finite clauses (compare the English gerundive nominalizations that permit this: *His lending me money surprised me)*. More instructive are languages which require genitivization of one of the objects. In most attested cases this object is T. We have observed this for English above; the same pattern is found in Hungarian, where only Accusative objects genitivize (are indexed by possessive person markers on the action nominal), while Dative and oblique objects must be introduced by *való* 'being':

(69) Hungarian (Kenesei et al. 1998: 355)

könyv	*Anná-nak*	*való*	*felolvas-ás-a.*
book	Anna-DAT	being	read-NMLZ-POSS.3SG

'the reading of the book to Anna'

Thus, in both English and Hungarian, nominalization operates on an indirective basis: only the P and T can be genitivized. Of course, the indirective pattern of nominalization may be attributed to the indirective coding alignment of the ditransitive construction in Hungarian. (For English, this would not explain restrictions on genitivization from a double object construction, however). The test case would be a language where the alignment in finite clauses is secundative, but which still genitivizes T in preference to R. Although the data are sparse, we know at least one language that behaves like this: In Alamblak, according to Bruce (1984: 286), in non-finite embedded clauses one of the arguments may be genitivized. Importantly, the secondary object (T) genitivizes preferentially to the primary object (R); cf. object genitivization in a non-finite "purposive relative clause" with the suffix *-yuk*:

(70) Alamblak (Bruce 1984: 113)

yinem-r	*yemrë-r-oh*	*wikna-hay-yuk*	*yima-r*
child-3SG.M	meat-3-GEN.PL	buy-BEN-PURP	man-SG.M

'a man to buy meat for the child' (lit. meat's buying (for) child)

As reported by Bruce, the benefactive primary object can be genitivized only if T/P is incorporated first. Similarly, in Itonama (Crevels, this volume) only T can be genitivized in the ditransitive double object construction, which is at odds with the fact that indexing is secundative. And in !Xun, genitivization is one of the very few diagnostics which singles out T as compared to R; otherwise the two objects behave in a parallel way (König & Heine, this volume).

Thus, it seems that nominalization generally has an indirective bias. Still, there is some evidence for the role of the finite coding alignment pattern as well. For example, Tukang Besi, which has the option of an (ergative) secundative and a neutral (antipassive) ditransitive constructions, allows both T and R to genitivize. Since A is genitivized as well (and indexed by a possessive person marker), the resulting pattern is "triple possessive":

(71) Tukang Besi (Donohue 1999: 76)

hu'u-ka-no	*nu*	*iaku*	*nu*	*bokuj*
give-NMLZ-3POSS	GEN	1SG	GEN	book

lit. 'their giving of a book of me'

This pattern can be interpreted as a compromise between the coding properties, which favor genitivization of a primary object (R) in a secundative pattern, and the intrinsic indirective bias of the nominalization pattern.

The origin of this bias is not entirely clear, but it probably has a semantic motivation: In the study of nominalizations, affectedness has often been implicated as a factor enabling genitivization, and this feature seems to be more readily associated with P and T rather than R.

4.9. Incorporation

Like nominalization, incorporation, too, favours indirective alignment. If incorporation occurs at all in a ditransitive construction, it is invariably the T that is incorporated. This may be illustrated by Southern Tiwa, which has two different ditransitive constructions, both of which involve incorporation (Allen & Frantz 1983). The first type is indirective insofar as R is marked by a postposition, while the second involves an unmarked R and can be characterized as neutral:

(72) Southern Tiwa (Allen & Frantz 1983: 306f.)

a. *Ti-khwien-wia-ban* *seuanide-'ay.*
1SG.3SG.R-dog-give-PST man-to
'I gave the dog to the man.'

b. *Ta-khwien-wia-ban* *seuanide.*
1SG.3SG.R.3SG.T-dog-give-PST man
'I gave the man the dog.'

Note that in both constructions T is incorporated, but in the indirective construction, incorporation is reported to be optional.

We can distinguish several subtypes of incorporation, but in all subtypes T is preferentially targeted (cf. Margetts & Austin 2007: §3.4). Thus, in Yaqui (Escalante 1990: 109), only (accusative) P and T can be incorporated, while R cannot, even when accusative. Similarly in Tukang Besi, only basic objects (P and T arguments), not the applied objects (benefactives and the like) can be incorporated (Donohue 1999: 63).

In fact, it seems that Ts are even more predisposed towards incorporation than Ps. Thus in Southern Tiwa, for animate Ps incorporation is optional even in the secundative pattern, while for Ts it is obligatory; cf. the ungrammatical (73):

(73) Southern Tiwa (Allen & Frantz 1983: 306f.)

* *'U'ude* *mim-wia-ban* *seuanin.*
child 1SG.3PL.3SG-child-gave men
'I gave (to) the men the child.'

A somewhat similar situation is found in Puma (Kiranti; Nepal). Puma has a construction called "Ø-detransitivization" by Bickel et al. (2007) that is similar to idealized incorporation in that the incorporated object has nonspecific meaning and does not trigger object agreement; the A is nominative-marked rather than ergative-marked. Importantly, this kind of detransitivization is possible only with the T of ditransitives.

(74) Puma (Bickel et al. 2007: 9)

Gai-lai ghasa itd-oŋ.
cow-DAT grass give-1SG.NOM.PST
'I gave grass to the cow.'

Similarly, in Teop (Mosel, this volume) only T can be incorporated from the basic ditransitive construction with secundative alignment. The same is true of Yorùbá, with the proviso that incorporation is found with action nominalizations rather than finite verbs (Atoyebi et al., this volume).

Thus incorporation follows a clear indirective pattern, targeting Ts (and Ps), but normally not Rs. The only exception to this generalization is found in Ojibwe,[21] where R-incorporation ("external incorporation", in terms of Rhodes, this volume), results in a pseudo-transitive construction with a sole secondary object (distinguished from a primary object by a special indexing type).

(75) Eastern Ojibwe (Rhodes, this volume)

Miin-an o-gii=asham-aawaso-n-an
blueberry-PL 3SUBJ-PAST=feed-child-N-INAN.PL
'She fed her children blueberries.'

This pattern can be related to the fact that Ojibwe has a pronounced secundative alignment both in coding (indexing) and behaviour (it is one of the few languages where antipassive applies to a secondary object). Thus, Ojibwe shows that coding alignment can override a general indirective preference of incorporation in certain cases. Yet, generally, the indirective bias of incorporation is obvious. This bias clearly has a semantic basis reflecting semantic compositionality. Importantly, similar effects have been ob-

[21] Another interesting pattern related to incorporation is found in Chintang (Bickel et al., this volume), where "detransitivization" imposes a non-specific interpretation of **both** goal and theme arguments, apparently irrespective of the alignment pattern. Note that R-incorporation from an indirective construction is unexpected on our approach (it is at odds with the coding alignment pattern but also with the functional bias). Yet, it should be noted that the pattern of goal-incorporation is found with caused motion verb and is not attested for canonical ditransitives, which invariably appear in the double object construction (see also fn. 22 below on the contrasting behaviour of these verb classes).

served in idiom formation, where ditransitive verbs more easily form idiom chunks with a T argument than with an R argument (Hudson 1992).[22]

4.10. Direct-inverse marking

In contrast to nominalization and incorporation, direct-inverse marking shows a clear secundative bias, like passivization. As is well known, some languages (especially North American languages) show a direct-inverse alternation depending on the ranking of A and P arguments on a prominence scale (person or animacy) (see, e.g., Zúñiga 2006). In such languages the direct-inverse alternation is found with both monotransitives and ditransitives. Importantly, for ditransitives this alternation usually operates on a secundative basis: the direct/inverse system monitors the ranking of A and R arguments on the prominence hierarchy (see, e.g., Crevels, this volume, on Itonama, and Golluscio, this volume, on Mapudungun). The following examples from Itonama illustrate this point:

(76) Itonama (Crevels, this volume; for gloss abbreviations see p. 708)

a. DIRECT DITRANSITIVE CONSTRUCTION

Si-makï	*uwaka*	*ya-dïlï*	*a-chipa*	*ïwabï*
1SG-give	SP.meat	DEM:MED-CLF:AN.seat.PL	DV-two	women

'I gave the meat to those two women.' [1A→3R]

b. INVERSE DITRANSITIVE CONSTRUCTION

Wase'wa	*sih-k'i-makï*	*pïlata*	*sah-nay-k'i-chuduwa'-ko*
yesterday	1PL.EXCL-INV-give	SP.silver	1PL.EXCL-SUB-APPL-pay-NEUT

makaya
clothes

'Yesterday they gave us money to buy clothes.' [3A→1R]

The secundative bias of inverse formation clearly has a functional explanation: R, unlike T, is normally animate, so can reasonably be ranked with respect to A. The role of animacy is also evident in languages which allow for an alignment switch to an indirective construction when T is prominent (animate or pronominal). For example, Mapudungun must use a different verb *wïlïn* 'give away (something)', instead of the regular ditransitive *elun* 'give (somebody something)', in cases when the theme is first person (Golluscio, this volume). In such cases, the basic (direct) construction is indirective; the inverse, too, has an indirective pattern:

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[22] Yet it should be noted that this holds for canonical ditransitives, less so for motion verbs ('send', 'throw'), which have been claimed to compose with T before the goal (Wunderlich 2006). There is also some evidence that the latter types more readily allow for goal-idioms (see Miyagawa & Tsujioka 2004 on Japanese).

(77) Mapudungun (Golluscio, this volume; for gloss abbreviations see p. 749)

Ñi	*chaw*	*wïl-e-n-ew*		*kiñe*
1SG.POSS	father	give.away-INV-IND.1SG.PO-INV		one
piwke-ye-no-fi-el-chi			*wentru*	*mew.*
heart-APPL$_5$-NEG.N.FIN-PO-N.FIN$_1$-N.FIN$_4$			man	PPOS

'My father gave me to a man whom I do not love.'

The last example not only shows the importance of animacy as a factor, which determines the secundative bias of inverse formation, but also reveals the role of the alignment pattern. Note that in most cases languages with a direct-inverse alternation have a secundative indexing pattern. So the overwhelming tendency for secundative alignment in inverse patterns might also be attributed at least in part to the secundative indexing pattern.

A unique pattern of alternation reminiscent of the inverse is found in Tlapanec (Wichmann, this volume). In this language, canonical ditransitives take two different inflections, depending on the ranking of R with respect to A: the R takes dative agreement if the object is first or second person, and "pegative" agreement otherwise:

(78) Tlapanec (Wichmann, this volume)

Mà-ʃn-é	*bùhká*
FUT-give-3SG.G>1SG.DAT	money

'She will give me money.'

(79)

Ni-ʁahm-ú	(*iyìʔ*)
PFV-show-3SG.G.PEG>3SG	(paper)

'She showed it/the paper to him.'

What makes this pattern typologically remarkable is that this kind of direct-inverse alternation is not found with canonical transitives which take the ergative-absolutive indexing pattern, but rather with less canonical two-argument verbs ("extended intransitives" in terms of Dixon). This presents a challenge to establishing the ditransitive alignment pattern in Tlapanec (which would be secundative if compared to less canonical ditransitives, but tripartite if compared to canonical monotransitives), but also provides an explanation why ditransitives in Tlapanec lack an ergative pattern (in violation of Croft's semantic map; see fn. 5). See Wichmann (this volume) for an alternative analysis and extensive discussion of this remarkable pattern.

4.11. Conclusion

In conclusion, we return to the question whether it is feasible to predict the behaviour of the two objects with respect to particular behavioural properties. No simple absolute constraints can be proposed in this domain, yet several contributing factors can

be identified: (i) harmony, i.e. dependency of behaviour on coding; (ii) functional preferences, i.e. preferences associated with the functions of the constructions; and (iii) construction-specific biases motivated by the formal properties of constructions.

4.11.1. Coding-behaviour harmony

As emerges from the discussion above, there is a clear tendency for behavioural properties to follow coding properties to the effect that the object coded like P would have P-like behaviour, all other things being equal. This means that in an indirective coding pattern, the direct object T shows the syntactic behaviour typical of P as well, while in a secundative coding pattern, the primary object R shows P-like behaviour. However, although there is a clear correlation here, it is equally clear that it is not absolute. For example, we have seen that dative Rs can passivize in an indirective construction, and primary R arguments cannot incorporate from a secundative construction. Yet, a weaker correlation which can be formulated in implicational terms seems to hold. It can be represented in the form of the implicational hierarchy in Figure 4. Here the term operation is used for the behavioural properties ("cross-cutting constructions", "transformations") of §4.2–10.

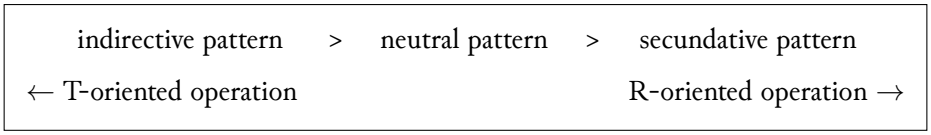

Figure 4: Implicational relations between coding and behavioural properties

This hierarchy can be read in two ways:

(a) For multiple targets in a single operation*:* If a P-style operation (e.g. passivization) is possible for R in an indirective coding pattern, it is also possible for T, and conversely, if a P-style construction in a secundative coding pattern is possible for T, it is also possible for R.

It seems that these predictions are generally borne out. Thus, we find languages which allow for T-passivization from an indirective pattern, and R-passivization from a neutral one (English, Yaqui), languages with R and T passivization from an indirective pattern (Japanese), and languages with R-passivization from secundative and T from indirective (Jalonke). All these patterns conform to the above generalization.

(b) For a single target across multiple operations: if a P-style operation applies to T in a secundative pattern, it will also apply to T in neutral and indirective patterns; conversely, if a P-style operation applies to R in an indirective pattern, it will also apply to R in neutral and secundative patterns as well.

Table 2: Functional preferences of operations for alignment patterns

alignment:	indirective	secundative
preferred by operations:	incorporation (and idiom formation) nominalization antipassivization	reciprocalization passivization[23] direct-inverse marking

For example, if R passivizes from an indirective construction, it should be able to passivize (in the same language) from a neutral or secundative construction as well, while the opposite need not be true. Again it seems that the data conform to this generalization.

4.11.2. Functional preferences

As noted above, certain syntactic operations have preferences for a certain alignment associated with the function they fulfill. For monotransitive constructions such construction-specific preferences are well known from the work by Comrie (1978, 1989), Moravcsik (1978) and Dixon (1979, 1994), but these preferences can be detected for certain behavioural properties in the ditransitive domain as well. Thus we can tentatively propose the universal preferences in Table 2.

The explanations for these biases are not totally clear but they seem to be related either to discourse pragmatic factors (e.g., passivization targets the more topical constituent), or semantic factors (the T is more related to verbal semantics, it composes first with the verb in the process of semantic compostion, and hence can be used to measure out the event, as in the case of antipassivization, and is a prime candidate for incorporation and idiom formation).

4.11.3. Structural biases

Apart from universal functional preferences which may be associated with particular operations, one should take into account construction-specific biases, associated with their form. Often it is insufficient to know the function of a certain construction to predict its behaviour without regard to the structural properties. Thus at some level of abstraction both modifying finite clauses and participles qualify as relative clauses but their alignment is radically different, ranging from a neutral one (as is usually the case with finite relative clauses with a relative pronoun), to a fixed one (say with resultative participles, which allow only for P/T heads). Structure-related biases should be distinguished from functional preferences, since there may be no one-to-one mapping between the two. Structural factors often have a straightforward explanation in

[23] Recall, however, the cautionary remarks at the end of §4.3.

diachronic developments. Thus, as mentioned above, passives originating from 'get' verbs often show secundative alignment, as expected given their original meaning.

Thus, all of these factors in combination can determine behavioural properties of the two objects in ditransitive constructions. It remains to be established how these factors interact, but it seems reasonable to look at them as competing motivations which may reinforce each other, or conflict (e.g. harmony in conflict with a construction bias). When different factors converge, the syntactic behaviour of the constructions under consideration is expected to be more consistent cross-linguistically, and when the factors conflict, the behaviour should be more variable.

5. Lexical variation in ditransitive constructions

5.1. Introduction

Intralinguistic variation in ditransitive constructions may be due to different factors. In §3.4 we considered construction alternations (such as the English Dative Alternation) and splits, conditioned by the semantics of the construction, intrinsic properties of arguments, or their discourse characteristics. On the other hand, multiple patterns may be due to **lexical splits**, when the choice of a ditransitive pattern depends on a verbal lexeme. Such lexical splits are very common cross-linguistically, if not universal, at least on a broad view of the ditransitive domain. Thus, in English, *give* is either indirective (*give sth to sb*), or neutral (*give sb sth*), *say* is indirective only, and *present* can also be secundative (*present sb with sth*). In German *geben* 'give' is indirective (taking a dative R), while *lehren* 'teach' is neutral (occurring in a double accusative construction). In Russian, *(po-)darit'* 'give as a gift' is indirective, taking a dative R, but *o-darit'* (with a different perfectivizing prefix) is secundative, taking R as an accusative object and T as an instrumental.[24] Similar examples can be provided for many other languages. Lexical splits have not been studied systematically partly because much of the research has focused on the properties of canonical ditransitives, such as 'give' (e.g. Haspelmath 2005b). Yet, it has long been noted that 'give' may be an atypical ditransitive verb, which might be quite exceptional in its properties and not representative for its class (Borg & Comrie 1984; Kittilä 2006b). This also suggests that when one looks beyond prototypical ditransitives such splits may be pervasive cross-linguistically.

In this section we discuss general patterns of lexical splits found cross-linguistically. The main question to be addressed is whether it is possible to establish a predisposition of semantic verb classes for different alignment patterns and make predictions concerning how a verb with a particular meaning will pattern cross-linguistically. The

[24] In this section, we only take the alignment of argument coding into account, and for the sake of convenience, we disregard indexing, which often shows complexities. Thus, we will occasionally describe a construction as neutral that is clearly neutral only with regard to flagging, but not necessarily with regard to indexing.

question is thus similar to other work in lexical typology, such as Dixon's (1977) study of adjectives, which aims to establish which semantic classes of property words will be categorized as adjectives in a language with a separate class of adjectives. As in the case of adjectives, it is most instructive to approach this question by looking at languages where ditransitive verbs constitute a closed class.

5.2. Double-object constructions: open and closed verb classes

As is well known, languages differ in the size of the class of verbs occurring in ditransitive constructions. In many languages this class is open. For example, the class of verbs taking a dative argument is open in Russian, as beneficiaries are regularly encoded through the dative case (*postroil mne dom* 'built me a house'). Moreover, the dative is regularly used for ethical datives, malefactives, and external possessors (*slomal mne ruku* [broke me.DAT arm.ACC] 'broke my arm'). The same is true of German, and many other languages, although in each language the dative will encode a somewhat different set of roles and consequently the dative construction will differ with respect to verb classes which it accommodates (as captured by the semantic map approach, see §5.3). The neutral pattern, too, may be relatively unrestricted in terms of verb classes. Thus, English has an open class of verbs participating in a double object construction (Levin 1993: 45–48), including verbs with beneficiary arguments (*built him a house*) and verbs of ballistic motion (*throw him the ball*). Cross-linguistically, however, ditransitive constructions with neutral alignment apparently tend to be more restricted lexically, and English is probably not typical, as even a comparison with other Germanic languages reveals. Thus, verbs like 'build' with a beneficiary do not occur in the double object construction in Dutch, while verbs of ballistic motion like 'throw' do not occur in the double object construction in Icelandic (cf. Barðdal 2007).

Moreover, many languages with a double object construction have been reported to have a closed class of ditransitive verbs. Thus, Jóola Banjal (Bassène, this volume), has ten ditransitive verbs, Yaqui has seven verbs appearing in the double object construction (*miika* 'give', *bittua* 'show', *majta* 'teach', *maka* 'give a gift', *reuwa* 'lend', *tejwa* 'tell', and *u'ura* 'take away'), Diyari has four such verbs (*yiŋki* 'give', *wanda* 'show', *ŋaNTa* 'call (by a kinship term)'; *Dika* 'name'), Mian has three (*-ub-* 'give (perfective)', *-ka-* 'give (imperfective)', and *ø-* 'handle' with a zero stem), as does Ewe (*ná* 'give', *fiá* 'teach/show', and *fiá* 'ask'), Tukang Besi has two (*hu'u* 'give', optionally *kahu* 'send'), as does Jaminjung (*-ngarna-* 'give', and *-jungga* 'take away'), and Thai has only one (*hay* 'give'); also in Tima (Dimmendaal, this volume) and Teiwa (Klamer, this volume), 'give' is the only ditransitive verb in its class; see also Kittilä (2006b) for other languages. Finally, as mentioned earlier, in some languages, like Tzotzil, there are no nonderived ditransitive verbs at all, and even 'give' includes an applicative marker (see (63) above). The same is true of Halkomelem (Gerdts, this volume), and Ainu *kor-e-* 'give' is a causative from *kor-* 'have' (Bugaeva 2009). Saliba (Margetts 1999, 2002) adds a further twist to

the story, as 'give' belongs to a closed class of derived ditransitives. In Saliba, a few ditransitive verbs are derived with the applicative suffix *-i*, while most tri-valent verbs involve causative formation:

(80) Saliba (Margetts 1999: 300)

Bosa	*kesega*	*ye-mose-i-di.*
basket	one	3SG-give-APPL-3PL.O

'He gave them one basket.'

It is striking that when a language has a closed class of ditransitive verbs, the same lexemes tend to recur in this class in language after language, most frequently verbs like 'give', 'show', 'teach', sometimes also 'tell', 'send', and 'ask'. Other verbs are less likely to do so, and if they do participate in the ditransitive construction, the same will be true of more canonical ditransitives mentioned above.

In a recent paper, Kittilä (2006b) also concludes that 'give' is by far the most typical "ditransitive" verb. By this he means that 'give' (almost) invariably belongs to a set of verbs which occur in a double object construction (which is most clearly differentiated from a monotransitive construction). Kittilä (2006b) attributes this predilection to the fact that 'give' counts as "highly transitive" on a number of semantic transitivity parameters (identified by Hopper & Thompson 1980): In particular, it takes three arguments (unlike verbs with external beneficiaries), and depicts a situation with an R participant that is affected (unlike 'send' verbs which do not carry this implication). Indeed both features seem to be relevant. Thus, the role of affectedness is most obvious in the case of languages like English or Zulu (Taylor 1998), where the dative alternation is related to affectedness. The role of this factor can also be appreciated by looking at languages which go against the general tendency to assign 'give' to the class of double object verbs. For example, in Mandarin Chinese, verbs like 'steal' appear invariably in the double object construction, while one of the 'give' verbs (*song*) allows variation between a double object construction and a prepositional construction. Actually, it seems to be common that a double object construction includes some of the verbs like 'steal', 'take-away, snatch' and the like (cf. Mapudungun, which has only two basic ditransitives: *elun* 'give' and its antonym *mïntun* 'take away, deprive'; Golluscio, this volume). Arguably, these verbs score higher on the scale of affectedness than 'give', which would account for their frequent use in a double object construction.

Another factor contributing to the preferential use of the 'give' verbs in a double object construction is the asymmetry between the two object arguments in prominence (animacy/referentiality). This asymmetry has long been noticed for 'give' verbs, which normally have an animate R and inanimate T (Sedlak 1975), and definitely contributes to the use of unmarked patterns with ditransitives. Indeed, in a situation where the respective roles of the two objects are disambiguated through animacy, case marking becomes dispensable. Note that those ditransitive verbs which necessarily involve two

animate objects do not show a predisposition for a double object construction (cf. **He introduced John Mary*). And a language may shift from a neutral to an indirective pattern in a situation when T is animate (as in Chinantec), or pronominal (as in some varieties of English). For some verbs like 'teach', this asymmetry is even more pronounced, hence they can appear in a double object pattern even in languages where 'give' cannot (cf. the discussion of German *lehren* 'teach' in Plank 1987).

There may be other structural factors responsible for the choice of double object constructions, which would account for the choice of ditransitive alignment in Malayalam (Asher & Kumari 1997: 205), where a double-object pattern appears with less canonical ditransitives, but not with 'give', which takes dative. In Malayalam, as well as in a number of other languages, only derived ditransitives (causatives and/or applicatives) appear in a double object construction, while basic ditransitives form an indirective pattern. Such structural factors will not be considered here for lack of space, but see Malchukov et al. (2010+) for discussion.

5.3. Marker polysemies, cognitive networks, and semantic maps

Before we turn to the general discussion of lexical splits in ditransitives, it is useful to briefly consider polysemy patterns of the R and T markers. In the literature different polysemy patterns of argument markers have been noted (Blansitt 1988; Newman 1996). Newman (1996) provides a useful cross-linguistic overview, noting several polysemy patterns, with R encoded as a (spatial) goal (by Allative case, as, e.g., in Finnish), as a beneficiary (by a benefactive preposition as, e.g., in Chrau), by a general locative marker (as, e.g., in Greek) or by a genitive case (as, e.g., in Dyirbal). Working in the cognitive grammar tradition, Newman represents the meaning of R (and T[25]) markers through hierarchically organized cognitive networks capturing similarities between individual meanings in particular languages. One of the problems with such semantic networks, admitted by Newman himself, is that for more complex networks it is more difficult to identify the general meaning of a marker (cf. his discussion of the Japanese "dative" marker *ni*). Another limitation of this approach is that the established semantic configurations are language particular, and it is not clear whether they can be extended cross-linguistically (Haspelmath 2003).

To overcome the latter problem the semantic map methodology, as developed by Anderson (1982), Croft (2001) and Haspelmath (2003), can be employed. Semantic maps are established through the study of recurrent polysemy patterns across languages, yet the established semantic configuration is claimed to be universal. In particular, the semantic maps should comply with the contiguity requirement to the effect that regions covered by a polysemous marker must cover a contiguous space on the map. Thus, they

[25] Newman also notes the frequent polysemies of the T marker, of which the polysemy with an instrumental sense is of particular importance.

are designed to capture generalizations like the one proposed by Blansitt (1988): If goals and beneficiaries are similarly encoded, the same encoding will be found with recipients as well. This generalization can be immediately read off of the map for dative functions suggested by Haspelmath (2003), where recipient is intermediate between goal and benefactive functions.

For our purposes, it is sufficient to work with the map in Figure 5, representing the basic ditransitive alignment types. It shares with Haspelmath's (2003) dative map the basic connections of the R marker, including beneficiary and goal. In addition it includes further connections relevant in the context of trivalent verbs: the malefactive-source (*I robbed **him** of money*), and the patient (such as *He hit **the man** with a stick*). The first connection is manifested in many languages with a double object construction, accommodating both canonical ditransitives and also (some) verbs taking malefactive source (as, e.g., Mandarin Chinese; Li & Thompson 1981: 374), but also in languages where both the recipient and the malefactive source can be coded by the dative case (cf. e.g. German *jemandem etwas wegnehmen* [sb.DAT sth.ACC take_away] 'take something from somebody'). On the other hand, many languages with differential object marking (e.g., many Indo-Aryan languages, such as Hindi, or Romance languages like Spanish, cited in (6) above) use the same case ("dative-accusative" case) for recipients and animate patients. A similar pattern is found in languages with secundative alignment (like West Greenlandic in (3)), although in this case it is R that aligns itself with P (both are usually zero marked), rather than P aligning itself with R (extension of a dative marker).

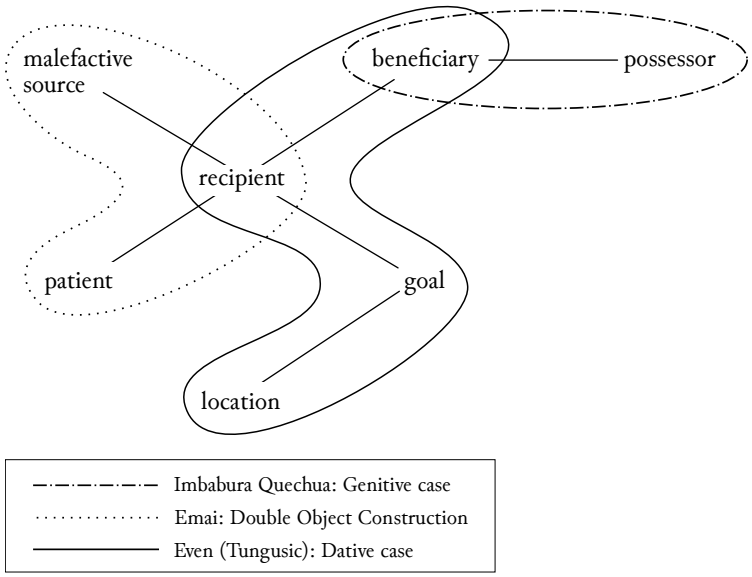

Figure 5: A semantic map for Recipient and related functions

The simple map in Figure 5 has the immediate advantage over cognitive networks as proposed by Newman that it brings more structure into the network, and the proposed configuration is assumed to be universal. In particular, it shows that possessor is related to recipient not immediately, but through the beneficiary function, or that the locative function is related to the recipient via the goal function.[26] For example, if the possessive (genitive) marker is found with recipients (as in Dyirbal), it should also be available for beneficiaries. But the map also allows the possessive marker to be confined to beneficiaries without extension to recipients, as is the case in Imbabura Quechua, where the recipient is marked by the Allative (Cole 1982). In a similar way, this map captures generalizations like the one suggested by Blansitt (1988): If the same marker is found with both goals and beneficiaries, it will also be found with recipients. This polysemy pattern can be illustrated by the extension of the meaning of the Finnish Allative (as represented on the map in Figure 6 below), and of the extension of the Dative in Even (Tungusic), where the same marker is further used for (static) location (Malchukov & Nedjalkov, this volume). Similarly, the map in Figure 5 predicts that if the same marker is used with the patient of 'hit' and malefactive source functions, it will also be used with the intermediate Recipient function found with the canonical ditransitives. This seems also to be corroborated by the data available. Thus, the double object construction in Emai (Schaefer & Egbokhare 2003; this volume) is used indiscriminately with 'give' verbs, 'hit' verbs, and 'steal' verbs. (The same is true of the secundative construction with the polyfunctional oblique preposition *ní* in Yorùbá; Atoyebi et al., this volume). The same map can be used to represent the meanings of individual markers in languages having multiple ditransitive constructions. For example, in Vafsi (Stilo, this volume), the oblique case may be used for recipients, beneficiaries, malefactives and (definite) patients, the allative case is used for goals and recipients, and the possessive indexing construction can be used for recipients (R is indexed by possessive/oblique clitics on the theme), beneficiaries and possessors proper.

There can of course be further extensions of the map, for example, from beneficiary to the domain "substitutive benefaction" ('instead of', Kittilä (2005)), and possession proper (cf. the possessor function on the role map in Figure 5); such extensions will be disregarded here. In addition, one could further "zoom in" on particular functions, gaining insights from languages which make further distinctions between individual functions. In the present context, however, it is important that the ditransitive maps can also be made more fine-grained with respect to the verb classes, as explained in the next section.

[26] Compare the map for allative markers, proposed recently in Rice & Kabata (2007), which shows partial overlap with our map.

5.4. Towards a semantic map for ditransitive constructions

The study of polysemies of individual case markers and adpositions in isolation is often insufficient, since the roles of both objects need to be taken into account. Thus, the grouping of the recipient with the monotransitive patient in the Russian verb *o-darit'* (R_{ACC} T_{INSTR}) 'give as a gift' mentioned in §5.1 above depends on the instrumental encoding of the theme. In the synonymous verb *(po-)darit'* (R_{DAT} T_{ACC}), it is the theme that is grouped with the patient. Thus, in addition to studying the polysemies of individual markers covering different semantic roles, we need to study the polysemy patterns of different ditransitive constructions and their distribution over different lexical items.

Figure 6 shows a map similar to Figure 5, but with verb meaning types instead of semantic roles as the nodes on the map. Instead of verb meaning class labels, the map shows typical verbs for each class, e.g. GIVE stands for caused-possession verbs, BREAK for verbs of affecting with an external possessor, and so on. The map has GIVE in the middle, from which several paths radiate outwards. An "allative path" leads from canonical ditransitives into the domain of caused motion verbs such (PUT/PUSH) (in the lower right-hand side), with some verbs (SEND) falling in between (cf. the hierarchy of "inherent transfer", 'give' < 'send' < 'throw', proposed for Germanic in Croft et al. (2001); cf. Rappaport Hovav & Levin (2008) for recent discussion). Similar paths can be established for other semantic domains. Thus, there is a "benefactive path" leading from recipients to beneficiaries (and further on to possessors). On that dimension, ditransitive verbs like GIVE are opposed to verbs taking a benefactive argument (like BUILD/COOK for sb), with commercial transaction verbs (like SELL/PAY) falling in between. Finally, one can set up an "instrumental path" where instrumental encoding is extended from prototypical instrumental verbs such as HIT/BEAT into the ditransitive domain; the intermediate group includes verbs such as FEED (also 'provide', 'award'). (See Malchukov et al. 2010+ for detailed evidence for the proposed paths).

The map in Figure 6 also shows some additional connections, such as a connection between benefactive, malefactive, and external possession, which may be related through an experiencer function (a common superordinate function, related to both recipient and malefactive source, as suggested by Newman (1996: 117f.)). External possession can then provide another link between experiencers and beneficiaries without recipient as a mediating category. Another link shown on the map but disregarded in the present context is the link between the allative and the instrumental paths, possibly mediated by LOAD-type verbs, which frequently allow for alternative alignment patterns (the "spray/load alternation").

It is clear that the construction map inherits the basic layout of the role map, distinguishing between four major associations of the recipient markers (with goals, beneficiaries, malefactive sources and patients). As on the role map, rightward associations are indirective (goal, beneficiary), and leftward associations are either secundative

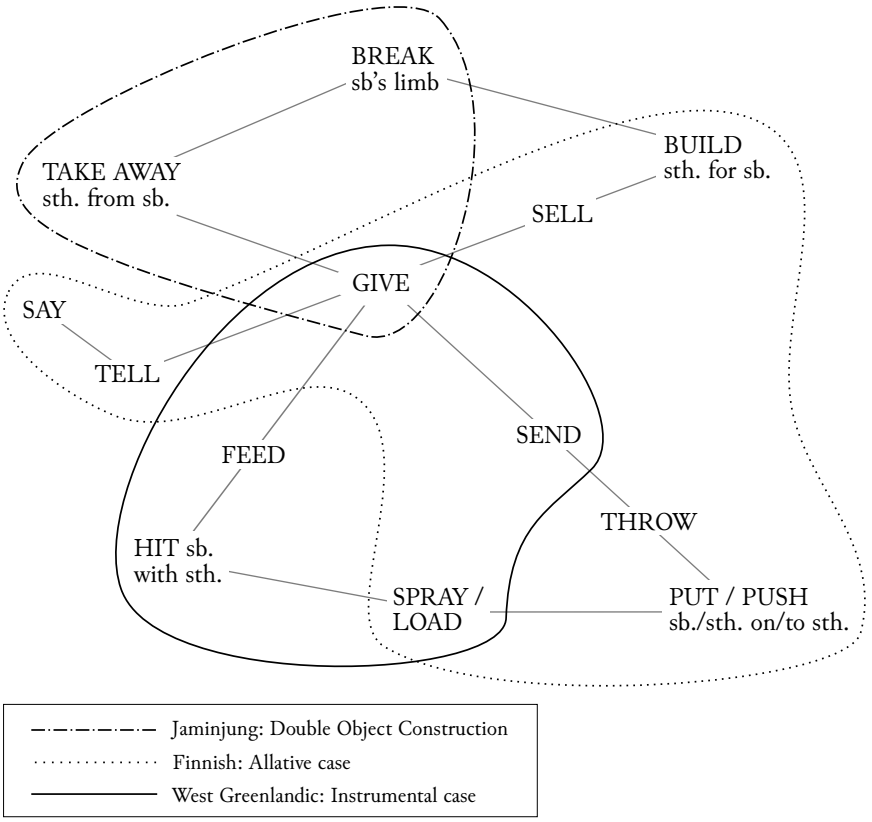

Figure 6: Basic ditransitive constructions in Jaminjung, Finnish and West Greenlandic

(instrumental) or neutral (double object construction). In Figure 6, the distributions of the basic ditransitive constructions in three languages (Finnish, West Greenlandic and Jaminjung) are represented, in order to illustrate basic alignment types: (i) indirective alignment (cf. the distribution of the Allative case in Finnish), (ii) secundative alignment (cf. the distribution of the Instrumental case in West Greenlandic), and (iii) neutral alignment (cf. the distribution of the Double Object construction in Jaminjung, which covers, apart from the ditransitive 'give', verbs of deprivation, and also constructions with external possessors; Schultze-Berndt, this volume).

Not all of the patterns are equally interesting. Thus, restricted patterns with allative marking restricted to goals, or benefactive markers restricted to beneficiaries are expected, hence of little typological interest. Most interesting in this respect are constructions with a broader application range, in particular those which are distributed over different paths. Thus, in West Greenlandic, the Instrumental construction is distributed over both the instrumental path and the goal path, and in Khanty the Instrumental construction extends to the benefactive path. In Finnish, the Allative construction extends to the benefactive domain, and in Qiang the Possessive construction

extends to recipients. Such broader distributions are interesting as they allow us to verify the contiguity predictions of the semantic map: If a strategy is distributed over a wider range of map functions, it must cover a continuous segment on the map. For example, if a marker is used both for the recipient of 'give' and the goal of 'push', it will be found with the goal/recipient of 'send' (cf. the Finnish Allative), and if a marker is used both for instrument of 'hit' and the theme of 'send', it will also be found with the theme of 'give' (cf. the West Greenlandic Instrumental), and so on.[27] Similarly, if a secundative pattern is found with both ditransitives and locative theme verbs ('spray', etc.), it will also be found with patient instrument verbs (as in Teop, Mosel, this volume). See Malchukov et al. (2010+) for more discussion of the lexical splits in the ditransitive domain, as well as for discussion of apparent counterexamples.

Semantic maps, as used in typology, also allow for a diachronic interpretation. The label "Allative" of the Finnish case suggests that its original use was for goals, and the label "Instrumental" for the Greenlandic case suggests that its original use was for instruments. It appears that their uses were extended diachronically along the paths of the map.

Thus, in general semantic maps provide a useful way to capture cross-linguistic lexical variation in the ditransitive domain, as well as a powerful tool for showing restrictions on such cross-linguistic variation.

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[27] Note that the map in Figure 6 is not confined to flagging, so it might be equally applied to constructions involving other types of coding. Thus, in Mian (Fedden, this volume), the main type of ditransitive construction – which involves indirective indexing rather than flagging – is used (apart from the ditransitive construction) for a benefactive construction, a malefactive construction, as well as an external possession construction, i.e. in a continuous zone in the upper part of the map (it also extends to a construction with animate goals). Even the highly complex system of verb classification in Jaminjung (Schultze-Berndt, this volume) seems to be largely compatible with the map, in spite of some idiosyncrasies: thus, the 'put' auxiliary is predictably found with caused motion verbs (and also some canonical ditransitives, such as 'show'), the 'give' auxiliary is also found with some ditransitives (but primarily with benefactives), while the 'take away' auxiliary is used for the malefactive domain.

Special abbreviations

ADN	adnominal	HAB	habitual
AN	animate	INAN	inanimate
AOR	aorist	INCPL	incompletive
ASP	aspectual	INT	interrogative
CL	clitic	CCM	conjugation class marker
CPL	completive	PEJ	pejorative
DES	designative	PRET	preterite
DEST	destinative	PROP	proprietive
DIR	directional	REC	recipient
EMPH	emphatic	RELCON	relative concord
EP	epenthetic	RL	realis
FACTUAL	factual	THM	theme

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