

Valenzklassen in den Sprachen der Welt:

Eine Untersuchung der Argumentstrukturen von Verbklassen in lexikalisch-typologischer und areal-historischer Perspektive

Fortsetzungsantrag auf Gewährung einer Sachbeihilfe im Rahmen der DFG-Forschergruppe “Grammatik und Verarbeitung verbaler Argumente” (Universität Leipzig, MPI-CBS, MPI-EVA)

1. General information

Note: The present project proposal grew out of the project “Ditransitive Konstruktionen in den Sprachen der Welt”, which has been directed by Bernard Comrie and Martin Haspelmath since May 2006. Its topic is clearly related to the topic of the earlier project, but it is significantly different, and the composition of the project team is also somewhat different. Andrej Malchukov, who played a central role in the project “Ditransitive constructions in the world’s languages”, and Søren Wichmann, who was associated with the project “Marked absolutive and marked nominative case systems in synchronic and diachronic perspective”, are joining Comrie and Haspelmath as principal investigators, as all four have contributed in crucial ways to formulating the application and developing its conceptual base. Another reason for having four PI’s is the division of labor, which is detailed in section 3.2. Both Malchukov and Wichmann are applying for temporary positions as part of the proposal (Malchukov on a full-time basis, Wichmann on a half-time basis). Malchukov bears the main responsibility for overall coordination of the research activities within the project.

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1.2. Topic

Valenzklassen in den Sprachen der Welt: Eine Untersuchung der Argumentstrukturen von Verbklassen in lexikalisch-typologischer und areal-historischer Perspektive

(Valency classes in the world's languages: a study of the argument structures of verb classes in lexical-typological and areal-historical perspectives)

1.3. Research area and field of work

Discipline: General linguistics
Field of specialization: Linguistic typology

1.4. Anticipated total duration

The project, which began 01.05.2006, is expected to last 6 years. The first three-year period corresponds to 01.05.2006-30.04.2009 and the second period, with which the present application is concerned, corresponds to 01.05.2009-30.04.2012. DFG-funding commenced when the project began and will be necessary until it ends.

1.5. Application period

01.03.2009-30.04.2012. Funding for Malchukov during 01.05.2009-30.04.2012 and for Wichmann during 01.03.2009-29.02.2012 (in immediate continuation of the current DFG-funded projects).

1.6. Summary

In this project we aim to investigate the argument-structure properties of verbs of different valency classes in a typological perspective. The envisaged project continues the line of research of the current ditransitive project, but focuses on lexical properties of verbs and extends the research questions to a variety of other valency classes, thus making a contribution to the nascent field of lexical typology. The project will consist of an empirical study of a relatively large set of verb meanings for a relatively small set of languages, combined with a study of a relatively small set of verb meanings for a relatively large set of languages. In the first subproject we investigate a representative list of 60 verb meanings (which can be viewed as a compromise between B. Levin's classification and semantically based classifications proposed in the typological literature) for a core sample of 40 languages. The data on the languages in the core sample will come from language experts, who will be asked to fill in a questionnaire, which will elicit information on both coding properties and behavioral properties of the verbs (such as occurrence in causative, passive and applicative constructions). Such descriptions will eventually constitute contributions to an edited volume "Valency classes across languages", which will constitute one of the results of the project (in addition to a co-authored monograph). In addition, we will set up an extended, more balanced sample of 100 further languages, for which we will obtain data on a smaller set of 20 verb meanings. The second subproject will focus on coding properties, for which the data is more readily available from secondary sources, and is intended, in particular, to uncover areal patterns in the domain of valency classes. The databases developed during the project will be made available online towards the end of the project. The universal tendencies and cross-linguistic variation in the domain of valency classes will be captured through semantic maps, which are well suited for representing verb clustering with respect to particular coding and syntactic properties within one language as well as across languages. The general goal is to clarify if and to what extent there are valency classes with similar behaviors across languages and to uncover areal and diachronic patterns in the syntactic behavior of selected verbs.

2. State of the art, preliminary work

2.1. State of the art: approaches to the study of valency classes

All verbs in a language have different meanings, but with respect to their syntactic patterning, they show striking similarities and fall into a relatively circumscribed number of **valency classes** whose members behave alike. By "syntactic patterning", we refer not just to the coding patterns (i.e. the ways in which the verbal arguments are flagged and indexed), but also to the behavior of verbs with respect to alternations such as causative, passive, applicative and other constructions that are not fully general for all verbs (e.g. secondary predicates, certain word order phenomena). It has often been noted that these syntactic verb classes typically correlate with semantic classes. The syntactic properties of verbs can be studied separately from the semantic classes, so the strength of the correlation is an empirical question.

The literature on syntactic verb classes is vast, yet with few exceptions it is limited to relatively few languages, most of them European. A classical study in this area is Levin's (1993) book on English verb classes, where she argues that verb classes are semantically based and can be identified in terms of their argument structures, possible argument structure alternations, as well as further syntactic diagnostics (such as middle alternation, unspecified object deletion, *there*-insertion, etc.). Unlike earlier studies, which divided the verbal lexicon into a few highly

general classes (e.g., stative vs. active verbs, intransitive vs. transitive vs. ditransitive, or, for intransitives, unaccusatives and unergatives), Levin attempts a much more fine-grained classification, which is constructed in a bottom-up fashion, and where verb classes are defined in terms of their overall syntactic distribution. Levin's study (as well as subsequent work with M. Rappaport Hovav; e.g. Levin & Rappaport Hovav 2005) has been highly influential not only in the theoretical work on lexical semantics, but also in computational linguistics, and underlies verb ontologies in WordNet (Fellbaum 1998) and extensions thereof such as VerbNet (see Kipper-Schuler 2005 for references) and FrameNet (see, e.g., Fillmore et. al. 2003; cf. also Schulte im Walde 2003 for discussion of verb classes in German)¹.

But neither Levin's study nor the pioneering study "Experimental study of the Russian verb" by Apresjan (1969), where verb classes were also established on syntactic grounds, have been extended cross-linguistically. Jones et al. (1994) is a small collection of working papers dealing with verb classes in English, German, Korean and Bangla, stemming from an MIT-based project explicitly aiming to extend the Levin-style classification to other languages. There are also occasional studies dealing with other languages (cf. Fukui et al. 1985 on Japanese, Vogel 2004 on Jarawara). Even contrastive studies devoted to a single verb type, such as the study of interaction verbs in English, German, Hungarian and Maori in Blume (1998), are rare.

This lack of an extension to more languages does not seem to be accidental: In spite of its merits, Levin's approach faces a number of problems which become evident once one attempts to extend it beyond English. First, since Levin's classes have been constructed on syntactic criteria, they are not always semantically coherent. This is a serious drawback for typological studies, where the phenomena to be investigated have to be defined in semantic terms to make a comparison possible. The main question is what aspects of this classification are universal and which are language-particular. Clearly, the details cannot be universal as the study refers to specific language forms (e.g., encoding of arguments through specific case forms, prepositions, etc). Similarly, the encoding of alternative constructions, as well as syntactic diagnostics like the English Middle alternation are clearly not universal. Yet, it is expected that universal cross-linguistic patterns do exist, insofar as both cross-linguistically recurrent coding properties as well as the availability of certain alternations have a semantic motivation. This has already been anticipated in a work on transitivity alternation by Pinker (1989), whose approach is close to Levin's, but additionally tries to provide explanations for encoding options in terms of semantic properties of verb classes on the one hand and the semantics of the alternation on the other hand (thus, for example, the middle alternation targets EFFECT verbs like *break*, not CONTACT verbs like *hit*).

A different tradition in the research on verb classes (or, valency classes) takes its origin in the work on case grammar, different versions of which were developed in the 1970's by Fillmore, Gruber, Cook, J. Anderson, Jackendoff, and Chafe, among others. In this tradition, verb classes are identified in terms of the semantic roles of the verbal arguments. A related approach has been developed (particularly in France and Germany) in the work by Tesnière, Gross, Helbig and others (see Ágel 2006 for a comprehensive bibliography of valency research). In this approach, however, verbal valency types are defined more in terms of formal than semantic criteria (see, e.g., Somers 1987 for a comparative treatment). In the subsequent literature, the argument

¹ Recently, there has been increased interest in these issues (fine-grained taxonomies, issues of terminology, computational implementation), as witnessed by the Call for Papers for a conference on "Verb typologies revisited" to be held at the University of Gent in 2009.

structure of verb classes has played an important role in linguistic theories of different persuasions (see, e.g., Levin & Rappaport Hovav 2005; Butt 2006 for an overview and discussion), yet this research has rarely been carried out systematically. In the generative literature the issue of subcategorization frames of different verb classes has been present for a long time, but it has not been addressed systematically. Thus, whereas there is a large literature on individual verb classes found to be of particular theoretical interest (cf. the work by Grimshaw 1990, Pesetsky 1995 and others on emotion verbs, which present challenges for argument linking), comprehensive studies of verb classes in other languages have not been attempted.

While the empirical basis of mainstream generative grammar has not been very broad until recently, other theories like Role and Reference Grammar (Van Valin 2005 *et passim*) and Lexical Decomposition Grammar (Wunderlich 2006 *et passim*; Stiebels 2000) have developed a strong typological orientation. These studies pioneered systematic research into semantic argument types of languages of different alignment (in particular, the work by Van Valin has contributed to the study of argument alternations cross-linguistically). Yet, these studies operate in terms of broad valency-based classes rooted in aspectual properties and lexical decomposition, and never reach the level of granularity of Levin's classification (see, e.g., the recent study of verb classes in Wunderlich 2006; cf. Joppen-Hellwig 2001)².

The interest in cross-linguistic variation in the domain of argument structure has increased since the advent of Optimality Theory: a number of OT studies grounded in different traditions such as Minimalism (Woolford 2001), Lexical Function Grammar (Lee 2001), Role and Reference Grammar (Nakamura 1999), and especially Lexical Decomposition Grammar (Wunderlich & Lakämper 2001, Stiebels 2000) aim to constrain possible valency patterns for selected verb types across languages. Recently attempts have been made to combine OT approaches with the functional-typological tradition (Malchukov 2005).

In typology, the cross-linguistic study of verb classes rooted in the case grammar and valency traditions was advanced especially by Lazard (1994), Lehmann (1991), and Drossard (1991). This research has contributed much to the understanding of how different verb types pattern in languages of different alignment, yet, like much of the research discussed earlier, it deals with rather broad classes. A partial exception is Lehmann's work, which achieves a finer cross-classification through the use of different criteria: aspectual (Vendler-style) criteria, verbal valency, and properties of arguments. Another approach, which is typological in nature, although it has been applied to English, is that of Dixon (1991, 2004). Dixon's taxonomy of verb classes, which predates Levin's classification, is different inasmuch as Dixon's taxonomy is semantic in nature—the syntactic properties (even verbal valency) are secondary for his classification. The established classes are very general (although some are further subdivided) and include verbs of different valency; thus the MOTION type includes verbs such as *run* and *take*, CORPOREAL includes verbs such as *eat* and *die*, and so on. Yet, this classification, like Lehmann's, is of obvious interest to typology because it is

² This is even true for valency studies, which have been specifically designed for capturing lexical variation in syntactic properties. Valency dictionaries remain few and are mostly confined to European languages (see Schumacher 2006a,b; Busse 2006 for references). It is also instructive that a recent monumental *Handbook of Dependency and Valency* (Agel 2006), which contains some contrastive studies of valency, has not succeeded in providing a systematic overview even for European languages.

semantically based and thus can be more easily extended to the study of other languages.

One general drawback of the typological work mentioned above is that it remains taxonomic in nature and has not led to broader generalizations. The only exception, to our knowledge, is the work by Tsunoda (1981, 1985), who proposed the following hierarchy of verb types that predicts the distribution of intransitive and transitive patterns in individual languages:

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

This hierarchy 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 verb types higher in the hierarchy. Tsunoda's approach is generally considered an important contribution to the study of verb classes (cf. Lazard 1994, Lehmann 1991). Yet until recently, this line of research has not been pursued further in typological work, as it faces a number of empirical problems (see Malchukov 2005 for discussion and references). Malchukov (2005), however, suggests that counterexamples can be accounted for by decomposing Tsunoda's hierarchy into the two dimensions of decreased patienthood of P (from 'break' to 'look for' and 'go to'), and decreased agenthood of A (from 'break' to 'like' and 'hurt'), recasting Tsunoda's hierarchy as two-dimensional:

	> contact	>	pursuit	>	(motion)
Effective >					
action >	> perception/cognition	>	emotion	>	(sensation)

Importantly, this hierarchy can be seen as a part of a larger semantic map showing how different verbs types pattern in the semantic space from transitive to intransitive verbs, as explained in 2.2.1. (see Haspelmath 2003 for a general discussion of the semantic map approach).

As is clear from the brief discussion of the research on valency classes, even though each of the approaches has made important contributions to the study of verb classes, they all have certain drawbacks as well. In the current project, which will carry out a comprehensive cross-linguistic study of verb classes, we selectively build on the advantages of different approaches. The desiderata for such work are:

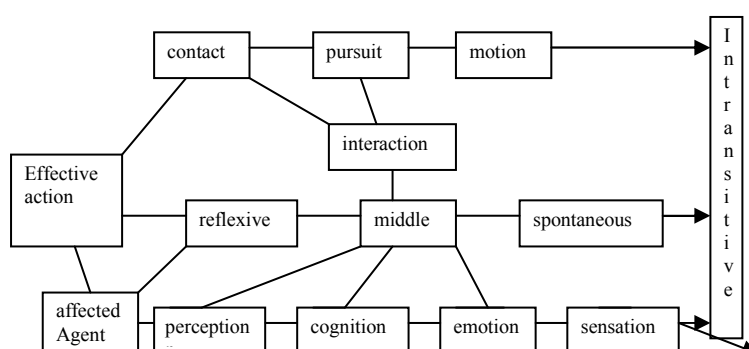
- the taxonomy should be fine-grained enough, as in Levin's approach;
- it should be semantically based such that it can be applied to other languages, as in the different typological approaches (Lehmann, Dixon and others);
- since the taxonomy is semantically based, the syntactic properties of these classes can be studied without the danger of circularity (cf. current work in Comrie & Haspelmath's project on ditransitive constructions);
- the general purpose is not just taxonomic, but aims to uncover universal and language-particular properties of valency classes in terms of coding properties and behavior (as in Tsunoda's hierarchies/semantic maps).

2.2. Earlier relevant work by the applicants

2.2.1. Earlier work on valency classes, lexical typology and semantic maps

In the envisaged project, as in the current project on ditransitive constructions, cross-linguistic similarities between valency classes are captured in the form of semantic maps. The semantic map method (as developed by Anderson 1986, Haspelmath 1997, 2003, and Croft 2001, cf. also Cysouw, Haspelmath, and Malchukov (eds.) 2008+) aims at uncovering semantic similarities among individual categories on the basis of cross-linguistically recurrent polysemy patterns. It is assumed—because of iconicity (Haiman 1985)—that recurrent similarity in form reflects similarity in meaning. The categories that are similarly encoded are therefore put contiguously in a semantic space. The central assumption of the semantic map methodology is that the semantic space is universal; thus a semantic map, once established empirically, makes universal predictions about possible and impossible (or rather, probable and improbable) polysemy patterns. Semantic maps have been applied to different domains, including verb types. Thus, Malchukov (2005) integrates Tsunoda's hierarchy into the semantic map in Figure 2.

Fig. 2. Transitivity reduction on a semantic map



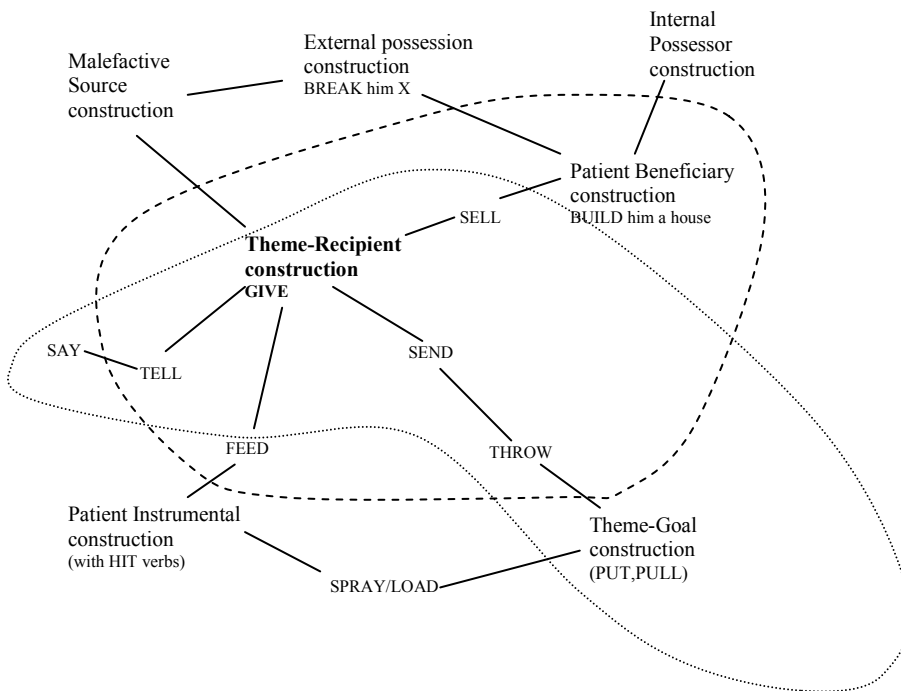
This map has the immediate advantage as compared to Tsunoda's one-dimensional hierarchy, that it can incorporate different extensions of the transitive frame across different dimensions which are conflated by Tsunoda. For example, English differs from Japanese in extending the transitivity pattern further along the second subhierarchy (to emotion verbs like *like* or *fear*, which pattern intransitively in Japanese; cf. *osorosii* 'fear(ful)'), but is more conservative with respect to the first subhierarchy (PURSUIT verbs in Japanese, unlike in, English pattern transitively; cf. *matu* 'wait for'). This map also includes some other verb types proposed in the literature, which, however, differ in granularity. Thus, it additionally includes the categories of INHERENTLY REFLEXIVE, MIDDLE, and SPONTANEOUS verbs representing the reduction of transitivity along the dimension of distinguishability between subject and object (cf. Kemmer 1993). It also includes INTERACTION verbs discussed by Blume (1998), which are linked to PURSUIT and CONTACT verbs on the map. On the one hand, interaction verbs show similarities with PURSUIT verbs (both are treated as subclasses of AIMING verbs by Lazard 1998). Clearly, this hierarchy is still not fine-grained enough, as many 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) study of English verb classes. Yet the hypothesis embodied in the hierarchy clearly deserves

to be explored cross-linguistically, as it constrains possible extensions of specific case patterns across the verbal lexicon in individual languages.

Semantic maps also play an important role in the current project on the typology of ditransitive constructions. Thus, for the ditransitive domain, the semantic map shown in fig. 2 is proposed in Malchukov, Haspelmath and Comrie (2007).

Fig. 2. Semantic map for ditransitive verbs

The lines indicate an approximate range of verbs participating in the English Double Object Construction and *to*-NP Construction; their intersection delimits verb types participating in a **dative alternation**; DOC-----, *to*-NP.....)



For the present purpose it is important to note that such maps are well suited for the representation of specific argument patterns as well as for argument alternations. Thus, the map above shows extensions of two different strategies involved in a dative alternation across valency classes. The map is arrived at empirically, through the study of extensions of particular strategies across the verbal lexicon. It also incorporates the hierarchies proposed in the literature, for example the hierarchy of transfer verbs proposed Croft et al. (2001): give > send > throw. In turn, the pattern underlying the semantic map is guided by semantic considerations, i.e. the relative similarities between the verb types in terms of their argument structure. For instance, as claimed in earlier work (Levin & Rappaport 2005) SEND verbs are intermediate between transfer of possession verbs like GIVE and caused motion verbs like THROW. This ensures that—on iconicity assumptions—the extension of a coding strategy (construction) will occupy a contiguous region of the semantic map. In short, the semantic map methodology captures the patterns in diversity: even though different languages (and even a single language) may exhibit different constructions, the resulting configuration may make claims to universality. Similar maps can be

established for other verbal domains; see, for example, Comrie & van den Berg (2006) for a semantic map of experiential verbs in Daghestanian languages.

As for the domain of syntactic properties (alternations), it is also expected that syntactic behavior will largely respect the map, since the alternations themselves are sensitive to different functional properties that correlate with lexical properties. The semantic properties have not been specifically discussed in Levin's study, but have been extensively discussed elsewhere (e.g. by Goldberg 1995 and Pinker 1989).

A further advantage of the semantic map methodology is that maps from different domains can be integrated as long as they deal with common types. Thus, the map for the transitive domain (in Fig 1) can eventually be integrated with the map for the ditransitive domain in (Fig 2), and the two together would represent a part of a more comprehensive map for valency classes. Finally, the semantic maps method can be further refined through the application of statistical scaling methods, which are well suited for representing relative frequencies of individual patterns (cf. the semantic maps of motion verbs generated from parallel texts in Wälchli 2007).

As mentioned in several places above the structure of the project is similar to the ditransitive project in terms of database development, the preparation of an edited volume, and other features of infrastructure. Thus, the practical bases are well prepared. In terms of contents many issues relating to valency classes and lexical typology have been addressed in the ditransitive project (Malchukov, Haspelmath, and Comrie 2007), and Wichmann's work on alignment systems has led to a volume (Donohue and Wichmann 2008) which monitors and contributes to the shift of attention among typologists working in this area from holistic approaches to more constructional and lexical approaches.

In the earlier work, **Malchukov** worked extensively on the issues of valency classes and case-marking typology in general. A forthcoming *Handbook of Case* (scheduled to appear in Oxford University Press in late 2008) which he is co-editing with A. Spencer, and to which he contributes a number of chapters (e.g., Malchukov & Spencer 2008; Malchukov & De Swart 2008, Malchukov & Narrog 2008; Malchukov 2008) summarizes the results of his recent work on case-marking typology. As mentioned earlier, his paper on verb type splits (Malchukov 2005) can be seen as a predecessor to the current project. In his other papers he addresses the issues of argument alternations (cf. the study of transitivity alternations in Malchukov 2006), differential case-marking (Malchukov 2008a; de Hoop & Malchukov 2007, 2008+), the rise of split intransitivity on the basis of transimpersonal constructions (Malchukov 2008c).

Wichmann co-edited the volume on languages with semantic alignment (or, split intransitive languages), which filled an important gap in the syntactic typology, but also shifted the focus to the issues of diachronic typology and lexical typology (Donohue & Wichmann (eds.) 2008). His recent paper (Wichmann 2007) also addresses valency alternations in this alignment type. He also co-edited another volume dealing with voice and transitivity (Estrada et. al. 2007). Although he was not officially part of the ditransitive project, he closely collaborated with its members and contributed a paper on "Ditransitives in Tlapanec" for the edited volume (Wichmann 2008+). He also has an extensive experience with lexicographic work which would facilitate the investigation of valency classes, as he can build on his earlier work (see, e.g., Wichmann, n.d., which is an electronic dictionary of Azoyú Tlapanec).

Comrie and Haspelmath have both had a deep involvement in the field of syntactic and lexical typology over many years of research. **Comrie** contributed to the work on syntactic typology and argument structure from early 1970s (e.g., his

pioneering work on the typology of causative constructions reported in Comrie 1976, and differential case marking, as reported in Comrie 1979, which predates the work by Bossong). More recently, he continued to work on different issues of argument marking typology, including causatives and transitivity (Comrie and Polinsky (eds.) 1993), argument structure in general (Comrie 1993), valency classes in relation to lexical categorization and valency change in Daghestanian languages (Comrie 2000a,b), experiential verbs and non-canonical subject marking (Comrie 2001; Comrie 2004). Importantly, he also used in his earlier work the semantic map approach for plotting experiential verbs in Daghestanian (Comrie & van den Berg 2006), an approach which played an important role in the ditransitive project and which will be instrumental in the envisaged project on valency classes.

Haspelmath has been one of the principal developers of the semantic map methodology, and importantly pioneered the application of this approach to the domain of case and valency (see Haspelmath 2003 and references therein). His study of the inchoative-causative alternation (Haspelmath 1993) has been influential in the research of valency alternations, and will be followed up in the envisaged project. He further wrote extensively on different issues pertaining to argument marking and syntactic typology, in general (see, e.g., Haspelmath 2001 on noncanonical subjects, Haspelmath & Müller-Bardey 2004 on valency change; Haspelmath 2008b+ on case), and has published numerous papers on ditransitives, in particular (see, e.g., Haspelmath 2004; Haspelmath 2005a,b; Haspelmath 2007; Haspelmath 2008a+).

Both Comrie and Haspelmath have extensive experience with databases, as most prominently manifested by WALS (Haspelmath, Dryer, Gil & Comrie (eds.) 2005). The work on databases, and in particular on lexical databases is currently continuing at MPI EVA, in the Loanword Typology project (coordinated by Haspelmath and Tadmor), and the Intercontinental Dictionary Project (coordinated by Comrie). Thus, the database of the valency classes envisaged in the current project will not only be related to the database of ditransitive constructions in the current ditransitive project, but is also framed within a larger network of lexical databases developed at MPI.

2.2.2. Results of the ditransitive project

See Report.

3. Objectives and work schedule

3.1. Objectives

3.1.1. General approach

In this project, we plan to study syntactic valency properties of verbs for a relatively large number of verbs in a relatively large sample of languages. We will set up a core sample of 40 languages from different parts of the world, and an extended world-wide sample of 100 languages. For the languages in the 40-language-sample, we will study 60 verbs, and for the 100-language sample we will study 20 verbs.

For each verb, we will look at two kinds of properties:

- coding properties: flagging (= case and adpositional marking) and indexing (= “agreement/cross-referencing”);
- behavioral properties: agent demotion, agent (causee) addition, object rearrangement, indefinite object omission, reflexivization, reciprocalization (and possibly others)

The general strategy is thus similar to our procedure in the ditransitive project, both in terms of methodology, the general approach, as well as the research questions addressed. But in the ditransitive project, we only looked at 10 verb meanings, and we did not have very complete data for all languages. As in the ditransitive project, we will be concerned not only with flagging patterns, but also with indexing patterns. These patterns have not figured prominently in the discussion of European languages, which are predominantly dependent-marking, but are indispensable in the discussion of head-marking languages. For example, different subject types in split intransitive languages (or languages with semantic alignment; Donohue & Wichmann 2008) are typically differentiated through agreement rather than case.

In terms of behavioral properties considered, we will likewise continue with the syntactic alternation types studied for ditransitive constructions: passivization, reflexivization, reciprocalization, as well as object rearrangement (applicativization), indefinite object omission and causativization (see the questionnaire on ditransitives by Comrie, Haspelmath, and Malchukov 2006 for a list of other behavioral properties addressed). Importantly, the syntactic behavior of Recipient and Theme arguments of ditransitives is compared to the properties of monotransitive Patient in order to establish indirective (T=P) or secundative (R=P) alignment of particular alternations (see Haspelmath 2005 for these terms)³. The same tests can be applied for other verb types from a transitive and intransitive domain. It should be noted that many alternations are of course limited to a subset of verbs and verb classes. This is also evident in Levin's work, where many alternations are relevant only to certain valency classes. For example, the Unspecified Object Alternation or the Middle alternation are relevant for some subgroups of transitive verbs, but not for intransitive ones.

The syntactic alternations that we will study are independent of the degree of morphological synthesis of a language. As noted above, languages with a richer morphology than English tend to make use of morphological valency-changing operations (applicatives, causatives, anticausatives, etc) instead of the *uncoded alternations* that are widely found in English (thus the dative alternation will involve the use of applicatives in Bantu languages; see, e.g., Van Valin 2001: 60-65). Thus in Even, a Tungusic language, the "middle alternation" is signaled by the Mediopassive marker, the "inchoative-causative alternation" by the Causative marker (in competition with the Mediopassive), and equivalents of English verbs allowing for a "reciprocal alternation" commonly involve a lexicalized Sociative marker (e.g. *bakal-da* [find-SOC] 'meet') (Malchukov 1995). For these languages the applicability of the valency-changing markers across the verbs needs to be established. Things get more complex when several markers compete for a certain domain, as in the case of causative and anticausative markers which show particular preferences for specific verb types established by Haspelmath (1993) and Nichols et al. (2004). Another complication concerns languages displaying several different constructions corresponding to one of our broad construction types. For example, Even distinguishes between Mediopassives and Adversative Passives (corresponding to our agent demotion), and Philippine languages display multiple passive-like voices targeting different roles (see Comrie 2008 for further discussion of passives). It is important to establish how these valency markers extend across the verbal lexicon. In our research we will try to establish not only availability of particular valency-markers for certain verb types, but also their function in case of polyfunctional

³ The issue of alignment can also be generalized from the domain of the ditransitive construction to other verbs types; in fact, Bickel & Nichols (2008) do not limit the term *alignment* to major clause types, but also speak of different alignment types of minor verb classes (experiential verbs, etc).

markers. For example, the reflexive marker *-sja* in Russian (and other Slavic languages) is notoriously polysemous, and its meanings are sensitive to the verb type involved (see Geniušienė 1987). Similarly, in many languages the interpretation of the applicative markers depends on the verb type (cf. Gerdtts & Kiyosawa 2005 on Salish applicatives). It is expected that taking into account the function of polysemous markers will help to identify further clustering in the verbal lexicon.

On the other hand, the verbal lexicon of languages of the more isolating type (like English) can be investigated through the study of (morphologically) uncoded valency alternations (as defined above). The study of such languages (e.g. South East Asian languages) will be informed by the previous literature, not only in the descriptive tradition, but also in the generative tradition. Some other alternations need to be established on language particular basis. For instance, in many languages the coding patterns will be more informative for lexical typology than they are in English. Thus, Sauerland (1994) shows that German makes finer coding distinctions among verb classes than English, which is due to the availability of verb-specific dative and genitive case in German. Case and adpositional patterns will be an important diagnostic for lexical splits in the project. For instance, in Tlapanec (an Otomanguan language of Mexico), verbs such as GET and RUN, which encode the single animate participant in the Dative case, contrast with verbs such as KILL and APPEAR, which encode the case-marked participant in the Absolutive (for a transitive verb such as KILL the case-marked participant will be the undergoer and for an intransitive such as APPEAR it will be the actor). Case is a sufficiently frequent phenomenon that it can be used as a consistent diagnostic across many languages, especially on a broad interpretation of case-marking which includes marking by adpositions as well (Haspelmath's 'flagging'). There will other phenomena, however, that are language-specific to a higher degree. To continue with the Tlapanec example, this language has a distinction between agentive and patientive verbs which cross-cuts case distinctions, and by this criterion GET and APPEAR cluster in that they are treated as patientive, while RUN and KILL cluster in that they are agentive (see Wichmann 2008). It is expected that systematic study of certain diagnostic constructions across the lexicon can also provide important insights into the properties of the constructions in question.

In explaining different syntactic preferences of arguments for certain alternations (e.g., preferential cross-coreferentiality of the recipient with the subject in the reciprocal formation), the hypothesis to be pursued is the one advocated in Malchukov, Haspelmath and Comrie (2007) for the domain of ditransitive constructions, namely, that the preferences are motivated by functional (semantic and/or pragmatic considerations), as acknowledged in different frameworks (see for example Van Valin 1990, Kaufmann 1995, and Wunderlich 2006 on the semantic grounding of unaccusativity diagnostics).

Thus, we expect to find universal patterns for syntactic characteristics, just as we find universal patterns for coding properties. Different alternations target different regions in the semantic map. We expect to find general patterns even where languages differ with regard to coding properties as well as with regard to the availability of alternations. Thus, Russian differs radically from English in that it does not allow an uncoded inchoative-causative alternation (= ambitransitive verbs). Instead, the Reflexive-Anticausative marker *-sja* signals intransitive uses (*lomat* 'break (tr.)' vs. *lomat'-sja* 'break (itr.)'). Yet the extension of the two constructions across verb classes is comparable in the two languages. Another point of contrast between English and Russian or German (Sauerland 1994) is that alternations involving rearrangement

of two arguments remain uncoded in English, while they require prefixation in the other two languages (cf. Russian *na-gruzit' seno na telegu* [PREF-load hay on cart] 'to load the hay on the cart' vs. *za-gruzit' telegu senom* [PREF-load cart hay.INSTR] 'to load the cart with hay'; cf. German *laden* vs. *be-laden*). This raises an interesting question to be addressed in the project regarding consequences of structural properties for the syntactic component (cf. Hawkins 1986 concerning a trade-off between morphological case and syntactic versatility).

Thus, we expect to establish general patterns of valency classes predicting their characteristics in terms of coding and behavioral properties. As noted above, such predictions hold insofar as the properties themselves are functionally grounded. Yet these functional motivations have their own limitations: A strategy may generalize beyond the core class to adjacent classes (e.g. extending the Allative pattern from caused motion verbs with a goal argument to beneficiaries with other verb types, as in Finnish). There may be other exceptions to the generalization which are rooted in functional, structural and diachronic factors. As discussed in Malchukov (2005), verb polysemy can be responsible for such exceptions. Thus in Lezgian (Haspelmath 1993), the verb for 'see' retains its Dative-Absolutive pattern even when it is used as an active perception verb ('look'). Another type of exception is due to structural factors. One example from the domain of ditransitive constructions, discussed in Malchukov, Haspelmath and Comrie (2007), is the use of a double object construction (DOC) in Malayalam. In this language 'give' takes a dative construction, while "less canonical ditransitives" like 'entrust' and 'feed' take a DOC (Asher and Kumari 1997: 205). This goes against the general tendency for 'give' to be preferentially encoded in a DOC (Kittilä 2006). This exception is due to a structural factor: the verbs occurring in the DOC like 'entrust' and 'feed' are (lexicalized) causatives, and causatives of transitives in Malayalam regularly occur in the double object construction. Finally, as an example of a diachronic factor, consider the case of subject-experiencer constructions in 'Standard Average European' languages, discussed by Haspelmath (2001). Haspelmath suggests a historical explanation for the preference of subject-experiencer constructions in Standard Average European languages, noted by Bossong (1998). He shows that many emotion predicates historically arise through metaphorical extension from 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: 79). Thus, the verb has changed its meaning but retained the case frame. Diachronic explanations have also been invoked for other cases, for example, to explain idiosyncrasies of split intransitive languages, where the exceptional (minor) pattern of patientive verbs is derived historically from a transimpersonal (= transitive impersonal) construction (Malchukov 2008). At the synchronic level, however, the existence of idiosyncratic case patterns cannot be denied (these are often discussed under the label of 'lexical case' in the literature).

All these exceptions to the majority pattern which have plagued the research on verb classes make generalizations in lexical typology subject to an important qualification: Implicational universals in terms of verb type hierarchies or semantic maps can only be formulated in existential terms ("for some member of the class X"), not in universal terms ("for every member of the class X"). Exceptions will often be found, due to the interference of other factors. In Malchukov (2005), such interfering factors were taken into account by identifying them as competing functional motivations in the domain of case marking (or competing constraints in terms of OT). In other cases, deviant behaviors of certain verbs may be due to their structural make-

up as derived (e.g. the Malayalam case mentioned in the previous paragraph) or periphrastic. In our database we will include structural information which will allow us to identify such cases where this plays a role. In order to avoid them, whenever possible, we will ask contributors to choose simplex equivalents, cf. the use of proxies in Johanna Nichols's study (e.g. Nichols 2008). The questionnaire will also include information on verb polysemy to control for possible polysemy effects. As for the diachronic issues, these can only be addressed by specialists in particular languages (in contributions to the planned edited volume; see below).

3.1.2. Methods and data

The general goal of the present study is to approach the question of valency classes from a broad typological perspective, identifying general patterns in verb syntax through an empirical examination of a cross-linguistically comparable list of verbs. The procedure will follow that of lexical typology as outlined by Nichols (2008), where translational equivalents of a sample of meanings are identified for all the sample languages sampled. In actual practice, it will include a lexical questionnaire containing sentences rather than glosses, to provide more contextual support. As noted above, the characteristics of the present approach are:

- the ontology of valency classes is fairly fine-grained, like Levin's;
- the ontology is grounded semantically, rather than syntactically; only in this way can the syntactic properties be studied without circularity;
- it will be limited to verb meanings which are likely to have equivalents across languages

Verb meanings

Below we give a preliminary list of 60 meanings, which can be viewed as a compromise between Levin's classification and semantically based classifications (in particular those suggested by Dixon 1991 and Lehmann 1991)

COVER	BEAT,	HELP,
FILL	KILL,	EAT,
LOAD	BREAK	DRESS
TIE	BUILD	WASH (tr/intr)
POUR	CALL (sb. a fool)	COUGH
PUT	SAY	CLIMB
THROW	SHOUT	SIT down
BRING	TELL	SIT
CARRY	ASK	RUN
SEND	TALK	JUMP
GIVE	KNOW	COME
SHOW	REMEMBER	GO (leave)
GET (= obtain)	SEE	LIVE (= dwell in)
STEAL	LOOK	APPEAR
HIDE (= conceal)	FRIGHTEN	HURT
TEAR X from Y	FEAR (proxy: LIKE)	DIE
WIPE	SEARCH for (proxy: HUNT for)	FALL
CUT	MARRY	FREEZE (= be cold)
TOUCH	MEET	BE HUNGRY
HIT	FOLLOW	RAIN

Verbs corresponding to these meanings will be collected for a **core sample** of 40 languages from all parts of the world.

In addition, we will set up an even better balanced sample of 100 further languages (**the extended sample**), for which we will obtain data on a smaller set of 20 verb meanings. The smaller set will contain about half of the 20-item list in

Nichols (2008: 136-7), which was designed to bring out relationships between lexical semantics and the subject role. This will be supplemented with items suited to expose different preferences for the encoding of property concepts and nonverbal predication. Finally, the selection is intended to bring about a balance among different aspectual classes. The set of meanings will not be a proper subset of the one used with the core sample, but there will be a large overlap, allowing for the two approaches to supplement each other with regard to the raw data. The aim of the study of the extended sample is to investigate (1) whether there are correlations to be found in the properties of lexical items such that different language types (or gradients among different types) can be set up and (2) whether there are areal-typological patterns to be found for the set of lexemes chosen. In a series of recent papers, Wichmann and collaborators have developed new methods for revealing such areal patterns (Holman et al. 2007), and for measuring the stability of typological features (Wichmann & Kamholz 2007, Wichmann & Holman [under review], Wichmann & Saunders 2007). The techniques for measuring stabilities can also be applied to valency classes to reveal which classes or which individual verbs are grammatically most stable across related languages. This type of investigation is completely novel. For this type of analysis, it is imperative to have a large sample of languages where some are related and some unrelated. We are planning to work with the following twenty meanings for the extended sample:

BE HUNGRY	FALL	SEE
BE COLD	FLY	STEAL
COUGH	GIVE	SAY
COME	JUMP	THROW
COVER	KILL	WANT
DIE	REMEMBER	WEEP
FEAR	SHOUT	

The extended sample will be subjected to a variety of correlation tests in order to investigate what determines differences among languages: universal preferences, implicational relations, inheritance or diffusion. Whereas typology has traditionally focused on the first two types of explanations there is currently a growing tendency to view typological distributions as historically contingent (Bickel 2007). The extended sample will contribute to clarifying the respective proportions of the different types of explanation. This is only possible through a database which contains both many related and many unrelated languages, many languages in both the same and different areas, and many languages of different types. This type of broad coverage is obviously not possible for the large set of languages in the general project, so the extended sample is an important component of the general project inasmuch as it can provide statistical support for different types of explanations.

Data sources

The data on the languages in the core sample will come from language experts, who will be asked to fill in a questionnaire, which will elicit information on both coding properties and behavioral properties of the verbs (such as occurrence in causative, passive and applicative constructions), as well as language-specific constructions that differentiate between different valency classes. For the extended sample, however, we will limit the information included for each item to argument coding properties, excluding alternations and other behavioral properties. This information will be retrieved from published sources, from language experts, and from native speakers. This should be feasible for the relatively small number of 20

verb meanings, given the excellent access to the published literature at the MPI-EVA and the extensive network of colleagues associated with the MPI-EVA and the project members.

To motivate the language experts to contribute the data for the core sample, we will invite about 30 experts to a meeting in Leipzig at which the valency class profile of each language will be presented and the resulting typology of valency classes will be discussed. Moreover, after successfully providing the data for our questionnaire and participating in the expert meeting, the language experts will be invited to contribute to an edited volume "Valency classes across languages". The remaining 10 languages will be covered by the project leaders themselves (Wichmann: Tlapanec and Texistepec Popoluca, cf. Wichmann 2002 and n.d., Malchukov: Even; Comrie: Bezhta), their close associates such as doctoral students, and other members of the Forschergruppe "Grammatik und Verarbeitung verbaler Argumente". Thus, (partial) funding for participation in the expert meeting will be required only for 30 linguists. The procedure of inviting language experts to an expert meeting and motivating them in this way has worked well for two earlier projects in Leipzig, the Loanword Typology project (Haspelmath & Tadmor 2009) and the Atlas of Pidgin and Creole Language Structures (Michaelis et al. in progress).

3.1.3. Planned results

The project will have three published results:

(i) An electronic database of 20 resp. 60 verbs for 140 languages with their valency properties (coding properties for all languages, behavioral properties for only the core sample of 40 languages). As in the case of the Ditransitive Project, we plan to publish the entire database on the web after using the material for our research questions.

(ii) A short monograph entitled "Valency classes" (ca. 150 pages) which summarizes the results of the project. It will present our cross-linguistic analyses of universal vs. language-specific patternings of valency classes in terms of case marking, argument alternations, and other morphosyntactic features. As mentioned above, we plan to summarize the generalizations through semantic maps. Moreover, we will discuss the lexical typological approach in more general terms and draw conclusions from this first ever larger, systematic cross-linguistic study of valency classes in terms of the viability and possible contributions of such an application of lexical typology.

(iii) An edited volume (or two volumes) entitled "Valency classes in cross-linguistic perspective". This will contain a general introduction by the project leaders and 40 contributions on individual languages from around the world.

3.2. Division of labor and work schedule

All four project leaders are jointly responsible for the theoretical and methodological underpinnings of the project, as well as the coordination with the other projects of the Forschergruppe. Malchukov bears the main responsibility for overall coordination of the research activities within the project. Malchukov also carries the main responsibility for the data and the analysis of the core sample, and Wichmann is in charge of the extended sample. Wichmann will also provide the expertise needed for a statistical evaluation of the results, which is of particular relevance for the extended sample, but is important for the project in general. Haspelmath will oversee the construction of the database, which will follow in its broad outlines the database for the Ditransitive Project. Comrie and Haspelmath

will organize the expert meeting and edit the multi-author volume, together with Malchukov. The introduction will be written by all three together. The short monograph will be coauthored by Malchukov and Wichmann, with input from Comrie and Haspelmath. Conceptual decisions regarding the project will be made jointly by Malchukov, Wichmann, Haspelmath and Comrie.

During the *first year* (2009-10) **Malchukov** will study the existing literature on valency classes, collect pilot data for three or four languages, and write a detailed questionnaire, in collaboration with other project participants. He will also write a first draft of a chapter that could serve as a model for the contributions to the edited volume. The questionnaire and the model chapter will then be made public and help from language experts will be solicited. In the *second year* (2010-11), we expect the bulk of the answers to the questionnaire to come in, and Malchukov will work closely with the experts to make sure that the answers are comparable. In the autumn of 2010, the expert meeting on the typology of valency classes will take place. During the *third year* (2011-12), Malchukov will write his part of the monograph, co-author a number of contributions to the edited volume dealing with individual languages, as well as help with the editing of the contributions to the edited volume

Wichmann will similarly orient himself in relevant literature during the first few months and will then get to work on assembling the data on the extended sample. One short field trip to Mexico will be devoted to supplementing existing data for the two unrelated languages Texistepec Popoluca and Tlapanec for the core sample. During the *first year* (2009-10) sufficiently many languages will be investigated for the smaller selection of verb meanings that this selection can be finalized at this stage. The data-analysis will continue during the first half of the *second year* (2010-11). Then Wichmann will start work on his part of the monograph discussing the historical and areal behavior of valency classes. Write-up and analyses will continue during the *third year* (2011-12). During the third year Wichmann will also write contributions on Tlapanec and Texistepec Popoluca for the edited volume. During the entire period he will furthermore collaborate with the other project members on developing the study of the core sample of languages and on organization of the expert meeting and editorial work.

During the *first year* (2009-10), **Comrie** and **Haspelmath** will work with Malchukov and Wichmann on formulating the questionnaires and on selecting and contacting the experts that will contribute their language-particular knowledge to the project. Haspelmath will work on the electronic database and make sure that it will be compatible with other typological databases and electronic publication requirements. In the *second year* (2010-11), they will organize the expert meeting and co-author the introduction to the edited volume, a draft of which should be available as a position paper before the expert meeting. In the third year, they will work on the editing of the volume "Valency classes in cross-linguistic perspective", and Comrie will write a contribution on valency classes in Bezhta. Haspelmath will write a paper on valency classes and inchoative-causative alternations following up his earlier work.

4. Funds requested

4.1. Staff costs

We are applying for a full-time position (BAT-IIa) for the period of 01.05.2009-30.04.2012 (for Andrej Malchukov) and for a half-time position (BAT-IIa) for the period of 01.03.2009-29.02.2012 (for Søren Wichmann). In addition, we need two positions for student assistants for the three years (40 h/month). The student assistants will assist us in entering the data into the database, managing the database, help us in

locating and managing bibliographical references, as well as in organizing the planned expert meeting.

4.2. Scientific instrumentation

Supplied by the MPI

4.3. Consumables

Supplied by the MPI

4.4. Travel

Travel expenses, fieldwork: 2000 EUR

Conference participation (Malchukov; Wichmann): 4000 EUR/year

4.5. Publication expenses

None.

4.6. Other costs

Organization of the expert meeting: 15 invited language experts (with additional support from MPI for the other 15 experts): 7,500 EUR

5. Prerequisites for carrying out the project

5.1 Composition of the work team

Prof. Dr. Bernard Comrie

Prof. Dr. Martin Haspelmath

Dr. Andrej Malchukov

Dr. Søren Wichmann

5.2 Collaboration with the scientists

The project will involve collaboration with the other projects in the Forschergruppe, which all take into account the role of lexical factors for the argument encoding in one way or another. Thus, there will be close cooperation with the project P1 (Bornkessel, Bickel) “Typologische Varianz bei der Verarbeitung grammatischer Relationen”, which explicitly acknowledges the importance of lexical factors as one of the major determinants of alignment. We will further collaborate with the project P7 “The internal structure of person portmanteaus” (Cysouw, Trommer), as our research on argument encoding concerns not only dependent-marking but head-marking as well. Moreover, since the investigation of valency classes is not confined to coding properties, but also includes syntactic properties (valency reduction, valency increase), there will also be interaction with the projects in the Forschergruppe of more syntactic orientation: project P5 “Argumentkodierung in Morphologie und Syntax” (Müller, Richards and Opitz), P4 “Bedingungen für die Argumentrealisierung in slavischen Sprachen” (Junghanns, Fehrmann, Lenertova) and P6 “Argumentstruktur, syntaktische Abbildung und morphosyntaktische Merkmale” (Zybatow, Biskup), both in terms of specific lexical classes addressed (cf. investigation of ditransitive verbs in Slavic in P4) but also specific syntactic operations involved (cf. the study of prefixation in Slavic, which performs function similar to argument alternations in English and applicative formation in other languages, in P6).

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