

Chapter 4

Case Pattern Splits, Verb Types and Construction Competition

Andrej L. Malchukov

1. Introduction: Transitivity Splits and Verb-Type Hierarchies

At the beginning of the 1980s two important studies appeared, both advocating a prototype approach to the notion of transitivity: Hopper and Thompson (1980) and Tsunoda (1981). In a highly influential paper Hopper and Thompson argued that transitivity is a gradable and multi-factorial notion. Among the features contributing to high transitivity they mention both parameters relating to participants of the event, such as the subject's volitionality and the object's affectedness and definiteness, as well as properties of the event itself, such as perfectivity, affirmativity and reality. In their article Hopper and Thompson convincingly demonstrate that if some of the semantic features of transitivity are lacking (e.g. O is only partially affected, the verb is imperfective or negated), it can result in a formally less transitive construction (construction with an oblique object, passive or antipassive transformation, etc.).

A similar approach has been independently proposed by Tsunoda (1981), who suggests that a two-argument clause will receive a transitive encoding, if it satisfies the Effectiveness Condition (EF-CON). EF-CON is again seen as a multi-factorial notion including such parameters as impingement of action on O (O is affected and/or attained), O-individuation (specificity, definiteness), completedness of the verbal action, actuality and telicity of the event. As compared to Hopper and Thompson's article, Tsunoda's paper is somewhat restricted in scope as it primarily

Competition and Variation in Natural Languages: The Case for Case

Edited by M. Amberber and H. de Hoop

Copyright © 2005 by Elsevier Ltd.

All rights of reproduction in any form reserved

ISBN: 0-08-044651-5

focusses on ergative languages (alternations of the ergative and intransitive patterns). On the other hand, it is broader in scope in that it pertains not only to transitivity alternations, also discussed by Hopper and Thompson, where the same verb takes alternative case-frames depending on the properties of the clause (tense/aspect/mood (TAM) properties), but also to verb splits, where different lexical classes of verbs subcategorise for different case-frames. Tsunoda makes an important point that “TAM splits (i.e. transitivity alternations, A.M.) and verb splits are fundamentally not different from each other, their semantics and case-marking mechanisms being governed by the common principles” (Tsunoda, 1981, p. 391). The principles alluded to in the quote above pertain to EF-CON. For example, it has been observed that incompleteness/imperfectivity can condition a transitivity alternation in some languages; not surprisingly, the verbs, which like ‘look for’ include the property of non-completeness into their lexical meaning, tend to select for an intransitive pattern. Similarly, since dynamicity/telicity has been identified as a factor contributing to high transitivity in TAM-conditioned transitivity alternations, it is not surprising that intrinsically stative verbs such as ‘like’, which lack these characteristics, often fail to take a transitive case-frame.

In this chapter I shall focus on verb-splits in case-marking patterns and propose a set of constraints that accounts for the cross-linguistic variation in case patterns for different verb classes (constraints on encoding of transitivity alternations have been proposed in Malchukov forthcoming). As a starting point I shall take the verb-type hierarchy proposed in Tsunoda’s original publication (Tsunoda, 1981) and elaborated on in Tsunoda (1985). In these articles Tsunoda suggested the following hierarchy of verb types that predicts distribution of intransitive and transitive patterns in individual languages:

Effective action >> Perception >> Pursuit >> Knowledge >> Feeling >> Relation

The hierarchy above represents a scale stretching from the more transitive verb types on the left to the less transitive verb types on the right. It is called a hierarchy since it predicts that if a verb type lower in the hierarchy allows for a transitive case-frame (NOM-ACC in accusative languages or ERG-ABS in ergative languages), so do the verb types higher in the hierarchy. The hierarchy is semantically grounded in that the verb classes higher in the hierarchy conform to the transitivity prototype (in Tsunoda’s terms, satisfy the EF-CON), while those further to the right fail EF-CON on one or several dimensions. For example, verbs of feeling (cf. ‘like’, ‘fear’) are lower on the transitivity hierarchy since an object of liking (unlike an object of killing or breaking) is less affected and the event itself is atelic.

Some verb types in the hierarchy are subdivided into further subclasses. Thus, verbs of effective action (i.e. verbs referring to an action that actually affects the patient), which are highest on the transitivity hierarchy, come in two types: the

resultative subtype that includes canonical transitives like 'kill' and 'break' as well as the non-resultative subtype including verbs of contact like 'hit' and 'touch'. Similarly, perception verbs also include two subtypes depending on whether the act of perception is described as necessarily resultative, the visual image of O being attained (the 'see'-class), or not (the 'look'-class) (on further distinctions between these classes of perception verbs see Section 3.4). The Relation subtype, which is lowest in the hierarchy, is heterogeneous, including apart from possession (as originally proposed in Tsunoda, 1981) also other types of static relations (cf. *consist*, *correspond*, etc.). Table 1, taken in an abridged¹ form from Tsunoda (1985), summarizes the cross-linguistic data on valency patterns ('case-frames') of individual verb types adduced in support of the hierarchy above.

As is clear from the table above, in general, the presented data lend support for the hierarchy. The verbs of effective action select invariably for a transitive case-frame (NOM-ACC or ERG-ABS), but as we go down the hierarchy we find this case-frame alternating with or replaced by one of the intransitive case-frames. The table also demonstrates that languages allow for different extensions of the transitive pattern along the hierarchy. For example, while Avar allows the extension of the transitive pattern only as far as the pursuit predicates, in Basque all verb types instantiate a transitive construction (albeit mostly in alternation with an intransitive pattern).

On the other hand, the table above demonstrates a great deal of variation in valency patterns within the same verb type. First, some verb types may be split in that different items select for different case-frames. For example, in English some predicates from the feeling and knowledge classes are transitive (cf. *like*, *know*), while some other (cf. *fond of*, *aware of*) are intransitive (note however that the latter are non-verbal; see Section 4.1 for further discussion). Second, the same verb may take different patterns alternatively (as in the case of *hit/hit at* alternation discussed below).² Still all these noise factors cannot obscure the fact that verb types show a gradual reduction in transitivity as one moves down the verb type hierarchy.

Tsunoda's work has been assessed in the typological literature as a major contribution to the cross-linguistic research on the valency patterns for particular verb classes (cf. Drossard, 1991; Lehmann, 1991, p. 186; Lazard, 1998, p. 61). Nevertheless, some problems with the proposed hierarchy have been noted as

¹ I have left out the lowest verb type "Ability" (for which data are lacking for many languages in the table), as well as the data on Samoan that show a similar pattern to Tongan and Warrungu that shows a similar pattern to Djaru.

² Furthermore, variation in case-frames may depend on the class of the nominal, like in many Australian languages, where nouns pattern ergatively while pronouns pattern accusatively. Such cases will not be discussed here.

well. Lehmann (1991, p. 234) notes that the hierarchy above conflates several semantic dimensions. Lazard expresses some doubts as to whether Tsunoda's ranking indeed constitutes a hierarchy, since "the hierarchy is only evident at the two extremes" (Lazard, 1998, p. 60). Indeed, as can be seen from the table above, some of the intermediate types are not strictly ordered. For example, while perception predicates outrank pursuit predicates in Djaru (the former are transitive, the latter allow for variation of transitive and intransitive patterns), the reverse is true for Avar (where the former invariably show the intransitive LOC-ABS pattern, while the latter can be either transitive or intransitive). Similarly, pursuit verbs outrank knowledge verbs in Japanese (the latter allow for an inverse pattern, as well), but the reverse is true of Tibetan (the former allow for a variation of a transitive and an ERG-OBL pattern, the latter are only transitive).

Furthermore, the hierarchy in the present form only predicts that verb types down in the hierarchy may deviate from the transitive pattern in some way, but it does not predict what case-frames would be selected. Yet, there seem to be cross-linguistic preferences for particular verb types to select for particular case-frames. It is true that some languages use the same pattern for different verb types deviating from the canonically transitive construction. For example, in Finnish, verbs with less affected objects including verbs of emotion and cognition as well as pursuit will take the object in the partitive case. However, other languages will use different case-frames for different verb types. For example, in German both pursuit verbs (cf. *warten auf* 'wait for') and mental verbs (e.g. *gefallen* 'like') can be intransitive but only the latter can take the inverse DAT-NOM pattern. In Basque, as reported in Tsunoda's table, ERG-DAT is used as an alternative case-frame to the transitive one for the contact and pursuit type, while DAT-ABS is an alternative for the knowledge and feeling types. In Avar perception and cognition verbs take the inverse OBL-ABS case-frame, while the pursuit verbs an ABS-OBL frame. Similarly, in Ingush, another (North-East) Caucasian language, pursuit verbs take an ABS-OBL pattern, while mental verbs take the DAT-ABS frame (Nichols, 1994, p. 118-119):³

³ The following abbreviations are used in the glosses: A=transitive subject; ABS=absolutive case; ACC=accusative case; ADVL=adverbializer; AGRabs=absolutive (S/O) agreement paradigm; AGRdat=agreement with indirect (dative) object; AGRs=agreement with S; AGRo=agreement with O; ALL=allative case; AOR=aorist; CL=class/gender marker; COND=conditional; DAT=dative case; DECL=declarative (mood); DU=dual; ERG=ergative case; F=feminine (gender); FUT=future tense; IF=illocutionary force marker; IMPFV=imperfective aspect; INCH=inchoative aspect; LOC=locative case; M=masculine gender; N=neutrum (gender); NOM=nominative case; O=(direct) object; OBJ=object marker; OBL=oblique object; PL=plural; POST-EL=post-elative case; PRES=present tense; PROG=progressive aspect; REP=repetitive aspect; REFL=reflexive marker; S=intransitive subject; SG=singular; TAM=tense/aspect/mood marker; TOP=topic marker.

Ingush (Nichols, 1994, p. 118–119)

- (1) *Īz suoga he*
 he.ABS me.ALL wait
 'He is waiting for me'
- (2) *Suona lz viez*
 I.DAT he.ABS like
 'I like him'

The presented data strongly suggest that the choice of the valency pattern is not random and particular verb types show certain predilections for certain case-frames. Clearly, Tsunoda's hierarchy as it stands does not allow for any principled predictions concerning the distribution of non-transitive case-frames across the verb types.

Actually, some typologists have expressed scepticism concerning a possibility of establishing a proper hierarchy of verb classes since it will presuppose an in-depth research into the whole verbal and adjectival vocabulary in a wide range of languages (Lehmann, 1991, p. 187). This can be a reason why this line of research has not been systematically pursued in the subsequent typological literature, and typologists addressing this topic such as Drossard (1991) and Lazard (1998) did not attempt to elaborate on the verb-type hierarchy or present a new hierarchy with more predictive power. Moreover, the results of cross-linguistic research on verbal valency patterns are not always compatible with each other. For example, in a recent volume dealing with non-canonical case-marking of arguments (Aikhenvald, Dixon, & Onishi, 2001), the authors of two cross-linguistically oriented contributions addressing the typology of verb splits have arrived at somewhat different conclusions (they do not discuss how their findings relate to Tsunoda's hierarchy). Thus, Onishi (2001), who draws in particular on the contributions to the above volume, concludes that sensation verbs are more prone for non-canonical subject marking as compared to emotion and perception predicates. Haspelmath (2001), on the other hand, referring to the results of Bossong's (1998) research of experiencer constructions in European languages, concludes that experiencers of cognition/perception predicates show a strong predilection for being encoded as a (canonical) subject, while experiencers of emotion predicates show an equally strong predilection for being encoded as objects (in particular, dative objects), and sensation predicates are intermediate in that respect. Note that the ranking of sensation and emotion predicates is reversed here as compared with Onishi's hierarchy.

Nevertheless, in this chapter I will show that constructing a universally valid hierarchy is feasible. Moreover, on the basis of such a hierarchy specific predictions can be made concerning the preferred patterns of case-frames for particular

semantic classes of verbs. The remainder of the chapter is structured as follows. In Section 2, I propose to decompose Tsunoda's hierarchy, recasting it in the form of a two-dimensional semantic map. Furthermore, I present some data in support of the particular 'routes' (sub-hierarchies) on the semantic map. In Section 3, I propose a set of constraints that can predict which case-frames would be preferred by different verb classes. In Section 4, some other factors contributing to case marking are considered. Finally, in Section 5, I integrate the proposed two-dimensional hierarchy into a more comprehensive semantic map showing further connections between the transitive and intransitive domains.

2. Verb Classes on a Semantic Map

2.1. Decomposing Tsunoda's Hierarchy

There is a general consensus in the functional-typological literature as to what constitutes a semantically transitive construction (cf., e.g. Hopper & Thompson, 1980; Comrie, 1989; Givón, 1985; Dixon, 1994; Palmer, 1994; Lazard, 1998). Thus, Givón (1985, p. 90) identifies the following properties as contributing to semantic transitivity:

- (a) *Agent-related*: The prototypical transitive clause has a visible, salient, volitional, controlling *agent-cause* which initiates the event;
- (b) *Patient-related*: The prototypical transitive clause has a visible, salient, non-volitional, non-controlling *patient-effect* which registers the bulk of change associated with the event;
- (c) *Verb-related*: The prototypical transitive clause has a compact, perfective, realis verb or verbal tense-aspect-modality.

Thus, the transitive prototype is defined in terms of the role properties of its core arguments, as well as the properties of the verb itself (the latter properties corresponding to the TAM properties described by Hopper and Thompson and Tsunoda will not concern us here). While there is general consensus that the transitivity prototype should appeal to semantic roles of its arguments, there is much less agreement how the semantic roles themselves should be defined. In some approaches going back to the classic Fillmorean Case Grammar tradition semantic roles are used as labels or supplied with informal definitions (cf. Givón's definition above), in some other they are characterized in terms of binary features (e.g. Rozwadowska, 1988), or derived from the position of semantic arguments in the event structure or — in somewhat different terms — in the lexical-semantic representation of the verb's meaning (cf. van Valin & Lapolla, 1997; Rappoport &

Levin, 1998; Croft, 1998; Wunderlich, 1997). The latter approach seems to be the most promising, but definitions have not been offered so far for all argument roles that will concern us here. Therefore, I shall use traditional labels for Semantic (Thematic) Roles as familiar from the literature, and further view them as multifactorial and, consequently, gradient concepts (cf. Palmer, 1994).

While a canonical transitive construction should conform to a certain semantic transitive prototype, no such prototype is available for an intransitive construction. In fact, the intransitive construction is rather defined in negative terms, as a clause not conforming in formal and semantic terms to the transitive prototype. However, deviations from the prototype may be numerous. To begin with a verb may have only one argument (which may additionally be more similar either to A or O). Additionally if a verb has two arguments, O may not represent a typical (affected) Patient and A may not be a typical (controlling) Agent.

Now, it is clear from looking at Tsunoda's verb hierarchy, that we are dealing with different deviations from the transitivity prototype. If we compare the canonical transitive (effective action) verbs with the pursuit type, we witness a difference in affectedness: while O is affected (undergoes some change) in the former case, it is not affected in the latter case, as an action is merely intended but not realized (cf. 'wait for', 'search'). In this respect, verbs of contact like 'hit' are intermediate between the effective action and pursuit types, as they refer to an action that has taken place but not necessarily yielded a result (change of state of O). Thus, one can set up a hierarchy of decreased Patienthood (affectedness of the O participant) where 'break' ranks higher than 'hit' and 'hit' ranks higher than 'search'. In other words, 'break'-verbs and 'search'-verbs differ in argument structure: the argument structure of the former is Agent-Patient, while the argument structure of the latter is Agent-Goal. Still clearer instantiations of the Goal role are objects of (two argument) motion verbs, which constitute a maximal deviation from transitivity along this dimension.

On the other hand, the difference in argument structure between canonical transitives and mental verbs such as 'see' and 'like' is more profound and complex, as the differences relate not only to properties of O but more importantly to properties of A as well. Indeed, also here as in the case of pursuit verbs, we are envisaging decreased patienthood on the part of O. Still more importantly, these verbs instantiate a deviation from the agentive prototype on the part of A: the A of emotional predicates is not a controlling but rather an affected participant. In other words, the argument structure of mental verbs is Experiencer-Stimulus, rather than Agent-Patient. The shift in argument structure along this dimension is also gradual, inasmuch as perception predicates of the 'see' type are arguably intermediate between 'break' and 'like' types. On the one hand, one can follow Kemmer (1993, p. 137) in her suggestion that experiencers of perception verbs are less typical than those of emotion verbs since the former are less affected. On

the other hand, even though the object of perception is physically unaffected, as long as a visual image is obtained, the action can qualify as resultative and the O as more Patient-like (see Tsunoda, 1981). Finally, sensation predicates (such as ‘freeze’, ‘be sick’) deviate arguably even further from transitivity prototype than emotion predicates, since Experiencer is their only argument, while many emotion predicates (‘like’, ‘fear’) take two arguments (admittedly, the situation is less clear with predicates like ‘be worried’, ‘be sad’, which fall in between two- and one-argument predicates).

Let us sum up the discussion. Above, I have argued that the verb-type hierarchy proposed by Tsunoda conflates two different dimensions: a (sub-) hierarchy of decreased patienthood on the part of O argument (that leads from ‘break’ to ‘go’), and another (sub-) hierarchy that additionally involves decreased agentivity on the part of the A participant (that leads from ‘break’ to ‘sick’). The new — two dimensional — hierarchy is represented below (verb types absent on Tsunoda’s hierarchy are in parentheses).

Figure 1 represents a ‘semantic map’ inasmuch as the adjacent verb types show semantic affinities (see Haspelmath, 2003, for discussion of the semantic map approach). On the assumption of form–function iconicity, which underlies the semantic map methodology, it is expected that the map should be contiguous. That is, if two categories (here, verb types) on the map share a certain case-frame this will hold for intermediate categories as well. For example, if emotion verbs share the transitive case-frame with the effective action verbs, the intermediate types — perception and cognition — should allow for the transitive pattern as well. On the other hand, inasmuch as the proposed semantic map preserves the initial insight of Tsunoda’s hierarchy in being oriented from more transitive to less transitive verb types, it can also be called a two-dimensional hierarchy. As noted by Haspelmath (2003), hierarchies have more predictive power than semantic maps, since apart from predictions based on contiguity requirements, they generate predictions based on the directionality of the map: if categories lower on a hierarchy display a certain pattern (the transitive pattern, in our case), categories higher in the hierarchy should display this pattern as well.

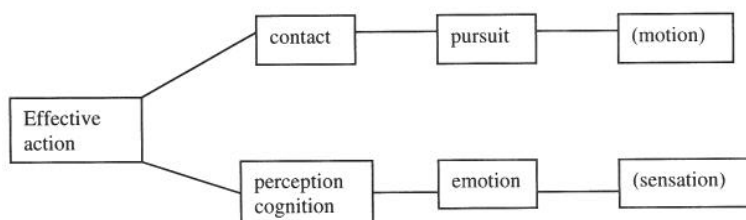


Figure 1: Two-dimensional verb type hierarchy.

An important qualification is in need here, though. An implicational hierarchy dealing with semantic classes should be formulated in existential terms (for some member of the class X) rather than universal terms (for every member of the class X); see Cristofaro (2003) for a recent discussion of 'quantified' implicational universals. That is, if some member(s) of the semantic class X displays a particular morpho-syntactic characteristic, the hierarchy would predict that some member(s) from the semantic classes higher in the hierarchy will display this characteristic as well (given, naturally, that this characteristic is associated with the high ranking in the hierarchy). This is a common assumption in typological research dealing with semantic classes. Thus, Dixon (1977) in his well-known typological study of adjectives, formulates a generalization to the effect that if (some of the) non-basic property words (e.g., human propensity items) pattern as adjectives in a particular language, (some of the) basic property words (referring to value, size, age and colour) should do the same (while the opposite does not hold of course; that is, languages having a closed class of adjectives may well confine this class to the basic property words). Thus, although the verb-type hierarchy cannot predict for every lexical item which case-frame it selects,⁴ it can predict that if there are some verbs from a type lower in the hierarchy that take a transitive pattern there should also be found some verbs from types higher in the hierarchy that do the same.

Generally, I assume with functional linguists such as Givón, Croft, Dixon, Tsunoda, Lazard that while in all languages clauses, which conform to the transitivity prototype, will receive a transitive encoding, languages will differ in the extent to which a transitive construction will be extended to other clause types departing from the transitive prototype. Such extensions can be conceived as metaphoric extensions from one semantic domain to the other, as suggested by Givón (1984) and Rice (1987). (For example, the notion of object affectedness clearly needs reinterpretation when one shifts from a domain of physical actions to the domain of mental events.) Alternatively, it can be regarded as assimilation of minor sentence types to the major construction, as suggested by Lazard, who views the transitive clause as a major construction type for two-actant action verbs, serving as a model for other two-actant patterns (Lazard, 1998, p. 40).⁵ In any case

⁴ In fact, Lucassen (1985, p. 258) expresses doubt in feasibility of cross-linguistic generalizations about valency patterns of verb types referring to the fact that in Abkhaz 'see' is transitive while 'hear' is not.

⁵ There is ample diachronic evidence in support of this view. For example, some experiencer verbs such as *thynca* 'seem' that took the inverse pattern in Old and Middle English have been assimilated to the transitive class in Modern English (see Blake, 1994, p. 148). In Russian, the verbs of the pursuit class such as *iskatj* 'look for' which originally took a genitive object are transitive in the modern language. The class of affective verb in North-east Caucasian languages is on decline and in some languages like Udi has been nearly ousted by the ergative pattern (Klimov & Alekseev, 1980; Schulze, 1994). In Kayardild some verbs of emotion, which historically derive from middle verbs, have been assimilated to the transitive pattern (Evans, 1995, p. 329).

a language may confine a transitive construction to some domain in the hierarchy presented above, or extend it to some further point down the hierarchy. In the next section, I shall present evidence for the different cut-off points for such an extension on the two-dimensional hierarchy, drawing on the data presented in Tsunoda's publications as well as in subsequent typological and descriptive studies. The data pertaining to particular sub-hierarchies will be presented separately; in Section 2.2, I present evidence for the ranking of the verb types on the sub-hierarchy leading from 'break' to 'go', while in Section 2.3, I shall present evidence for the ranking of the verb types on the sub-hierarchy leading from 'break' to 'sick'.

2.2. From 'Break' to 'Go'

Evidence for this sub-hierarchy is easy to obtain, in fact ample evidence was provided already in Tsunoda's initial publication. Below I shall present evidence for the ranking on this (sub-)hierarchy focussing on cases where a verb type higher in the hierarchy takes the transitive case-frame, while the verb types lower in the hierarchy take the intransitive case-frame.

2.2.1. break > hit Most languages seem to assimilate contact verbs like 'hit' and 'touch' to transitives. Yet, already in European languages we can observe that 'irresultative' verbs like 'hit' and 'touch' may diverge from canonical transitives (the 'resultative' subtype of effective action verbs) in behaviour. As noted by Tsunoda (1981), many of these verbs in English show an alternation between a transitive and prepositional O construction, while 'resultative' transitives do not (cf. *hit at* and **break at*; see Levin (1993, pp. 41–43) for further discussion of the 'conative alternation'⁶).

Some other languages offer more straightforward evidence for the reduced transitivity of the contact verbs. Thus, it is well known that in many Caucasian languages "verbs of surface contact" including such items as 'hit', 'bite', 'kiss', 'pinch' take an oblique O (Klimov & Alekseev, 1980, p. 180). Consider the following example from Chechen (Daghestanian):

Chechen (Nichols, 1984, p. 188)

- (3) *Da:s* *woʃa:* *b-iett*
 father-ERG son.DAT CL-beat(PRES)
 'The father beats his son'

⁶ Admittedly, not all groups of contact verbs participate in the "conative alternation": thus, while Levin's (1993) *hit*-verbs allow such alternation, *touch*-verbs do not. However, there are other syntactic characteristics that indicate lower transitivity of contact verbs from either class, for example, neither permits the "middle alternation" (cf. *it breaks easily*, **hits easily*, **touches easily*); see (Levin, 1993, pp. 149, 155).

As illustrated in (3), in Chechen contact verbs take the patient in the DAT rather than absolutive case thus deviating from the ergative pattern. Admittedly, the origin of this case-marking pattern in Daghestanian languages is due to the fact that ditransitives take the notional instrument as a direct O (cf. Klimov & Alekseev, 1980). This is particularly evident for Chechen, where an example like (3) can still be interpreted as a ditransitive construction involving the understood (omitted) absolutive O *bi*: ‘fist’ (see Nichols, 1984, p. 188). However, this interpretation cannot be generalized — at least in synchronic terms — to other Caucasian languages, Kartvelian and West-Caucasian where contact verbs pattern intransitively as well. Consider an example from Abkhaz (West-Caucasian):

Abkhaz (Lucassen, 1985, p. 260)

- (4) *D-sə-sə-yL*
 3sg/AGRabs-1sg/AGRdat-beat-TAM
 ‘S/he beats me’

In Abkhaz, encoding of grammatical relations manifests itself in agreement rather than morphological case. The verb in (4) cross-references both arguments, but differs structurally from the transitive in that it involves ‘absolutive’ and ‘dative’ AGR prefixes rather than ‘ergative’ and ‘absolutive’; also the order of AGR markers is different from the transitive pattern.

In many other languages, such as Tibetan mentioned in Tsunoda’s table, contact verbs pattern intransitively as well. In Amele, which makes a three-way distinction between transitive (with a full paradigm of object AGR), half-transitive (with a restricted AGRo), and the intransitive (lacking AGRo) verbs, includes *q-oc* ‘hit’ in the half-transitive class (Roberts, 1987, p. 285). In Trumai (language isolate, South American) the verb for ‘bite’ takes the ABS-DAT rather than ergative pattern, just as other ‘aiming verbs’ (Lazard, 1998, p. 147). A more complex case is represented by Marathi, a split ergative Indo-Arian language. Marathi, makes no formal distinction between ‘break’ and ‘hit’ verbs in imperfective tenses, since ACC is identical to DAT. However, the difference between the two becomes obvious once one regards case-marking in perfective tenses. Since Marathi is a split ergative language with an aspect-based split, in perfective tenses the direct O of ‘break’ verbs appears in the NOM case, while the O of ‘hit’ retains its case just as other indirect objects.

2.2.2. hit > look for As is also clear from Tsunoda’s table, some languages treat pursuit verbs as intransitives, while some other assimilate them to the transitive class. The former case can be illustrated by European languages, where many pursuit verbs take oblique (prepositional) objects; cf. English *look for*,

German *warten auf* 'wait for'; see Christol (1998, p. 474 ff.) for more examples. The latter case is attested in Japanese where all pursuit predicates are transitive:

Japanese (Jacobsen, 1992, p. 46)

- (5) *tomodati o matu*
 friend ACC wait
 'wait for a friend'
- (6) *apaato o sagasu*
 apartment ACC look.for
 'look for an apartment'

Similar variation in the treatment of pursuit predicates is attested for ergative languages. While Eskimo treats pursuit verbs as transitives, for Australian languages pursuit verbs constitute a cut-off point on the transitivity hierarchy: rather than taking the transitive ERG-ABS pattern, they opt for the ERG-OBL or ABS-OBL patterns (Tsunoda, 1981; cf. Blake, 1977). Consider the following example from Djaru:

Djaru (Tsunoda, 1981, p. 407)

- (7) *Mawu-nu ngal- ϕ -la jaji-wu jarra+nyang-an*
 man-ERG C-3sgAGRS-3sgAGRdat kangaroo-DAT wait-PRES
 'A man waits for (looks for) a kangaroo'

Note that contact verbs are treated as transitives in Djaru, indeed most Australian languages do not distinguish lexically between 'break' and 'hit' (Dixon, 1980, p. 103).⁷

On the other hand, for Caucasian languages, where contact verbs pattern intransitively, the hierarchy predicts that (some) pursuit verbs will pattern intransitively as well. This prediction is borne out; see the Ingush example with the 'wait' predicate in (1). Sometimes, pursuit verbs share the same pattern with verbs of contact. Thus, in Lezgian *QeQün* 'look for' and *galuq'un* 'hit (against)' govern the same 'postessive' case (Haspelmath, 1993, p. 274). And Basque, as is clear from Tsunoda's table, uses the same ERG-DAT pattern (in alternation to the transitive) for both the pursuit and the contact type.

Lazard (1998, p. 144) includes both verbs of pursuit and contact into his class of 'aiming' verbs denoting "actions directed towards an object but without necessarily attaining or affecting it". Note, however, that Lazard's notion of 'aiming verbs' extends even further to include verbs of directed perception (look at), emotional attitudes (worry about) and of social interaction (help, speak to). As evidence for taking 'aiming verbs' as a natural class, Lazard refers to the fact that in

⁷ Yet some of them distinguish these meanings grammatically through an antipassive alternation.

many Oceanic languages they constitute a group of “middle” verbs selecting an ABS–DIR frame (cf. Chung, 1978, p. 47).⁸

2.2.3. search > go Most languages including the ones discussed above treat motion verbs as intransitives, although they may admit some few into the transitive class (cf. English *enter*, *leave*; see also Dixon, 1991, p. 281 for a discussion of ‘preposition omission’ with motion verbs). Admittedly, languages differ in the extent to which they extend the transitive pattern to the motion type. As compared to English, Japanese (not surprisingly, given that pursuit verbs take invariably a transitive pattern) allows more motion verbs to appear in a transitive construction (Jacobsen, 1992, p. 50).

Japanese (Jacobsen, 1992, pp. 32, 46)

- (8) *rooka o hasiru*
 hall ACC run
 ‘run down the hall’

(But see Spencer & Otaguro (this volume) for a challenge to the traditional assumption that Japanese has a case system.) This construction, however, is mostly reserved to cases when the location is traversed completely and unidirectionally, elsewhere it alternates with the intransitive NOM–LOC frame:

- (9) *rooka de hasiru*
 hall LOC run
 ‘run in the hall’

The preference of motion verbs for intransitive constructions pertains to languages of different alignment type, at least to those that have case morphology. In languages, which lack the case category, the distinction can be blurred, however. Thus, Mathews and Yip (1994, p. 136) note that in (Cantonese) Chinese many verbs of motion and posture (‘go to’, ‘sit on’) that are intransitive in other languages take an O like transitive verbs.

2.3. *From ‘Break’ to ‘Freeze’*

In this section, I shall present evidence from typologically diverse languages for the ranking of particular verb types on the second sub-hierarchy leading from ‘break’ to ‘freeze’.

⁸ Cf. also Blume (1997) for a comparative study of ‘interaction verbs’ in European and Polynesian languages.

2.3.1. break > see As repeatedly noted in the typological literature, many languages — both accusative and ergative — distinguish ‘affective verbs’ from transitives. In some languages, verbs of perception are treated as belonging to this class on a par with the verbs of cognition and emotion. Thus, in Japanese perception predicates can pattern either transitively or intransitively: the former pattern is found with verbs of attentive perception the latter with inactive perception, which take the DAT–NOM pattern:

Japanese (Jacobsen, 1992, pp. 30, 31)

- (10) (*Watashi wa kokuban o mita*
 (I TOP) blackboard ACC look-at-PAST
 ‘I looked at the blackboard’
- (11) (*Watashi ni kokuban ga mieta*
 (I DAT) blackboard NOM see/visible-PAST
 ‘I saw the blackboard’

Not surprisingly, emotion predicates that are lower in the hierarchy also take the intransitive pattern:

Japanese (Shibatani, 2001, p. 312)

- (12) *Mami ni (wa) Hata-sensei ga osorosii (soda)*
 Mami DAT (TOP) Hata-professor NOM fear (ful)
 ‘Mami is afraid of Professor Hata’

Similarly, in some ergative languages verbs of perception pattern intransitively. Again Caucasian languages, which display an inverse pattern with perception predicates, can serve as an example (cf. Tsunoda, 1981; Drossard, 1991; Lazard, 1998 for discussion and further exemplification). Consider the following examples from Avar (contrasted with the transitive construction), where cognition and perception predicates take an experiencer in the locative case, while emotion predicates take an experiencer in the dative case:

Avar (Blake, 1994, p. 121 from Ebeling, 1966):

- (13) *Īnssucc-a j-as j-écc-ula*
 (M)father-ERG F-child F-praise-PRES
 ‘The father praises the girl’
- (14) *Īnssu-du j-as j-ix-ula*
 (M)father-LOC F-child F-see-PRES
 ‘The father sees the girl’

- (15) *Ínssu-je* *j-as* *j-ól'- ula*
 (M)father-DAT F-child F-love-PRES
 'The father loves the girl'

Thus, in all these languages verbs of perception share intransitive pattern with other mental verbs, although they do not necessarily display the same case-marking of arguments. A similar situation occurs in many Indic and Dravidian languages, where perception predicates also take a non-canonical subject (Onishi, 2001).

2.3.2. see/know > like/fear Languages cited above do not provide evidence for the relative ranking of perception and emotion predicates, since both take an intransitive pattern. For perception verbs, however, it is rather an exception than a rule, since in most languages (inactive) perception verbs as 'see' and 'hear' pattern transitively (cf. Tsunoda, 1981; Blake, 1994, p. 57; Palmer, 1994, p. 26). This has been generally confirmed by Bossong's (1998) study of the experiencer construction in European languages which showed that 'see'-verbs show a strong predilection for a transitive construction with a subject experiencer, while 'like'-verbs show an equally strong predilection for the 'inverse' object experiencer construction (Haspelmath, 2001, p. 61). The European languages from Bossong's sample are mainly nominative, but the same reference for perception verbs to pattern transitively can be observed in ergative languages as well (as can be readily seen from Tsunoda's table). Thus, Tsunoda notes that 'see' is used as an exemplary transitive predicate in many descriptions of Australian languages, while emotion predicates often select for some other case-frame, typically ABS-OBL like in Djaru:

Djaru (Tsunoda, 1981, p. 407)

- (16) *Ngali* *nga-li-nyanta* *minyirri* *ngumpirr-a*
 we.ABS C-1duS-3sgLOC shy.ABS woman-LOC
 'We are shy of the woman'

Also 'split intransitive' (or split-S) languages, which consistently differentiate between agentive and patientive subjects, are instructive in that respect. It seems that few of these languages treat 'see'-verbs as having a patientive subject, as is the case in Oneida which groups 'see' together with 'like' and 'sick'. Most split-S languages, however, assimilate 'see'-verbs to semantic transitives with agentive subjects and patientive objects. Thus, Ika treats 'see' as agentive, while 'know', 'afraid' and 'tired' are non-agentive. Similarly, in Guarani 'see' is transitive, while emotion verbs take a patientive subject. The same holds for Acehnese, where 'see' is cross-referenced as an agentive subject verb and needs to take a special detransitivizing marker (the 'accidental action' prefix *teu-*) in order to shift to the patientive subject class (Durie, 1985, p. 60).

The presented evidence indicates that perception predicates of the ‘see’ class (for a discussion of the ‘look’ predicates see Section 3.4) rank higher in the hierarchy than emotion predicates. Cognition predicates seem to fall in between the two types. Note that Tsunoda’s hierarchy suggests that cognition predicates are more similar to emotion predicates (they are adjacent in the hierarchy). However, in Daghestanian languages perception (‘see’) and cognition (‘know’) predicates are invariably treated in the same manner, while emotion predicates can receive a distinct treatment (for example, the former take the A in the affective/locative case, the latter in the dative, as in Avar (14)–(15); see Comrie and van der Berg (2003), Ganenkov (forthcoming) for an overview of case-marking of experiencers in Daghestanian languages). In general, however, these data are consistent with Tsunoda’s hierarchy inasmuch as cognition predicates take an intermediate position between perception and emotion. As a final illustration consider the situation in Acehnese (Durie, 1985, p. 63ff.). While perception verbs are treated as agentive, emotion verbs are for the most part either patientive or ‘variable’ (i.e. can cross-reference their subject with either agentive or patientive clitics). Cognition verbs fall in-between these two classes, as some of them belong to the agentive class, while some others belong to the ‘variable’ class.

2.3.3. like/fear > freeze/be cold Tsunoda does not include sensation predicates into his classification, apparently because his hierarchy is concerned with two place verbs, while sensation predicates are predominantly one place. Still there is a class of emotion predicates like ‘be sad’ which seem to be similar in terms of the number of valencies to sensation predicates like ‘be cold’ (see Kemmer (1993, p. 128ff.) on the distinction between two- and one-participant mental events). Thus, Onishi (2001) assigns both groups into the same class of “one- or two-place verbs with affected S/A”. Interestingly, even within this class sensations sometimes pattern differently from verbs of emotion. Consider the case from Quechua, where sensation predicates take the Subject in the ACC case:

Quechua (Hermon, 2001, p. 151)

(17) *ñuka-ta chiri-wa-rki-mi*
me-ACC cold-AGRO.1sg-PAST3-IF
‘I was cold’

(18) *ñuka-ta-ka uma-ta nana-wa-n-mi*
me-ACC-TOP head-ACC hurt-AGRO.1sg - PRES3-IF
‘My head hurts me’

As noted by Hermon (2001, pp. 151–152) other mental verbs including those of emotion display the canonical pattern with the nominative experiencer (with the exception of *muna-* ‘want’ that takes the accusative subject).⁹ In Tariana (Amazonian) there

⁹ Note that predicates with the desiderative suffix also take the subject in the accusative.

is a small class of verbs (S_{10} verbs in Aikhenvald's (2001) classification) that takes the S in the objective case, rather than in the unmarked case (Aikhenvald, 2001). As noted by Aikhenvald (2001, p. 180), this class mostly includes predicates of physical state. In Amele (Papuan) sensation predicates pattern as impersonal constructions with object-experiencers. As noted by Roberts (1987, p. 316), the majority of impersonal constructions are used to refer to a physiological state ('tired', 'itchy', 'cold', 'hurt', 'breathless'), although some few refer to emotional states ('sorry', 'willing') and one verb — to the mental state ('aware/understand').¹⁰

These data prompted Onishi's (2001) conclusion that sensation predicates are most prone among the verb types for non-canonical subject marking. Below we shall see how this observation can be reconciled with the results of Bossong's (1998) study showing that in European languages emotion predicates seem most prone for non-canonical subject marking, a result which seems to contest the lowest position of the sensation predicates on the verb-type hierarchy.

2.4. Conclusions on the Verb Hierarchy

Above I have shown that the verb-type hierarchy proposed by Tsunoda indeed conflates several semantic dimensions.¹¹ Once these dimensions are disentangled into separate sub-hierarchies we find how exceptions to the hierarchy mentioned in Section 1 fall into place. Note that all these exceptions concern the relative ranking of the pursuit predicates vis-à-vis mental verbs. As argued above, pursuit type cannot be reasonably ranked with respect to mental verbs since the two types display a deviation from a transitivity prototype in a different way; in particular, only the latter hierarchy involves a decrease of agentivity of the A participant. With these amendments, the two-dimensional hierarchy can be set up as a universal hierarchy having predictive power. If (some members of) the verb types lower in the hierarchy display the transitive pattern, (some members from) the verb types higher in the hierarchy will do so as well.

¹⁰ Another instructive example comes from Malayalam. As noted by Jayaseelan (2004, p. 230), while mental psych-verbs allow for both NOM and DAT subjects, physical sensations take only the latter. Interestingly, if a verb referring to a physical sensation (e.g., *vedaNicc* 'feel pain') exceptionally takes a NOM subject it is interpreted as (metaphorically) referring to mental suffering.

¹¹ The same conflation is found in the typology of verb types proposed by Onishi (2001), where mental predicates and pursuit/interaction verbs are treated as subclasses of the same group (Class II in his classification: 'two place verbs with less agentive A and less affected O'). More generally, it is doubtful if a one-dimensional universal hierarchy of semantic (thematic) relations can be constructed. Indeed, Experiencer and Instrument are opposed to Agent along different dimensions (the former characterized as affected, the latter lacking the agent's sentience) and thus cannot be ranked in relation to each other on a principled basis.

As a further illustration of independence of the sub-hierarchies on the two-dimensional map, consider extensions of transitivity along the hierarchy in English and Japanese. If one operates in terms of a one-dimensional hierarchy as proposed by Tsunoda it hardly makes sense to ask which of the languages is 'more transitive', that is more liberal in extension of the transitive pattern. However, such a comparison makes perfect sense in terms of a two-dimensional hierarchy. Indeed, Japanese is more permissive in extension of the transitive pattern along the first sub-hierarchy: as noted above it treats pursuit predicatés (and even many motion verbs) as transitive. On the other hand, English is more liberal than Japanese in extending of the transitive pattern along the second sub-hierarchy as it assimilates mental verbs to the transitive pattern. This is consistent with Jacobsen's (1992) conclusion that English (unlike Japanese) downplays the distinction between the verb types in agentivity/volitionality, while Japanese (unlike English) does not make a consistent distinction between intended (potentially resultative) and accomplished (actually resultative) actions.¹²

3. Constraining Case Frames for Verb Types

3.1. Introductory Remarks

In the previous sections, I have introduced a two-dimensional hierarchy of verb-splits and demonstrated how verb types can be located on the semantic map ranging from prototypical transitive to intransitive constructions. In this section, I shall suggest constraints that will account for the cross-linguistic variation in case-marking of arguments for individual verb types.

Let us first briefly consider the motivation behind case-marking in natural languages (see De Hoop & Narasimhan, this volume for further discussion). In functional-typological literature (Comrie, 1989; Mallinson & Blake, 1981; Kibrik, 1985), two main functions of case-marking have been identified: the indexing function, that is cases are used to encode semantic roles, and the discriminating function, that is the need to distinguish between the core arguments (subjects and objects). First recognition of these functions have given rise to two analyses of case-marking that were viewed as alternative and even competing, nowadays it is generally acknowledged that both are indispensable to account for

¹² Further, as noted by Jacobsen (1992, p. 47), Japanese is also more restrictive than English in extending a transitive pattern to verb types involving a symmetrical relation between the participants ('marry', 'resemble'). This is still another dimension of the transitivity hierarchy, which we shall briefly address in 5.

a cross-linguistic variation in case patterns (cf. Mallinson & Blake, 1981, pp. 91–96; Song, 2001, pp. 156–167). For example, the indexing approach provides a better account of case-marking of oblique arguments, as well as of marking of core arguments in ‘role-dominated’ languages (in terms of van Valin & LaPolla, 1997), where case reflects semantic roles of arguments. On the other hand, the indexing approach on its own cannot account for the well-known tendency attested both in accusative and ergative languages to leave a single argument of an intransitive verb (S) and one of the core arguments of the transitive verb (A or O) unmarked. To account for this one usually invokes other functional factors, such as the need to differentiate between the two arguments (that is, the discriminating function mentioned above), as well as economy that disfavours overt marking of (core) arguments. Note that due to the latter factors both intransitive and transitive clauses contain one unmarked argument (in the nominative case in accusative languages and in absolutive case in ergative languages). Based on these observations Tsunoda (1981), following some earlier suggestions of Shibatani (1977) and Dixon (1979), has proposed the UNMARKED CASE CONSTRAINT, which reads as follows:

UNMARKED CASE CONSTRAINT (UCC): In a non-elliptical sentence at least one NP must be in the unmarked case (nominative or absolutive).

Tsunoda used this constraint to account for the fact why case patterns lacking an unmarked argument (such as the ERG–DAT pattern lacking the unmarked absolutive argument and impersonal constructions lacking nominative subject in accusative languages) are generally dispreferred. In (Malchukov, forthcoming) I relied on the UCC to account for certain asymmetries between accusative and ergative languages in the encoding of the transitivity parameters suggested by Hopper and Thompson (1980). In particular, I proposed two constraints on the encoding of transitivity parameters: (i) the Relevance Principle that predicts that a parameter should be encoded on an argument to which it pertains (e.g. agentivity on the A argument and affectedness on the O argument), and (ii) the PRIMARY ACTANT IMMUNITY PRINCIPLE (PAIP) derived from Tsunoda’s UCC, which prohibits encoding of a transitivity parameter on the primary (unmarked) argument. PAIP helps to explain why differential object marking is mostly confined to accusative languages (where O is not a primary argument and therefore permits manipulation on its case-marking), while differential subject marking is mostly found in ergative languages (where ERG argument is not a primary argument and therefore permits manipulation on its case-marking). However, in this chapter I shall return to the original form of the UCC constraint suggested by

Tsunoda, since it provides a more appropriate formulation than PAIP for an account of transitivity splits, where no case alternation with the same verb is involved.

More recently the typological variation in case-marking systems has been addressed in Optimality-Theoretic literature, which attempts to provide a principled account of cross-linguistic variation in case-marking systems (see, e.g. contributions by de Hoop, Koenenman, Mulders, & Wearman, 2001; Legendre, Grimshaw, & Vikner, 2001). Within Optimality-Theory (OT) (Prince & Smolensky, 2004), the grammar of a natural language is viewed as the result of interaction of conflicting and violable constraints. Since the functional factors discussed above can be viewed as competing motivations in the domain of case-marking it is clear that they are amenable to an OT-style analysis. Here I shall briefly regard three optimality-theoretic approaches to case-marking, proposed by Primus (1999), Wunderlich and Lakämper (2001) and De Hoop and Narasimhan (this volume), which are most similar to my approach (see Nakamura, 1999; Woolford, 2001 for alternative approaches).

Although these approaches are based on somewhat different theoretical assumptions, they are similar in a number of respects, in particular with regard to a set of constraints used to account for variation in case-marking. Firstly, all these approaches assume some version of the UCC, termed 'Obligatory NOM Requirement' by Primus, 'Default Linking' by Wunderlich and Lakämper and PAIP (Malchukov, forthcoming) by De Hoop and Narasimhan. Secondly, all approaches propose a constraint (called Distinctness by Primus, Distinguishability by De Hoop and Narasimhan, and Uniqueness by Wunderlich and Lakämper) that is used to rule out constructions with doubling of a particular case (NOM–NOM, ACC–ACC, etc.). The functional motivation for this constraint lies in the discriminating function of cases, as explicitly acknowledged by Primus and De Hoop and Narasimhan. Thirdly, both Primus and Wunderlich and Lakämper assume some default rules assigning structural cases to core arguments. In the analysis of Wunderlich and Lakämper, structural cases are defined in terms of features [+hr] 'there is a higher role' and [+lr] 'there is a lower role' on the argument structure. In this system, the feature [+hr] licenses ACC-marking, the feature [+lr] licenses ERG-marking, the feature combination [+hr]/+lr] licenses DAT-marking, while NOM lacks a feature specification. Primus introduces structural case defaults in the form of NOM–ACC preference for two-argument verbs in an accusative language. I shall follow Primus in her assumption that assignment of structural cases in a transitive pattern is best viewed as the result of the assimilation of two-argument verbs to the transitive construction (cf. Lazard, 1998, for a similar view).

Most differences between these analyses concern the question of how the indexing function of cases is captured. In the approach of Primus this is captured

most directly since the choice of case is motivated by the ‘Proto-Role’ properties, as suggested by Dowty (1991). NOM in the accusative system (and ERG in the ergative system) is assigned to an argument that displays (the greater number of) Proto-Agent properties, while ACC (and ABS in the ergative system) case are assigned to an argument that displays (the greater number of) Proto-Patient properties. DAT is assigned by default (DAT-Default constraint) to an argument displaying a small number of Proto-Agent properties. Thus, in this system the choice of cases is ultimately semantically motivated. Wunderlich and Lakämper, on the other hand, argue for an approach that treats assignment of structural and semantic case in a different fashion and further assume that semantic and syntactic case assignment can compete with each other. Structural cases are assigned through feature specification [+hr] and [+lr], as mentioned above. Semantic cases, by contrast are sensitive to semantic roles (this is ensured by their Mark Semantics constraint). Generally, Wunderlich and Lakämper argue that structural case assignment is oblivious to semantic information, even though they admit that there is a connection between the semantic features [+hr] and Proto-Patient properties (affectedness) and the feature [+lr] and Proto-Agent properties (control).¹³ Finally, within the ‘uniform model of case-assignment’ advocated by de Hoop and Narasimhan, the indexing function of cases is directly captured through the Identify constraint.

I shall follow Wunderlich and Lakämper in their assumption that structural and semantic case assignment can be in competition (cf. also Woolford, 2001), but shall assume with Primus and de Hoop & Narasimhan that (in a semantically transitive construction) there is a semantic motivation for assignment of structural cases as well, as long as the A argument represents an Agent and the O argument a Patient. The requirement that semantic roles are properly encoded can be viewed as instantiations of Faithfulness to semantic input, where the semantic roles are specified (or can be deduced from lexical decomposition of verbal semantics). Furthermore, I shall assume that Faithfulness ensures existence of the default (iconic) mapping from semantic roles to cases such that the agent will be iconically encoded through a NOM case in an accusative system (and the ERG case in the ergative system), the patient will be encoded through ACC (or ABS in the ergative system), the experiencer by DAT¹⁴ case and local roles by oblique cases (see de Hoop & Narasimhan for a similar approach).

¹³ The semantic import of structural cases is used by Wunderlich and Lakämper to account for the licensing of DAT case beyond ditransitive constructions.

¹⁴ Dative is systematically notationally distinguished from obliques (DAT vs. OBL), when it encodes the Experiencer, elsewhere (e.g., when marking Goal arguments) it is subsumed under OBL.

Thus, building on the previous work in the functional-typological and optimality-theoretic traditions, I shall assume the following constraints on case-marking:

- (a) cases encode semantic roles (FaithRole);
- (b) core arguments are assigned default structural cases (Trans(itive)Def(ault));¹⁵
- (c) each clause contains an unmarked Case¹⁶ (UCC);
- (d) doubling of (structural) cases is prohibited (Uniq(ueeness)).

In the following sections, we shall see how these constraints can be applied to predict the cross-linguistically available case-marking patterns for the different verb types on the verb-type hierarchy. In accordance with previous OT approaches, variation in case-marking patterns is viewed as resulting from a different ranking of potentially conflicting and violable constraints. Of course, these constraints do not need to be in conflict in every particular case. Thus, in the case of canonically transitive constructions all these constraints are satisfied. Indeed, the FaithRole constraint ensures that Agent and Patient roles are encoded (in an accusative language) by NOM and ACC respectively.¹⁷ Similarly, the transitive

¹⁵ As noted above, I regard TransDef as a markedness constraint, as I take the transitive construction to be the unmarked pattern for polyvalent verbs (cf. Primus, 1999). Alternatively, it can be viewed as a conjunction of structural case assignment to both subject and object (which is motivated by the [+hr] and [+lr] features in LDG). On Woolford's (2001) approach the choice of the transitive pattern is determined by the case markedness hierarchy, where NOM and ACC are the two least marked cases. On this view one has to specify further that A receives the NOM case (in the accusative system) and O receives the ACC case, rather than the other way around. As far as I can judge, taking one of the latter two alternatives would not change anything in the computation of the optimal case-frames below.

¹⁶ I leave here open the question whether UCC itself should not be better viewed as a result of interaction of some (faithfulness and markedness) constraints, as suggested by an anonymous reviewer. In the present chapter, UCC is taken as a stipulation informed by the typological data, much like the Default Linker constraint in Wunderlich's LDG or — in a somewhat different perspective — Obligatory Case Requirement in Bobaljik (1993). Generally, however, the relation between UCC and markedness is indisputable; one way to derive UCC from markedness constraints has been suggested by Woolford (2001), who derives UCC from the case markedness hierarchy (*DAT >> *ACC >> *NOM).

¹⁷ The question whether the NOM case marking of subjects satisfies the FaithRole constraints or is rather due to (un)markedness, as suggested by an anonymous reviewer, depends on the assumptions about the candidate set. Here I assume that the candidate set is restricted to case forms available in a particular language. Therefore, say, ERG case markers do not enter into the set of competitors in an accusative language (hence also the notational distinction between NOM case in an accusative language and ABS case in an ergative language). Furthermore, I follow Primus (1999) in her view that there is a correlation between Proto-agent properties and nominative marking of subjects in an accusative language; otherwise it is difficult to account for non-canonical subject marking in cases when the subject lacks (some) of the Proto-agent properties. If a set of competing case-frames is assumed to be universal and the computation itself determines the inventory of cases, the absence of ergative case in an accusative language must be due to some higher-ranking Economy constraint prohibiting

pattern will be preferred by virtue of the Transitive Default. The transitive pattern further satisfies UCC and Uniqueness constraints. As can be seen from the following Generalized Tableau, all the alternative patterns violate one or more of these constraints (this is indicated by asterisks in the respective boxes).

Tableau 1 (Table 2) above is called ‘generalized’ since it is designed to predict a cross-linguistically preferred pattern given a certain set of constraints, rather than to account for (un)grammaticality of certain patterns in individual languages in terms of language particular constraint ranking. No universal ranking among the constraints is assumed here, rather constraint reranking gives rise to a cross-linguistic variation in case-patterns. Thus, Tableau 1 accounts for the fact that a semantically transitive construction will be consistently encoded through a transitive pattern since the constraints reinforce each other rather than conflict. For the other verb types from Tsunoda’s hierarchy that deviate from the transitive prototype the patterns will be more diversified since different patterns would be favoured by different constraint rankings. In what follows we shall see how the proposed set of constraints can predict possible case-frames for the other verb types from Tsunoda’s hierarchy drawing on the data introduced in the previous sections.

3.2. Case Patterns of Pursuit Verbs

Since FaithRole constraints play a crucial role in my analysis let us first consider the argument structure of the pursuit verbs. Above I have argued that pursuit verbs differ from semantic transitives in that the argument roles of the former are

Table 2: Tableau 1: Case-marking in the canonical transitive construction in an accusative language.

	FaithRole	UCC	TransDef	Uniq
NOM-ACC				
NOM-OBL	*		*	
DAT-ACC	*	*	*	
NOM-NOM	*		*	*
ACC-ACC	*	*	*	*

case-marking of As (maybe it can be identified with the UCC, as in the approach of Nakamura, 1999). On this view, indeed, marking of A by the NOM case (instead of ERG) will incur a FaithRole violation. This move however will not have any consequences for the competition among the case-frames in Tableau 1, since all the other competitors will incur similar violations. Hence the NOM-ACC pattern will be optimal on either account.

Agent–Goal rather than Agent–Patient. In an accusative language mapping of this argument structure onto cases is unproblematic. The agent is iconically encoded by NOM, while the goal is iconically encoded by an oblique case. The only alternative seems to be to assimilate this pattern to the transitive pattern, which would account for the fact why some languages treat (certain) pursuit verbs as transitive. Indeed both patterns are attested; as discussed in Section 2.2, pursuit verbs in English generally prefer the NOM–OBL pattern while Japanese usually opts for the NOM–ACC pattern (see (5)).

For ergative languages mapping of this argument structure is less convenient, though. The mapping rules based on semantic faithfulness would predict the ERG–OBL case-frame which lacks the unmarked argument, and hereby incurs a violation of UCC. In such a case several options are available, as represented in Tableau 2 (Table 3). Henceforth I disregard case-frames violating the Uniqueness Constraint since those are considered sub-optimal.¹⁸ Generally, only these candidates that are optimal under different constraint rankings are represented in the Tableau 2.

Thus, the following case-frames would be optimal under different constraint rankings:

- ERG–OBL, if FaithRole >> {UCC, TransDef};
- ERG–ABS, if TransDef >> {UCC, FaithRole};
- ABS–OBL, if UCC >> FaithRole >> TransDef.

The last option is in need of further justification, as it seems to follow from Tableau 2 that if UCC is the highest ranking constraint, the ABS–OBL will always lose to the ERG–ABS pattern as only the latter satisfies the TransDef constraint. This is, however, a consequence of considering FaithRole as a unitary feature “checked” for both arguments simultaneously, rather than assuming two

Table 3: Tableau 2: Case-frames for pursuit verbs in ergative languages.

	FaithRole	UCC	TransDef
ERG–OBL		*	*
ERG–ABS	*		
ABS–OBL	*		*

¹⁸ Some languages like Japanese seem to permit the ‘double nominative’ pattern, in an apparent violation of Uniqueness constraint. Note, however, that the ‘double nominative’ construction seems to presuppose a separate topic position that is distinct from the subject position and thus can be seen as “parasitic” on the latter.

separate Faithfulness constraints pertaining to each of the arguments individually: FaithRole/A and FaithRole/O. On the latter approach, FaithRole/A is violated if A is not assigned the ERG case in accordance with its Agent role and FaithRole/O is violated if O is not assigned the OBL case in accordance with its Goal role. Now, a different ranking of FaithRole/A and FaithRole/O with regard to UCC will yield different results. If FaithRole/A dominates UCC and UCC dominates FaithRole/O, ERG–ABS emerges as a winning candidate. In this case, the Faithfulness constraint for A is satisfied, while the Faithfulness constraint for O is violated. This violation however is ‘minimal’, given that it is more important for the optimal candidate to satisfy the higher-ranking UCC, which requires that one argument in a transitive frame will be unmarked. An opposite ranking of Faithfulness constraints with respect to UCC (FaithRole/O >> UCC >> FaithRole/A) will yield ABS–OBL as an optimal candidate, provided that TransDef is a low-ranking constraint. The ABS–OBL pattern will also be optimal under the constraint ranking UCC >> FaithRole/O >> FaithRole/A. Thus, the crucial factor for the choice of the ABS–OBL pattern as the optimal pattern is that both UCC and FaithRole/O dominate FaithRole/A.

All case-marking options listed in Table 3 are indeed attested. The ERG–OBL pattern exists as a minor pattern in many Australian languages, as illustrated above for Djaru in (7). The transitive pattern ERG–ABS is attested, as reported in Tsunoda’s Table, in Eskimo and Basque among others. Finally, the ABS–OBL pattern is found in many Caucasian languages and has been illustrated above for Ingush in (1).

3.3. Case Patterns of Emotion Verbs

Mental verbs (also called psych verbs) have attracted much attention in the linguistic literature since they allow for alternative mapping from semantic roles to grammatical relations and thus challenge those theories which (like Perlmutter and Postal’s Universal Alignment Hypothesis) assume that there is a universal alignment between the two (see, e.g. Grimshaw, 1990, p. 19ff; Croft, 1991, p. 213 ff. for discussion). As noted by Croft (1991), such versatility is particularly characteristic for the class of mental state verbs, which can show alternative alignment both cross-linguistically and within one language: for example, in English *like* takes a subject-experiencer, but *please* takes an object-experiencer.¹⁹ Croft (1991) attributes this variation to the fact that mental states cannot be easily interpreted in

¹⁹ Some other classes of mental verbs are universally aligned, according to Croft (1991): thus, causative mental verbs like *frighten* invariably take an experiencer as their object, while activity verbs (cf. *think*) and inchoative verbs (cf. *get mad*) invariably take an experiencer as their subject.

terms of the causal chain of events including an agent-causer and an affected Patient. Here the causal chain is rather bi-directional, as the experiencer must first direct his attention to the stimulus, and then the stimulus causes a change in the mental state of the experiencer.

Let us consider how my analysis can account for the cross-linguistic variation found in the case-marking of arguments of mental state verbs, in particular, of emotion verbs. As stated above, the semantic role of A is traditionally defined as Experiencer, and the role of O as Stimulus. Since the second argument is not an affected Patient, while the first is not a controlling Agent, the iconic mapping from argument roles to cases will yield the DAT-OBL frame. As is clear from the discussion above, this case-frame is problematic for both accusative and ergative languages, since it lacks an unmarked argument and thus incurs a violation of UCC. Tableau 3 (Table 4) shows the competition of case-frames of Experiencer-verbs in accusative languages.

Tableau 3 predicts which patterns would be optimal under different constraint rankings:

- (a) DAT-OBL survives, if FaithRole \gg {UCC, TransDef};
- (b) NOM-ACC is a winning candidate, if TransDef \gg {FaithRole, UCC};
- (c) both NOM-OBL and DAT-NOM may be optimal candidates if UCC \gg FaithRole \gg TransDef or if UCC is interpolated between the Faithfulness constraints.

As in the previous case, the choice between the two patterns in (c) is determined by ranking of the FaithRole/A and FaithRole/O with regard to UCC and to each other. Thus, if both UCC and FaithRole/A dominate FaithRole/O, DAT-NOM is the optimal candidate, if UCC and FaithRole/O dominate FaithRole/A, NOM-OBL wins.

All patterns are indeed attested. The (a) pattern is attested as a minor pattern in some European languages (cf. Icelandic *Mér líkar vel við henni* 'I like her', or German *Mir graut von dir* 'You horrify me' cited by Primus, 1999, p. 70). The tran-

Table 4: Tableau 3: Experiencer-verbs in accusative languages.

	FaithRole	TransDef	UCC
DAT-OBL		*	*
NOM-OBL	*	*	
NOM-ACC	**		
DAT-NOM	*	*	

sitive (b) pattern illustrated by the English *like* is typical for ‘Standard Average European’ languages (Haspelmath, 2001). The two patterns in (c) are also common in European languages (cf. Bossong, 1998, for an overview): NOM–OBL is attested for example in Finnish, where the O of emotion verbs (such as *rakastaa* ‘love’ and *pelätä* ‘fear’) is in the Partitive case, while the inverse DAT–NOM is found in many other European languages such as Russian, German and Italian (cf. Russian *Mne nravitsja eta kniga* (me.DAT like.REFL this book) ‘I like this book’).

Now consider case-marking options for experiencer verbs in ergative languages as shown in Tableau 4 (Table 5).

Tableau 4 shows case-frames that would be optimal under different constraint rankings:

- (a) the iconic DAT–OBL survives, if FaithRole >> {UCC, TransDef};
- (b) transitive ERG–ABS is the optimal candidate, if TransDef >> {FaithRole, UCC};
- (c) both ABS–OBL and DAT–ABS may be optimal candidates, if UCC >> FaithRole >> TransDef or if UCC is interpolated between the Faithfulness constraints.

The transitive (b) pattern is attested in many languages such as Basque and Eskimo, referred to in Tsunoda’s Table. Both case patterns in (c) are common and show a particular areal distribution: ABS–OBL is attested in Polynesian and Australian languages (cf. e.g. (16) from Djaru), while DAT–ABS is found in many Caucasian languages (see (15) from Avar). The iconic pattern in (a) seems to be less frequent, but crops up in some (East-)Caucasian languages, such as Tabasaran.

Tabasaran (Ganenkov, forthcoming)

- (19) *Uzu-z Xu-jir-i-q-an gučura*
 I-DAT dog-PL-OBL-POST-EL be.afraid
 ‘I am afraid of dogs’

A similar pattern has been reported for Budukh (Alekseev, 1994, p. 285), Lezgian (Haspelmath, 1993, p. 284) and Udi (Schulze, 1994, p. 495). Interestingly,

Table 5: Tableau 4: Experiencer-verbs in ergative languages.

	FaithRole	TransDef	UCC
DAT–OBL		*	*
ABS–OBL	*	*	
ERG–ABS	**		
DAT–ABS	*	*	

in Udi both Experiencer and Stimulus are marked by the 'dative' cases, but it does not incur a Uniqueness violation since the two dative cases are different ('dative-1' and 'dative-2' in Schulze's notation).

3.4. Case Patterns of Perception Verbs

Among perception predicates two classes are traditionally distinguished: inactive perception verbs like *see* and *hear* in English and active (alias 'attentive') perception verbs like *look* and *listen*. As already observed by Tsunoda (1981), both classes deviate from a transitivity prototype albeit in a different way. Inactive perception predicates characterize their O as attained, but are not necessarily agentive (as one can see something accidentally). On the other hand, attentive perception predicates are agentive but not (necessarily) resultative (as one can look at something without seeing). Now, Tsunoda (1985) observed that cross-linguistically 'see'-verbs are always more transitive than 'look'-verbs (and used this observation as evidence that it is affectedness rather than volitionality that is crucial for the transitive encoding). Næss (2004), however, noted that in some ergative languages (East Futunian, Udi) 'look'-verbs are more transitive than 'see'-verbs since the former take an ergative pattern while the latter do not. Her explanation is that ergative languages are more consistent in encoding control, while accusative languages are more consistent in encoding affectedness. Note however, that Tsunoda's evidence for 'see' being more transitive than 'look' is in no way restricted to accusative languages: for example, in Tsunoda (1985) he refers to Chepang (Tibetan) where 'see' takes the transitive ERG-ABS pattern while 'look' does not. On the other hand, we have also witnessed accusative languages, like Japanese, where 'see' patterns intransitively and 'look' patterns transitively (see (10)–(11)). Perhaps most interestingly, in some ergative languages both 'look' and 'see' are intransitive, but display different patterns. Such a situation is common in (East-)Caucasian languages. This is illustrated below for Lezgian, where 'see' takes the DAT-ABS pattern, while 'look' takes the ABS-DAT pattern:

Lezgian (Haspelmath, 1993, pp. 89, 281)

- (20) *Zun mad wa-z akwa-n qhiji-da-č*
 I.ABS still you-DAT see-PER REPET-FUT-NEG
 'You will not see me again'

- (21) *Xtul č'exi bubadi-z kilig-na*
 grandchild.ABS great father-DAT look-AOR
 'The grandson looked at his grandfather'

Similar patterns have been reported for perception predicates in Ingush (Nichols, 1994, pp. 118–119). In Khinalug (Kibrik, 1994, p. 399) *zaği* 'see' takes a DAT-ABS

pattern and *l'äkši* 'look' takes a ABS–LOC pattern. In most Andic languages, except for Bagvalal where 'listen' takes a transitive ERG–ABS pattern, 'hear' takes an inverse DAT/AFF–ABS pattern, while 'listen' an ABS–OBL pattern (Comrie & van der Berg, 2003). In Svan (Kartvelian) 'listen' takes the ERG–DAT pattern, and 'hear' the DAT–ABS pattern (Testeleets, 1998). How does the proposed analysis fare when confronted with such variation in case-marking patterns?

Let us consider first the predictions of my constraint-based analysis for the two classes of perception predicates. Note first that 'look' predicates are similar in argument structure to pursuit verbs: both have a controlling A (Agent) and non-affected O (Goal). In fact, Dixon (1991) attributes *look for* and *look at* to the same semantic class of 'Attention'-verbs, while Lazard includes both into his class of 'aiming verbs'. Then, evaluation of case-frames for the 'look' verbs would be predicted to proceed similarly to pursuit verbs (see Tableaux 3 and 4). In the accusative languages the two preferred patterns would be NOM–OBL or the transitive pattern. These predictions are borne out: the former pattern is attested, for example, in English, while the latter is attested, for example, in Japanese (see (10) above). For ergative languages, the optimal case-frames would be ERG–OBL, ABS–OBL, ERG–ABS. Again all these patterns are attested, in fact, all occur in Caucasian languages cited above: ERG–OBL occurs in Svan, ERG–ABS occurs in Bagvalal, while ABS–OBL is attested in most other Andic languages.

For 'see' predicates predictions are similar to those for 'like' predicates, as they are similar in argument structure. However, the O of 'see' predicates is characterized as attained which makes it more similar to Patient (in this respect 'see' verbs are like 'find' verbs). Therefore, I shall assume that the iconic pattern for the 'see'-predicates is DAT–ACC rather than DAT–OBL. On these assumptions, the evaluation of competing case-frames is represented in Tableau 5 (Table 6).

Thus the optimal candidates are:

- (a) DAT–ACC, if FaithRole >> {UCC, TransDef};
- (b) NOM–ACC, if TransDef >> {FaithRole, UCC};
- (c) DAT–NOM is optimal under constraint ranking {UCC, FaithRole/A} >> {FaithRole/O, TransDef}. Under the opposite ranking of Faithfulness

Table 6: Tableau 5: 'See'-verbs in accusative languages.

	FaithRole	TransDef	UCC
DAT–ACC		*	*
NOM–ACC	*		
DAT–NOM	*	*	

constraints {UCC, FaithRole/O} >> {FaithRole/A, TransDef}, the transitive pattern emerges.

Tableau 5 accounts for the fact that assimilation to the transitive pattern would be more frequent for (inactive) perception verbs as compared to emotion verbs; indeed, as noted in Section 2.2 the transitive pattern is cross-linguistically most common. DAT–NOM pattern in (c) is found, for example, in Japanese (see (11)). Finally, the iconic DAT–ACC pattern seems to be rare, but is attested, for example, in Sinhala:

Sinhala (Gair & Paolillo, 1997, p. 33)

- (22) *MeŋE dæŋ aliyawE peenEwa*
 I.DAT now elephant.ACC see.PRES
 'I now see the elephant'

For ergative languages the default mapping from roles to cases based on semantic faithfulness will yield the DAT–ABS frame. The only alternative to this case-frame is the transitive pattern. The choice of the optimal candidate among these two patterns will depend on the relative ranking of FaithRole (more specifically, FaithRole/A) and TransDef, as both patterns satisfy UCC.

Again, the predictions of Tableau 6 (Table 7) seem to be corroborated by the data available. As can be readily seen in Tsunoda's table, ERG–ABS pattern is used for 'see' predicates in many Australian languages, while DAT–ABS pattern is found in Caucasian languages (see (20) from Lezgian).

Thus, my account correctly predicts that both 'see' and 'look' verbs can pattern either transitively or intransitively, but in the latter case the alternative case-frames would be different: 'see' verbs will have the DAT–NOM (or DAT–ABS) pattern as an alternative to the transitive pattern, while the 'look' verbs will have the NOM–OBL (or ABS–OBL) pattern as an alternative. As is clear from the discussion above, these predictions are generally borne out (however, as we shall see in Section 4.2, counterexamples can be found in languages where classes of inactive and active perception verbs are not lexically differentiated).

Table 7: Tableau 6: 'See'-verbs in ergative languages.

	FaithRole	TransDef	UCC
DAT–ABS		*	
ERG–ABS	*		

3.5. Case Patterns of Sensation Predicates

Finally, let us consider sensation predicates like ‘freeze, be cold’. As noted above, these predicates are distinguished from other classes by the fact that they are normally one-argument. The sole argument inasmuch as it is conceptualised as Experiencer, should be iconically encoded through the DAT case (but see below). Tableau 7 (Table 8) shows the optimal case-marking patterns given the familiar set of constraints (note since these verbs are one-argument TransDef is out of force/satisfied vacuously):

The former pattern resulting from FaithRole dominating UCC is familiar from European languages, which regularly use this pattern, in particular, with non-verbal predicates: cf. German *Mir ist kalt*, Russian *Mne xolodno* (me.DAT cold.ADV) ‘I am cold’; see Bossong (1998) for more examples from European languages. Among ergative languages this pattern occurs, for example, in Lezgian (Haspelmath, 2001, p. 61): *Zaz meqi-da* (me.DAT cold-COP) ‘I am cold’.

Interestingly, with verbal predicates the dative-experiencer pattern competes with the accusative-experiencer pattern; consider the following examples from Icelandic and Russian:

Icelandic (Andrews, 1982, p. 461)

- (23) *Mig kelur*
I.ACC is.freezing
‘I am freezing/getting frost-bitten’

- (24) *Mer kolnar*
I.DAT is.getting.cold
‘I am getting cold’

Russian

- (25) *Mne nezdorovitsja*
me.DAT sick.REFL.PRES.3sg
‘I feel sick’

Table 8: Tableau 7: Case-marking of sensation-predicates.

	FaithRole	UCC
DAT _		*
NOM/ABS _	*	

- (26) *Menja toshnit*
 I.ACC nauseat.PRES.3sg
 'I am nauseated'

The occurrence of the ACC-marked experiencers is unexpected under the present account. Note, however, that in both Icelandic and Russian cases the ACC-marked experiencers are conceived as more affected and more Patient-like as compared to Dative experiencers. This has been noted for Icelandic by Andrews (1982, p. 463; cf. Onishi, 2001, p. 27), who discussing examples (23) and (24) writes that the former, with the ACC-marked experiencer, suggests a physical damage (frostbite), while the latter, with the DAT-marked experiencer, speaks merely of being cold. The same point can be made with regard to the Russian examples in (25) and (26). Thus ACC marking of experiencers of sensation verbs can be attributed to FaithRole, inasmuch as S is conceptualized as a Patient. Interpretation of the sole argument of sensation verbs as Patients is also uncontroversial in the case of Papuan languages mentioned in Section 2.3, where constructions with sensation predicates pattern like an impersonal clause with an object-experiencer.

The first pattern motivated by the FaithRole constraint is also found in languages with 'split intransitivity', where subjects of sensation predicates pattern with non-actors rather than actors (see Mithun, 1991; Dixon, 1994, for discussion of these languages). The distinction between actors and non-actors in these languages manifests itself in agreement rather than morphological case. Sensation verbs regularly take non-actor agreement to cross-reference the experiencer. Some languages, which like Koasati (Muskogean) make a further distinction between 'object'-agreement and 'dative'-agreement paradigms, may use both paradigms with sensation verbs. (Note that the nominative case on the pronominal subject remains unaltered in the examples below, since case-marking of nouns, which operates on the nominative-accusative basis, is totally independent of the choice of agreement.)

Koasati (Kimball, 1991, pp. 253–254)

- (27) (*Anó-k am-hó-p*)
 (I-NOM) I.ACC-sick
 'I am sick'
- (28) (*Anó-k ca-hó-p*)
 (I-NOM) I.DAT-sick
 'I feel sick/I am hurt'

The choice between the two paradigms is largely lexically determined (hence Koasati qualifies as a predominantly 'split-S' language, in terms of Dixon, 1994). When the same verb may alternatively chose AGR_{acc} or AGR_{dat} paradigms, as in the examples above, the choice between the two paradigms is determined not by

the degree of affectedness but rather depends on whether the sensation is viewed as permanent or temporary (Kimball, 1991, p. 253; cf. Payne (1982, p. 356) for the discussion of Chickasaw, another Muskogean language). In most Split-S languages, however, these two AGR series are not differentiated, which is consistent with the view that these languages do not consistently differentiate between experiencers and patients (Drossard's (1991, p. 169) observation that languages of the 'active' type normally lack a distinct class of experiencer verbs).

However, in most other languages — both nominative and ergative — sensation verbs are assimilated to the intransitive pattern with the sole unmarked argument. On my account this is due to the fact that UCC outranks FaithRole. This pattern with subject experiencers of sensation verbs is predominant in European languages (as long as predicates are verbal), as clearly shown by Bossong's (1998) study. My account also provides a straightforward explanation for the fact that even though sensation predicates generally have a stronger predilection for the object-experience construction, in European languages they are less prone for inversion as compared to emotion predicates. Note that in an inverse construction with a (two-place) emotion verb Stimulus is encoded by the unmarked nominative case, hence UCC is satisfied. But for one-place sensation predicates encoding Experiencer as the subject is the only way to satisfy UCC: they simply lack another argument to "invert" with. This account relating the possibility for inversion to the number of arguments is corroborated by the fact that one-argument emotion predicates on Bossong's list such as 'be glad' are less prone for inversion and pattern similarly to sensation predicates.²⁰

3.6. Conclusion

In this section, I have argued that cross-linguistic variation in case-frames of individual verb types is best viewed as resulting from interaction of a few functionally based constraints. Notably, the same variation in case-marking arising from competition of several case-frames can often be attested for a single language as well, as each of the competing case-frames may be optimal under different conditions. First, there may be a lexical split within the verb type, some verbs opting for one case pattern while other verbs choosing another one (see, for example the situation in Amele discussed in Section 2.2.). Second, the same lexical item may allow for alternative case patterns (cf. the 'conative alternation' for contact verbs in English).

²⁰ Haspelmath (2001) provides the following percentages for Bossong's sample showing predilection of particular predicates for object-vs. subject-like experiencer constructions: 'like' shows a clear predilection for the object-experiencer construction (21% vs. 79%), while distribution of these patterns for 'glad' and 'cold' predicates is about the same (52% vs. 48% for 'glad' and 54% vs. 46% for 'cold').

Yet another manifestation of competition between several case-marking options is a 'mixed' pattern when different case-marking strategies (say, morphological case and agreement) opt for different case-patterns. We have seen an example of such mixed patterns in Koasati in (27)–(28), where AGR is chosen on the semantic basis (that is, FaithRole >> {UCC, TransDef}²¹) while case-marking is determined syntactically (that is, {UCC, TransDef} >> FaithRole).

4. Other Factors

Above I have argued for an approach where different functional factors that determine case-marking are viewed as conflicting constraints and I showed how case-frames for individual verb types can be predicted on the basis of these constraints. In this section, I shall briefly discuss for the sake of completeness, two other factors that can influence the case-marking pattern, the lexical class of the predicate, and polysemy and pattern inheritance.

4.1. Non-Canonical Marking of Arguments and Non-Verbal Predication

As noted by Drossard (1991, p. 172) who further attributes this insight to Hansjakob Seiler, the origin of transitivity splits is often rooted in the non-verbal character of certain predicate types. The evidence for this claim is not difficult to come by. For example, in Russian mental predicates regularly take an inverted pattern if the predicate is adverbial: *Ja znaju* 'I know' vs. *Mne izvestno* lit. 'me.DAT (it) is known'. In German, only nonverbal intransitive predicates can take a DAT subject (cf. Primus, 1999); *Mir ist (es) kalt*, etc. In English, verbal types low on Tsunoda's hierarchy (knowledge, feeling, relation) usually pattern transitively if verbal (cf. *know, like, have*), but intransitively if non-verbal (cf. *aware of, fond of, similar to*). In Japanese, mental predicates take a transitive pattern if they are verbs but an inverted or a 'double-nominative' pattern if they are adjectives (see Sugamoto, 1982; Shibatani, 2001, for discussion and exemplification). In Tamil, the only productive class of predicates that allow dative subjects are adverbialized nouns:

Tamil (Asher, 1985, p. 106)

- (29) *Enakku daakamaa irukkutu*
 I.DAT thirst.ADVL be.PRES.3SN
 'I am thirsty'

²¹ Of course, for one-argument verbs such as those in (27)–(28) TransDef is out of force.

In Tariana the largest class of sensation predicates that take a non-canonical subject is nominal:

Tariana (Aikhenvald, 2001, p. 180)

- (30) *Amiri-ka-mha* *du-na*
 drunk(eness)-DECL-PRES 3sgnf-OBJV
 'She is drunk'

In many Australian languages, the ABS–DAT pattern is regularly found with nominal predicates denoting emotion or will (see, e.g. Crowley, 1983, p. 342, on Uradhi; cf. also a similar ABS–LOC pattern with the non-verbal predicate in (16) from Djaru). Notably, even when the nominal predicate is verbalized it inherits this case-pattern. Compare the following example from Nyawaygi where the verbal predicate is derived from the nominal through the use of an 'inchoative verbalizer':

Nyawaygi (Dixon, 1983, p. 455)

- (31) *ŋayba walŋambiNa yagugu*
 1sg.S thirsty.INCH.TAM water.DAT
 'I am thirsty for water'

Of course, the fact that non-verbal predicates often select a non-canonical subject or object marking has not gone unnoticed in the previous literature. For example, Tsunoda (1981) also notes that the likelihood of a non-verbal expression increases as one moves down the hierarchy. Still, the relation of non-canonical marking to the verb class has not been systematically investigated. Sometimes this relation is conceived as indirect and attributed to the fact that non-verbal predicates are normally stative, and stativity is one of the parameters correlated with low transitivity (see, e.g. Drossard, 1991; Onishi, 2001). Although the correlation between non-verbal predication and stativity is undeniable, not all such cases can be accounted for in semantic terms: after all, mental verbs such as 'like' and 'know' are stative as well, but still select for a transitive pattern in many languages. In general, it seems that a predilection for non-canonical marking related to word class of the predicate is much more robust since it is ultimately rooted in syntactic valency of the respective word classes. For example, a non-nominative encoding of Experiencer in the Russian and Tamil examples cited above can be straightforwardly accounted for by the fact that predicative adverbs do not subcategorise for a subject. Similarly, non-canonical marking of the subject and/or object in two-argument clauses with adjectival (and nominal) predicates can be attributed to the fact that adjectives normally are more restricted in their transitive potential than verbs. Although adjectives in some languages (e.g. in Quechua) can govern a direct object, in most languages they cannot. In this respect, adjectives in Japanese and Korean which take an object in the NOM rather than ACC

case provide a good example. As these examples demonstrate, encoding of arguments is severely constrained by the syntactic valency of individual word classes.

How can this factor be integrated into my model? I shall assume that non-verbal and verbal predicates share the same argument structure as long as they belong to the same predicate type, but differ in syntactic constraints. TransDef would be out of force with respect to non-verbal predicates since it pertains only to two-argument verbs. For adverbial predicates that do not subcategorise for a subject either, UCC is further irrelevant. The fact that adjectival predicates in many languages disallow a direct object can be captured through an additional constraint prohibiting assignment of accusative case to the second argument (cf. the common view in the generative linguistics that (transitive) verbs are structural case assigners, while adjectives are not). Thus, case-marking patterns for non-verbal predicates can be straightforwardly accounted for in terms of (additional) syntactic constraints pertaining to individual word classes.

4.2. Polysemy and Pattern Assimilation

Another factor that can influence case-marking is polysemy. Notably, polysemous items often share the same case pattern even if their different meanings represent different verb types. Perception predicates provide a good example in this respect. In some languages a verb meaning both 'see' and 'look' can select for different case-frames hereby differentiating these meanings. For example in Even (Tungusic), the same verb *it-* means 'see' when it takes an accusative object (*d'uuy itten* 'saw a house(-ACC)'), but 'look' when it takes an allative object (*d'uuy-iki itten* 'looked at a house(-DIR)'). However, in other cases of such polysemy one pattern can be assimilated to another. A telling example is found in Tongan (Polynesian), mentioned by Tsunoda (1981), where 'see' takes an ABS-OBL pattern (ABS-DAT/LOC). As I have argued in Section 3.4, this pattern is more appropriate for the 'look' class. Importantly, in this case 'see' can also mean 'look at', as in the following example from Chung (1978):

Tongan (Chung, 1978, p. 217)

- (32) *'Oku sio ki tahi 'a e sianá na*
 PROG see to ocean ABS the man that
 'That man was looking at the ocean'

An opposite situation is found in Caucasian languages, where inactive perception predicates display an inverse (affective) pattern (see (20) for Lezgian). Interestingly, in Lezgian, the verb 'see' can also mean 'look', when used in the imperative sentence, without changing its case-frame (DAT-ABS).

Lezgian (Haspelmath, 1993, p. 283)

- (33) *Gila kwe-z [za wuč-da-t'a] aku!*
 now you-DAT [I.ERG do.what-FUT-COND] see.IMPV
 'Now look (lit. see) what I am going to do!'

Thus, both in Tongan and Lezgian perception verbs are ambiguous between inactive and attentive perception, but in Tongan verbs inactive perception follow the pattern of verbs of attentive perception, while in Lezgian the situation is reverse.

Similar examples of pattern assimilation due to polysemy can be found elsewhere. For example, Dixon (1980, p. 103) notes that many Australian languages do not differentiate lexically between intended and accomplished action and therefore use the same item (with the same transitive frame) in both meanings, citing Dyirbal verb *balga-l* 'hit (with a club etc.); kill by hitting' as an example. Similarly, the fact that psych-verbs from the Levin's (1993) 'amuse' class take Object-Experiencer may be due to the fact that many of them (including *amuse* itself) also allow an agentive interpretation (Grimshaw, 1990, p. 23), while some others (e.g. *depress*, *strike*) can also refer to a physical (agentive) action (Levin, 1993, p. 191).

In the above cases, polysemy can be observed on a synchronic level. However, in many cases it can be observed only diachronically, when in the course of semantic evolution a verb can shift its verb type. Now, if the original meaning providing motivation for a particular case-frame is lost we are not dealing with a case of polysemy any more; for such cases it would be more appropriate to speak of pattern inheritance. For example, Haspelmath (2001) suggests a historical explanation for the preference of subject-experiencer constructions in 'Standard Average European' languages. He notes that many emotion predicates historically arise through metaphorical extension from the verbs denoting a physical action; thus, *worry* derives its meaning from 'strangle; seize by the throat', *stun* from 'deprive of consciousness with a blow', etc. (Haspelmath, 2001, p. 79). Mithun discussing idiosyncrasies of subject marking in the split intransitive Haida, where a subject of a 'know' predicate is treated as a non-agent while the subject of 'believe' as an agent, remarks (1999, p. 217): "It might be hypothesized that belief requires a stronger will or instigation than knowledge, but a better explanation is rooted in idiomaticity and lexicalization. Levine notes that to 'believe' in Haida is literally 'make true for oneself' (1977, p. 135)". Similarly, Nichols (1984, p. 199) states that it is impossible to provide a synchronic explanation for idiosyncratic marking of indirect objects of two-place verbs in Nakh-Daghestanian languages, but for most cases a diachronic explanation is readily available.

It is more difficult to integrate constraints associated with lexical assimilation into my model. As long as we are dealing with cases of synchronic polysemy, these can be dealt by introducing an additional constraint requiring unification of

valency patterns of a polysemous verb. However, once the source meaning which could account for the deviant case-frame is lost, it appears to be impossible to account for the deviant valency patterns in terms of universal constraints; here the valency pattern should be specified in the lexicon.

5. Conclusion: Towards a Comprehensive Map for Transitivity Splits

Above I have set up a two-dimensional semantic map for transitivity splits and showed how a small set of functionally based constraints can account for variation in case-frames for particular verb types on the map. However, in the present form this map is incomplete. As mentioned in the introduction, while there is only one way to comply with the transitive prototype (see Givón's definition above), there are numerous ways in which a construction can deviate from it. Above we have considered two strategies for violating the transitivity prototype, as manifested with the respective sub-hierarchies on the proposed two-dimensional map: the first resulting in a decrease in affectedness on the part of O, the other primarily concerned with reduction in agentivity on the part of A (the sub-hierarchy from 'break' to 'freeze'). These two routes lead into the domain of agent-like and patient-like intransitives, respectively.

However, there are more conceivable routes between the semantic domains of transitivity and intransitivity. A route that we have not considered so far pertains the loss of referential distinctness and asymmetrical relation between A and O arguments. This dimension of transitivity have been addressed by Kemmer (1993) in her study of middle voice, although her study concerns the issue of voice alternations as much as the issue of verb classification. As far as the latter is concerned we can integrate the semantic map suggested by Kemmer (1993, p. 202) for the middle situation types with the semantic map of transitivity splits presented above. On the one hand, semantic middles (I use this term to refer to inherent reflexives like 'wash' and inherent reciprocals like 'meet') are connected with syntactic reflexives, which are closer to the transitive pole of the map. On the other hand, middle verbs are linked to the intransitive domain via the verbs of spontaneous action ('burst', 'be born', etc.). A further connection between semantic middles to experiencer verbs is corroborated by the fact that the latter often display middle morphology (Kemmer, 1993).

Further the map is incomplete, as there are other verb types not represented on the map. First, we have seen evidence that cognition verbs are intermediate between the perception and emotion verbs, as originally proposed by Tsunoda. Furthermore, transitive verbs involving an affected subject (like 'eat', 'put on' or 'take') are

arguably intermediate between canonical transitives and perception verbs.²² The distinction between verbs with the affected subject and experienter verbs can be conveniently captured in the analysis proposed by Testelelets (1998) who distinguishes between different verb types in terms of control and affectedness but additionally ‘weights’ A and O with regard to these features. On this view, both mental verbs and verbs from the ‘eat’ class involve an affected A, but for the latter verb class O is arguably more affected than A. There is also an obvious connection between the class of affected subject verbs to inherent reflexives Kemmer’s (1993, p. 54) class of “grooming” verbs). Another verb type missing on the map is the verbs of social interaction, studied by Blume (1997). This is again a rather heterogeneous group including such items as ‘follow’, ‘help’, ‘obey’ and ‘speak’. On the one hand, interaction verbs show similarities with pursuit verbs (note that both are treated as subclasses of ‘aiming’ verbs by Lazard, 1998).²³ On the other hand, interaction verbs show an affinity with symmetric predicates (inherent reciprocals); cf. ‘agree’ or ‘marry’ which can be interpreted as members of both types. In terms of Testelelets (1998), the difference between the two types lies in the degree of control ascribed to the O participant: with symmetric predicates A and O are equal in control, with interaction verbs O is lower in control than A (with canonical transitives O has no control whatsoever). The connection between aiming verbs and symmetric predicates is corroborated by the data from Kartvelian languages where both classes are encoded as middle verbs (Testelelets, 1998). Finally, as we have witnessed above (in Sections 2.3 and 3.5), sensation predicates additionally show links that lead beyond one-argument intransitives to the domain of impersonal constructions.

The connections between individual verb types discussed above can be tentatively summarized in the form of semantic map shown in Figure 2 for verb classes, which subsumes the two-dimensional map introduced in Section 2:

Needless to say, much cross-linguistic research is needed to substantiate the claims embodied in this map. Again, the map is still incomplete in that further semantic types can be introduced. Thus, my map does not mention Tsunoda’s ‘Relation’ type, which in itself is a rather heterogeneous class. Furthermore, some other classes may need further decomposition; for example, it is instructive, that both Tsunoda’s ‘pursuit’ verbs and Blume’s ‘interaction verbs’ are distributed across several subclasses in Levin’s (1993) comprehensive study of English verb classes. Generally, much more descriptive and theoretical work (along the lines

²² Ample cross-linguistic evidence for the reduced transitivity of verbs with affected subjects (in particular, ‘ingestive verbs’) has been presented by Saksena (1980), Amberber (2002) and Næss (2004).

²³ In Chukchee, for example, interaction verbs (e.g. ‘call’, ‘help’) and pursuit verbs (‘wait for’, ‘stalk’) belong to the same class in that both are labile and allow for the alternation of the ERG–ABS and ABS–OBL patterns (Inenlikej & Nedjalkov, 1967, p. 254).

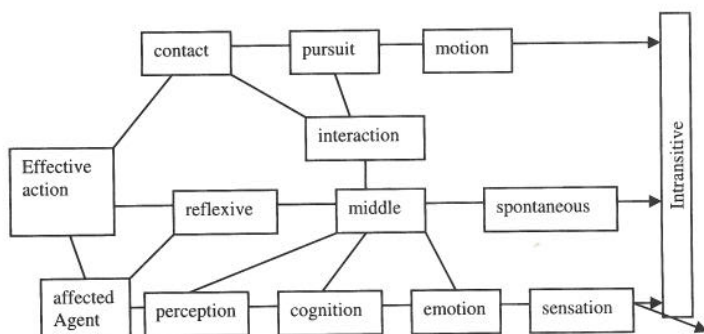


Figure 2: A Comprehensive semantic map for transitivity splits.

of Aresjan (1969) for Russian and Dixon (1991) and Levin (1993) for English) is needed to identify verb classes in individual languages, as well as to provide a proper definition and diagnostics for particular argument roles. Still, as I tried to show in this chapter, constructing a cross-linguistically viable hierarchy of verb types is feasible, and this hierarchy can be used to constrain cross-linguistic variation in case-marking patterns for particular verb types.

Acknowledgements

I am grateful to H. de Hoop, P. de Swart, T. Tsunoda and two anonymous reviewers for the helpful comments on the earlier version of this chapter. I acknowledge the Netherlands Organization for Scientific Research (NWO) for financial support, grant 220-70-003 for the PIONIER project “Case cross-linguistically”.

References

- Aikhenvald, A. (2001). Verb types, non-canonically marked arguments and grammatical relations: a Tariana perspective. In: A. Aikhenvald, R. W. M. Dixon & M. Onishi (Eds) *Non-canonical marking of subjects and objects* (pp. 177–201) (Typological studies in languages, 46) Amsterdam: Benjamins.
- Aikhenvald, A., Dixon, R. W. M., & Onishi, M. (Eds), *Non-canonical marking of subjects and objects* (pp. 177–201) (Typological studies in languages, 46). Amsterdam: Benjamins.
- Alekseev, M. E. (1994). Budukh. In: R. Smeets (Ed.), *North East Caucasian Languages* (Vol. 2, pp. 259–297). New York: Caravan Books.

- Amberber, M. (2002). Quirky alternations of transitivity: the case of ingestive predicates. In: M. Amberber & P. Collins (Eds) *Language universals and variation*. (pp. 1–20). Westport, Connecticut: Praeger.
- Andrews, A. (1982). The representation of case in modern Icelandic. In: J. Bresnan (Ed.), *The mental representation of the grammatical relations* (pp. 427–503). Cambridge: MIT Press.
- Apresjan, Ju. D. (1969). *Eksperimental'noe issledovanie russkogo glagola*. Moskva: Nauka.
- Asher, R. E. (1985). *Tamil*. London: Croom Helm.
- Blake, B. J. (1977). *Case marking in Australian languages*. (*Linguistic Series*, 23). Canberra: Australian Institute of Aboriginal Studies.
- Blake, B. J. (1994). *Case*. Cambridge: Cambridge University Press.
- Blume, K. (1997). A contrastive analysis of interaction verbs with dative complements. *Linguistics*, 36(2), 253–280.
- Bossong, G. (1998). Le marquage différentiel de l'objet dans les langues d'Europe. In: J. Feuillet (Ed.), *Actance et valence dans les langues de l' Europe* (pp. 259–294). Berlin: Mouton de Gruyter.
- Christol, A. (1998). Marquage oblique des actants. In: J. Feuillet (Ed.), *Actance et valence dans les langues de l' Europe* (pp. 457–525). Berlin: Mouton de Gruyter.
- Chung, S. (1978). *Case marking and grammatical relations in Polynesian*. Austin: University of Texas Press.
- Comrie, B. (1989). *Language universals and linguistic typology*. Chicago: University of Chicago Press.
- Comrie, B., & van der Berg, H. (2003). Experiencer constructions in Daghestanian languages. Handout of talk presented at the PIONIER workshop on *Case, valency and transitivity*.
- Cristofaro, S. (2003). *Subordination*. Oxford: Oxford University Press.
- Croft, W. (1991). *Syntactic categories and grammatical relations: The cognitive organization of information*. Chicago: University of Chicago Press.
- Croft, W. (1998). Event structure in argument linking. In: M. Butt & W. Geuder (Eds), *The projection of arguments* (pp. 21–65). Stanford: CLSI Publications.
- Crowley, T. (1983). Uradhi. In: R. W. M. Dixon & B. Blake (Eds), *The handbook of Australian languages* (Vol. 3 pp. 307–430). Amsterdam: Benjamins.
- Dixon, R. M. W. (1977). Where have all the adjectives gone? *Studies in Language*, 1, 19–80.
- Dixon, R. M. W. (1979). Ergativity. *Language*, 55, 59–138.
- Dixon, R. M. W. (1980). *The languages of Australia*. Cambridge: Cambridge University Press.
- Dixon, R. M. W. (1983). Nyawaygi. In: R. W. M. Dixon & B. Blake (Eds). *The handbook of Australian languages* (Vol. 3, pp. 431–527). Amsterdam: Benjamins.
- Dixon, R. M. W. (1991). *A new approach to English grammar, on semantic principles*. Oxford: Clarendon Press.
- Dixon, R. M. W. (1994). *Ergativity*. Cambridge: Cambridge University Press.
- Dowty, D. R. (1991). Thematic proto-roles and argument selection. *Language*, 67, 547–619.
- Drossard, W. (1991). Verbklassen. In: H. Seiler & W. Prempfer (Eds), *Partizipation: das sprachliche Erfassen von Sachverhalten* (pp. 150–182). Tübingen: Narr.
- Durie, M. (1985). *A grammar of Acehnese*. Dordrecht: Foris.

- Ebeling, C. L. (1966). Review of Chikobava and Cercvadze's "The grammar of literary Avar". *Studia Caucasica*, 2, 58–100.
- Evans, N. (1995). *A grammar of Kayardild*. Berlin: Mouton.
- Gair, J. W., & Paolillo, J. C. (1997). *Sinhala*. München: LINCOM.
- Ganenkov, D. (forthcoming). Experiencer coding in Daghestanian languages. In: L. Kulikov, A. Malchukov & P. de Swart (Eds), *Case, valency and transitivity: A cross-linguistic perspective*. Amsterdam: Benjamins.
- Givón, T. (1984). *Syntax: A functional-typological introduction*. Vol. 1. Amsterdam: Benjamins.
- Givón, T. (1985). Ergative morphology and transitivity gradients in Newari. In: F. Plank (Ed.) *Relational typology* (pp. 89–107). Berlin: Mouton.
- Grimshaw, J. (1990). *Argument structure*. Cambridge, MA: MIT Press.
- Haspelmath, M. (1993). *A grammar of Lezgian*. Berlin: Mouton.
- Haspelmath, M. (2001). Non-canonical marking of core arguments in European languages. In: A. Aikhenvald, R. W. M. Dixon & M. Onishi (Eds), *Non-canonical marking of subjects and objects* (pp. 53–85). (Typological studies in languages, 46). Amsterdam: Benjamins.
- Haspelmath, M. (2003). The geometry of grammatical meaning: Semantic maps and cross-linguistic comparison. In: M. Tomasello (Ed.), *The new psychology of language* (Vol. 2, pp. 211–243). New York: Lawrence Erlbaum Associates Publishers.
- Hermon, G. (2001). Non-canonically marked A/S in Imbabura Quechua. In: A. Aikhenvald, R. W. M. Dixon & M. Onishi (Eds), *Non-canonical marking of subjects and objects* (pp. 149–177). (Typological studies in languages, 46). Amsterdam: Benjamins.
- Hopper, P. J., & Thompson, S. A. (1980). Transitivity in grammar and discourse. *Language*, 56, 251–299.
- de Hoop, H., Koenenman, O., Mulders, J., Weerman, F. (Eds). (2001). Effects of morphological case. *Lingua*, 111.
- de Hoop, H., & Narasimhan, B. this volume. Differential case-marking in Hindi.
- Inenlikej, P. K., & Nedjalkov, V. P. (1967). Iz nabljudenij nad ergativnoj konstrukciej v chukotskom jazyke (Some observations on the ergative construction in Chukchee). In: V. Z. Zhirmundskij (Ed.), *Ergativnaja konstrukcija predlozhenija v jazykax raznyx tipov* (pp. 247–261). Leningrad: Nauka.
- Jacobsen, W. M. (1992). *The transitive structure of events in Japanese*. Tokyo: Kurosio Publishers.
- Jayaseelan, K. A. (2004). The possessor-experiencer dative in Malayalam. In: P. Bhaskararao & K. V. Subbarao (Eds), *Non-nominative subjects* (Vol. 1, pp. 227–245). Amsterdam: Benjamins.
- Kimball, G. D. (1991). *Koasati grammar*. University of Nebraska Press.
- Kemmer, S. (1993). *The middle voice*. (Typological studies in language, 23). Amsterdam: Benjamins.
- Kibrik, A. E. (1985). Toward a typology of ergativity. In: J. Nichols & A. Woodbury (Eds), *Grammar inside and outside the clause* (pp. 268–324). Cambridge: Cambridge University Press.

- Kibrik, A. E. (1994). Khinalug. In: R. Smeets (Ed.), *North East Caucasian languages* (Vol. 2, pp. 367–407). New York: Caravan Books.
- Klimov, G. A., & Alekseev, M. E. (1980). *Tipologija kavkazskix jazykov*. Moskva: Nauka.
- Lazard, G. (1998). *Actancy*. Berlin: Mouton.
- Legendre, G., Grimshaw, J., Vikner, S. (Eds). (2001). *Optimality-theoretic syntax*. Cambridge, MA: The MIT Press.
- Lehmann, C. (1991). Predicate classes and PARTICIPATION. In: H. Seiler & W. Premper (Eds), *Partizipation: das sprachliche Erfassen von Sachverhalten* (pp. 183–239). Tübingen: Naar.
- Levin, B. (1993). *English verb classes and alternations*. Chicago: University of Chicago Press.
- Levine, R. (1977). *The Skigate dialect of Haida*. Ph.D., University of Columbia.
- Lucassen, W. (1985). On the verbal structure of Abkhaz. In: F. Plank (Ed.) *Relational typology* (pp. 257–269). Berlin: Mouton.
- Malchukov, A. (forthcoming). Transitivity parameters and transitivity alternations: constraining co-variation. In: L. Kulikov, A. Malchukov & P. de Swart (Eds), *Case, valency and transitivity: A cross-linguistic perspective*. Amsterdam: Benjamins.
- Mallinson, G., & Blake, B. (1981). *Language typology: Cross-cultural studies in syntax*. Amsterdam: North-Holland.
- Mathews, S., & Yip, V. (1994). *Cantonese: A comprehensive grammar*. London: Routledge.
- Mithun, M. (1991). Active/agentive case marking and its motivations. *Language*, 67, 510–546.
- Mithun, M. (1999). *The languages of native North America*. Cambridge: Cambridge University Press.
- Næss, Å. (2004). *Transitivity: From semantics to structure*. Doctoral dissertation, University of Nijmegen.
- Nakamura, W. (1999). Functional optimality theory: Evidence from split case systems. In: M. Darnell et al. (Eds). *Functionalism and formalism in linguistics* (Vol. 2, pp. 253–277). Amsterdam: Benjamins.
- Nichols, J. (1984). Direct and oblique objects in Chechen-Ingush and in Russian. In: F. Plank (ed.) *Objects: towards a theory of grammatical relations* (pp. 183–211). London: Academic Press.
- Nichols, J. (1994). Ingush. In: R. Smeets (Ed.), *North East Caucasian languages* (Vol. 2, pp. 79–147). New York: Caravan Books.
- Onishi, M. (2001). Non-canonically marked subjects and objects: Parameters and properties. In: A. Aikhenvald, R. W. M. Dixon & M. Onishi (Eds), *Non-canonical marking of subjects and objects* (pp. 1–53). (Typological studies in languages, 46). Amsterdam: Benjamins.
- Palmer, F. R. (1994). *Grammatical roles and relations*. Cambridge: Cambridge University Press.
- Payne, D. (1982). Chickasaw agreement morphology: A functional explanation. In: P. Hopper & S. Thompson (Eds), *Studies in transitivity. (Syntax and Semantics, Vol. 15, pp. 351–379)*. New York: Academic Press.
- Primus, B. (1999). *Cases and thematic roles*. Tübingen: Niemeyer.

- Prince, A., & Smolensky, P. (1993). *Optimality theory. Constraint interaction in generative grammar*. Malden: Blackwell.
- Rappoport Hovav, M., & Levin, B. (1998). Building verb meaning. In: M. Butt & W. Geuder (Eds). *The projection of arguments* (pp. 97–135). Stanford: CLSI Publications.
- Rice, S. (1987). *Towards a cognitive model of transitivity*. Ph.D, thesis University of California.
- Roberts, J. (1987). *Amele*. London: Croom Helm.
- Rozwadowska, B. (1988). Thematic restrictions on derived nominals. In: D. Wilkins (Ed.), *Thematic relations. (Syntax and Semantics, (Vol. 21, pp. 147–165)*. San Diego: Academic Press.
- Saksena, A. (1980). The affected agent. *Language*, 56, 812–825.
- Schulze, W. (1994). *Udi*. In: R. Smeets (Ed.), *North East Caucasian languages (Vol. 2, pp. 447–503)*. New York: Caravan Books.
- Shibatani, M. (1977). Grammatical relations and surface cases. *Language*, 53, 789–809.
- Shibatani, M. (2001). Non-canonical constructions in Japanese. In: A. Aikhenvald, R. W. M. Dixon & M. Onishi (Eds), *Non-canonical marking of subjects and objects* (pp. 307–355). (Typological studies in languages, 46). Amsterdam: Benjamins.
- Song, J. J. (2001). *Linguistic typology: Morphology and syntax*. London: Longman.
- Spencer, A., & Otaguro, R. (this volume) Limits to case — a critical survey of the notion.
- Sugamoto, N. (1982). Transitivity and objecthood in Japanese. In: P. J. Hopper & S.A. Thompson (Eds), *Studies in transitivity. (Syntax and Semantics, Vol. 15, pp. 423–449)*. New York: Academic Press.
- Testeleets, J. (1998). On the two parameters of transitivity. In: L. Kulikov & H. Vater (Eds), *Typology of verbal categories. Papers presented to V. Nedjalkov on the occasion of his 70th birthday* (pp. 29–45). Tübingen: Niemeyer.
- Tsunoda, T. (1981). Split case-marking in verb types and tense/aspect/mood. *Linguistics*, 19, 389–438.
- Tsunoda, T. (1985). Remarks on transitivity. *Journal of Linguistics*, 21, 385–396.
- van Valin, R., & Lapolla, R. (1997). *Syntax: Structure, meaning and function*. Cambridge: Cambridge University Press.
- Woolford, E. (2001). Case patterns. In: Legendre, G. et al. (Eds). *Optimality-theoretic syntax* (pp. 509–545). Cambridge, etc.: MIT Press.
- Wunderlich, D. (1997). Cause and the structure of verbs. *Linguistic Inquiry*, 28, 27–68.
- Wunderlich, D., & Lakämper, R. (2001). On the interaction of structural and semantic case. In: H. de Hoop, O. Koenenman, J. Mulders, F. Weerman (Eds), *Effects of morphological case. Lingua*, 377–417.