The typology of clause linkage:
status quo, challenges, prospects

Volker Gast and Holger Diessel

1. Introduction

Complex sentences came into the focus of attention in linguistic typology in the 1970s, when factorial (non-holistic) and onomasiological (functionally based) approaches to language comparison started to flourish. For instance, the study of causatives (e.g. Comrie 1975, Givon 1975, Shibatani 1976) opened the door for a systematic comparison of complementation strategies as presented in Givon (1980), who demonstrated that there are clear correlations between the semantic properties of predicates taking clausal arguments, and structural properties of the complements, formulating the Binding Hierarchy as a result of his findings (cf. also Noonan 2007 for a cross-linguistic survey of clausal complementation). In a similar vein, Keenan & Comrie (1977, 1979) showed that the distribution and structural properties of relative clauses was determined by specific cross-linguistic tendencies or even principles, condensing their generalizations into the well-known Noun Phrase Accessibility Hierarchy (cf. also Fox 1987). Perhaps due to their relative heterogeneity, adverbial clauses were not studied systematically until the 1990s, when they were investigated by members of the adverbial group in the EUROTYPE project, with major results being published in van der Auwera (1998). The relevant investigations focused on semantic properties of adverbial clauses (e.g. Hengeveld 1998) and the form and function of adverbial subordinators (e.g. Kortmann 1996, 1998).

The three types of subordinate clauses investigated in earlier comparative studies – complement clauses, relative clauses, and adverbial clauses – still form the cornerstones of most typological work on complex sentences, and most contributions to this volume are also based on it (but see Section 2 on a fourth type of subordinate clause which has been largely neglected in typological research). However, this tripartition should probably be regarded as a rough guideline rather than a rigid classification. Many languages do not categorically differentiate these types (see for instance Hale 1976 on adjoined clauses in Australian languages and Comrie & Horie 1995

on postnominal clauses in Japanese and Khmer; cf. also Matsumoto 1997, Comrie 1998). Moreover, even in those languages that appear to do so, many individual instances of clause combining cannot easily be assigned to a single type (cf. Section 5 below). Finally, the question arises to what extent generalizations can be formulated that apply across major types of subordinate clauses, universals of clause combining as it were.

Such "cross-domain" generalizations can be approached by taking a parametric approach, in which the objects of study – in our case, complex sentences – are not categorized holistically, but investigated in terms of logically independent, though potentially co-varying, properties. An early influential proposal in this direction was made by Lehmann (1988) (cf. Section 3; cf. also Haiman & Thompson 1984 for an even earlier sketch of a parametric approach to clause combining, and Fabricius-Hansen 2011 for a recent summary). A parametric typology was also proposed by Bickel (1991), which was not however prominently published (some of the ideas developed there can also be found in international publications like Bickel 1993 and, more recently, Bickel 2010; see also Schackow et al. this volume). The atomic units of analysis used in a parametric approach cover the "traditional" parameters of clause combining (e.g. the attachment site, the presence or absence of subordinators, structural properties of subordinate clauses, etc.; cf. Section 2), but also more specific aspects such as the sharing of arguments and the scope of specific (propositional or illocutionary) operators (cf. Sections 3 and 4). This approach allows for an investigation of variation and co-variation in the domain of complex sentences which is compatible with more traditional research in this area without, however, having to rely on the "triad" of subordinate clause types, i.e. the distinction between complement clauses, adverbial clauses and relative clauses.

A parametric approach to clause linkage along the lines of Lehmann (1988) and Bickel (1991) crucially requires the establishment of an inventory of typologically relevant parameters, i.e. parameters allowing for the formulation of cross-linguistic generalizations. Just like any other domain investigated in linguistic typology, the realm of clause linkage is, in our view, best explored by carrying out detailed studies of individual languages from different families and different parts of the world. It is in this spirit that the present volume came about (cf. Dixon & Aikhenvald 2009 and Bril 2010 for similar recent projects). It contains studies of clause linkage which are data-driven in one of three ways: (i) The contributions deal with languages for which no data is available so far, in many cases based on field work carried out by the authors (Otomi/Palancar, Laz/Lacroix, Puma/

Schackow et al., Akhvakh/Creissels, Tsezic languages/Comrie et al., Ket/
Nefedov, Apsheron Tat/Authier, several North Asian languages/Pakendorf);
(ii) they reconsider data from well-known languages and discuss problems
for current theories and typologies of clause linkage (Lithuanian/Arkadiev,
Ancient Greek/Cristofaro, Latin/Gast & Schäfer); or (iii) they make use of
quantitative methods of analysis (Schmidtke-Bode, Gast & Schäfer).

In this introductory chapter we summarize some major assumptions,
results and challenges of (traditional and more recent) research into clause
linkage, making reference to the chapters of this volume. We focus on
typological work, as language typology, itself feeding on studies of indi-
vidual languages, provides a frame of reference for the description of the
latter. The relationship between typological studies and descriptions of
individual languages is thus, ideally, "symbiotic" (cf. Evans & Dench 2006).
We start in Section 2 with a survey of major parameters of clause linkage
as assumed in both pre-structuralist and modern linguistics. In Section 3,
Lehmann's (1988) programmatic study is summarized and illustrated. The
following three sections focus on topics which we regard as challenges for
contemporary and future typological studies in the domain of complex
sentences. Section 4 provides an overview of "cross-clausal dependencies",
i.e. semantic and structural ties between (constituents of) clauses, whose
role has, in our view, been largely underestimated so far. Section 5 deals
with the problem of gradience in clause linkage, in analogy to recent rele-
vant research in other domains (cf. Aarts 2007 on gradience in general).
In Section 6, the question of explanation is addressed. A summary of this
chapter is provided in Section 7.

2.   Clause combining: Traditional parameters of analysis

2.1. Clauses, sentences and clause combining

Complex sentences are sentences that contain more than one clause. A clause,
in turn, can be defined as a unit minimally consisting of a predication,
i.e. a pairing of a predicate and a (potentially empty) set of arguments (cf.
Lehmann 1988: 182, Haspelmath 1995: 11, among others). According to this
criterion, all of the following English sentences are complex (clausal con-
stituents are put in brackets):

(1)   [*Bill ordered a beer*] *and* [*Mary ordered a wine*]. (coordination)
(2)   [*I don't think* [*that he will ever change*]]. (finite complement clause)
(3)   [*I asked him* [*to slow down*]]. (control infinitive)

(4)   [*He risked* [*getting caught*]]. (gerund)
(5)   [[*He went to the library*] [*to lend a book*]]. (adverbial infinitive)
(6)   [*Walking home*]*, *[*he met his brother-in-law*]. (adjunct participle)
(7)   [*With John driving*], [*there was no need to worry*]. (absolute participle)
(8)   [*Bill approached the man* [*who was drinking a Martini*]]. (relative clause)

While the term "clause combining" suggests a symmetrical interpretation – standing for a "combination of two clauses with each other" – it actually means that one clause is combined with something else. This "something else" – the attachment site – can of course be another clause, but clauses can also be combined with nouns (or nominal projections), as in the relative clause illustrated in (8). Moreover, even in (apparent) cases of clause-with-clause combining, there are several options, and the attachment categories are not always clauses as characterized above (cf. Section 3.1 below). Clause combining is thus best defined as the "combination of a clause with some other constituent". The category of the "other constituent" (the attachment site) is one of the parameters of variation that a comprehensive typology of clause linkage needs to take into account.

2.2. Three major factors of traditional analysis

Under the assumption that clause combining involves the combination of a clause with some other constituent, at least the following parameters are relevant to a syntactic and semantic analysis of clause combining:

i.   the relation of dependency holding between the clause and the attachment site;
ii.   properties of the attachment site;
iii. properties of the attached clause.

Let us start with the first parameter, i.e. the relation of dependency. Traditionally, a major distinction is made between two major types of relation holding between clause, i.e. coordination (structural and functional independence and equivalence) and subordination (structural or functional dependency and non-equivalence; cf. Hengeveld 1998: 335–338, Cristofaro 2003: Ch. 2; see also Ehrich et al. 2009 for some more recent contributions). The term "dependency" can be understood in at least three ways: syntactically, semantically (or pragmatically) and prosodically. Coordination – in the domain of clause combining alternatively called "parataxis" – can thus be

conceived of as the absence of syntactic, semantic or prosodic dependency between the clauses, i.e. a sentence can (i) stand by itself, (ii) be interpreted independently (disregarding matters relating to discourse such as the interpretation of cohesive elements in the sense of Halliday 1985), and (iii) form an intonation phrase of its own (see for instance Chafe 1988, Mithun 1988 and Palancar this volume on intonation). A subordinate (or "hypotactic") clause depends on some other constituent and lacks at least one of the properties characterizing coordinated clauses. Establishing an exact distinction between coordination and subordination is a non-trivial task for which, as far as we can see, no satisfying solution has been found so far. In a parametric approach, the distinction is regarded as a gradual one (cf. Section 3.1).

Subordinate clauses can be roughly sub-categorized in terms of their syntactic function within the host clause. Complement clauses fill a valency position of some governing predicate, while adjunct clauses are optionally adjoined to some constituent of the host clause. Like any other valency-based classification, this distinction is of course highly simplifying (cf. also Foley 2010), but, as has been pointed out, it provides a reasonable starting point for a more fine-grained typology of clause linkage.

The relation of dependency holding between a clause and its attachment category may or may not be made explicit by some linking element. In the former case, the juncture is traditionally called "syndetic", in the latter it is "asyndetic" (cf. also Palancar this volume). Examples of structures that allow both syndetic and asyndetic linking are given in (9).

(9)   a.   *Jack is gentleman, (but) Bill is a villain*. (coordination)
       b.   [(*When*) *walking home*]*, Bill ran into his boss*. (adjunction)
       c.   *I think (that) he is guilty*. (complementation)

The second major parameter of clause combining distinguished above concerns the internal morphosyntax of the attached clause. This parameter is traditionally captured by the notion of "finiteness" (see e.g. Cristofaro 2003: 53–54 and several contributions to Nikolaeva 2007). In the traditional (Latin and Greek) grammar tradition, finiteness is regarded as a property of verbs. Verbs are regarded as finite if (and only if) they exhibit tense inflection and subject agreement. Finiteness is thus a discrete category, i.e. a verb is either finite or non-finite.

Given that the two criteria for finiteness mentioned above are obviously not applicable to many non-European languages, the concept of "finiteness" has come under attack. While some authors suggest that we could do without this term (see e.g. Cristofaro 2007), others, in the tradition of Givon (1990), have reanalyzed it in order to make it more widely applicable. Givon

(1990) has argued that finiteness should be regarded as a property of clauses, not of verbs. Moreover, he treats it as a gradual notion. According to this view, the degree of finiteness of a given clause depends on the number and type of grammatical categories encoded in that clause. Roughly speaking, declarative main clauses are regarded as a "standard of comparison" with respect to the encoding of morphosyntactic features such as argument realization, TAM, etc. Other clause types are then compared to this standard of comparison. The degree of non-finiteness of a clause is thus determined by the number of (morphosyntactic) "asymmetries" (Bisang 1998) between the clause in question and a canonical declarative main clause. Such asymmetries may consist in either "minus asymmetries", i.e. the absence of specific declarative main clause features (e.g., tense marking and subject concord is [typically] missing in infinitival or participial clauses), or "plus asymmetries", i.e. the presence of features in a subordinate clause that are absent from main clauses (e.g. modal categories; cf. Bisang 1998: 739–750 for details and examples; note that finiteness can also be regarded as a multi-dimensional, yet discrete category; cf. Bisang 2007 for this position).

Finally, the third major parameter in the traditional analysis of clause linking concerns properties of the constituent that a given clause combines with. We have to distinguish between at least two major types of categories, i.e. verbal projections and nominal projections. Given that the type of attachment site can be cross-classified with the two major types of subordination – adjunction and complementation – we can distinguish the four major types of subordinate clauses shown in Table 1. This table summarizes what we can call the "canon of subordinate clause types" in traditional grammar. Finiteness could be added as an additional dimension, since all types of subordinate clauses may (in English as well as many other European languages) be either finite or nonfinite.

Table 1. Four major types of subordinate clauses

	nominal projection	verbal projection
adjunction	RELATIVE CLAUSE *the house* [*that you bought*]	ADVERBIAL CLAUSE *He's angry* [*because she left*].
complementation	NOMINAL COMPLEMENT CLAUSE *the fact* [*that he was angry*]	VERBAL COMPLEMENT CLAUSE *He said* [*that he was angry*].

Note that, for some reason, the class of nominal complement clauses in the bottom left corner has not so far received much attention in either

descriptive (language-specific) or cross-linguistic work (but see Comrie & Horie 1995 for a relevant comparative study of English, Japanese and Khmer). It is for this reason that we only mentioned three major types of subordinate clauses in Section 1. To what extent nominal complement clauses allow for cross-linguistic investigations is a question which we think should be put on the typological research agenda in the near future.

As has been pointed out, the sub-classification of subordinate clauses shown in Table 1 is too coarse-grained for cross-linguistic comparison and probably also eurocentric. Still, it provides a useful point of orientation, and most contributions to this volume make use of it. Before turning to a (radically) parametric approach as advocated by Lehmann (1988) and Bickel (1991), we will discuss a number of refinements of the traditional view summarized above that were proposed in the early 1980s within the framework of Role and Reference Grammar.

2.3. Some refinements: Clause linkage in Role and Reference Grammar

The traditional view of clause combining can be regarded as being parametric already, i.e. major categories such as "adverbial clause" and "relative clause" are not primitives of analysis, but abbreviations for parameter combinations such as "adverbial adjunct clause" or "adnominal adjunct clause" (cf. Table 1). The traditional classification of subordinate clauses can thus be refined by simply distinguishing more values for each parameter. This was done by Foley & Van Valin (1984) within the framework of Role and Reference Grammar (cf. also more recent publications such as Van Valin 2007). While remaining largely indifferent with respect to the question of finiteness, Foley & Van Valin propose two refinements: (i) they introduce an additional type of relation of dependency ("cosubordination"), and (ii) they distinguish different levels of "juncture", i.e. different types of attachment sites within the major class of adverbial clauses.

Foley & Van Valin (1984) argue that the distinction between coordination and subordination is not a primitive one, but actually results from the combination of two independent parameters, i.e. (i) the question of whether one clause is *embedded* within another or not, and (ii) whether a clause is *independent* or not (cf. also Matthiesen & Thompson 1988, who distinguish the parameters "hypotaxis" and "embedding"). They argue that there is a type of "nexus" in which the attached clause is dependent on, but not embedded within, its attachment category. Following Olson (1981), they use the term "cosubordination" for such cases. This notion subsumes

clause chaining constructions as discussed by Fedden (this volume). (10) is a pertinent example from Usan.

(10)   Usan

　　　ye nam su-ab is-omei
　　　I   tree cut-SS go_down-1SG.FPST
　　　'I cut the tree and (I) went down.'
　　　(Reesink 1983: 217; quoted from Fedden, this volume: ***)

The medial clause *ye nam suab* in (10) is dependent insofar as it cannot stand by itself – it lacks (otherwise obligatory) tense marking. Its tense is determined by the final verb *isomei*. Put differently, the tense operator on the final verb (*-omei*) takes scope over both clauses. Such cross-clausal scope-dependencies between non-embedded clauses are regarded as a central characteristic of cosubordination (cf. also Bickel 2010 and Section 4.2 below). The scope of the temporal operator in clause chaining can be represented as shown in (11) (the subscript "C" stands for "clause").

(11)   PAST.1SG $[[_{C_1}$ *cut the tree*$]$ $[_{C_2}$ *go down*$]]$

More recently, the existence of cosubordination as a third type of linkage (next to coordination and subordination) has been called into question, most notably by one of its early proponents itself (Foley 2010). In a similar vein, Bickel (2010) has shown that cosubordination as a specific type of clause linkage is not supported by multifactorial analyses of clause linkage. Foley (2010) analyses clause chaining constructions in terms of a – by now almost traditional – generative analysis as coordination of two sub-sentential con-stituents (IP). While this is an obvious and probably not totally mistaken analysis, it remains to be seen whether the notion of "cosubordination" can be entirely dispensed with when more types of scope interaction are taken into account.

　　The second major parameter that Foley & Van Valin (1984) modify is related to the architecture of the clause in Role and Reference Grammar. It is assumed that the clause has a layered structure comprising a "nucleus" (predicate), a "core" (predication/predicate plus arguments) and a "periph-ery" (other elements like adjuncts; note that a largely parallel structure is assumed by Functional Grammar, cf. Dik 1997). Like any other type of constituent, clauses may be attached to hosts at any one of these levels. Accordingly, Foley & Van Valin (1984) distinguish between "nuclear junc-tures", "core junctures" and "peripheral junctures". Given that the three

levels of juncture can be cross-classified with the three types of "nexus" – with one combination being unattested or impossible ("nuclear subordination") – eight types of clause linkage can be distinguished. Foley & Van Valin (1984: 267) arrange these types on a Syntactic Bondedness Hierarchy as shown in (12).

(12)   Nuclear cosubordination
       Nuclear coordination
       Core cosubordination
       Core subordination
       Core coordination
       Peripheral cosubordination
       Peripheral subordination
       Peripheral coordination

The Syntactic Bondedness Hierarchy correlates with an Interclausal Semantic Relations Hierarchy (Foley & Van Valin 1984: 269–70), which orders subordinate clause types in terms of the "semantic tightness" of the link between the two clauses. This is reminiscent of Givon's (1980) Binding Hierarchy and can be regarded as an elaboration of it (cf. also Cristofaro's 2003 "global hierarchies", which make generalizations across major clause types).

3. A radically parametric view of clause linkage

As we have tried to show in the preceding section, the recent history of crosslinguistic work on complex sentences can be regarded as a stepwise movement away from "major" categories like "adverbial clause" or "complement clause" to more specific categories or subtypes. In other words, research on complex sentences has increasingly been parameterized. The most comprehensive and, in a way, so far most radical proposal in this direction was made in a programmatic paper by Lehmann (1988). Lehmann distinguishes three major dimensions along which (combinations of) clauses may differ: (i) AUTONOMY vs. INTEGRATION, (ii) EXPANSION vs. REDUCTION and (iii) ISOLATION vs. LINKAGE. Each of these dimensions comprises two sub-parameters (cf. Diagram 1). Note that all of these parameters are relevant to all type of subordinate clause, i.e. this parameterization is independent of the classification shown in Table 1.
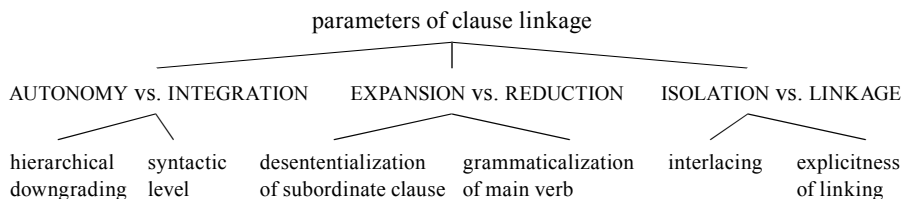
parameters of clause linkage

AUTONOMY vs. INTEGRATION   EXPANSION vs. REDUCTION   ISOLATION vs. LINKAGE

| hierarchical downgrading | syntactic level | desententialization of subordinate clause | grammaticalization of main verb | interlacing | explicitness of linking |

Diagram 1. Lehmann's (1988) parameters of clause linkage

As is pointed out by Lehmann (1988: 181), "[m]ost of these parameters have been found relevant to this issue by other authors". Still, the multi-dimensional space that Lehmann (1988) creates goes way beyond traditional approaches to clause linkage and opens up new horizons, and raises new questions. In what follows, we will briefly discuss Lehmann's parameters, using examples from the present volume for illustration.

3.4. Autonomy vs. integration

The autonomy-integration dimension concerns the degree of dependency between the elements involved ("hierarchical downgrading", parataxis ↔ embedding), and the syntactic level of the attachment category ("syntactic level", sentence ↔ word) (cf. also Bickel's 1991 continua of "integration" and "centrality"). As pointed out above, traditional grammar makes a binary distinction between parataxis (coordination) and hypotaxis (subordination), and Foley & Van Valin (1984) distinguish an additional types of juncture, i.e. cosubordination. Lehmann's (1988) scale of "hierarchical downgrading" ranges from "parataxis" at the left end to "embedding" at the right end. Clauses are embedded when they form part of another constituent. This applies most clearly in those cases where a clause fills a valency position of a governing predicate, as in the Ancient Greek example in (13) (from Cristofaro this volume), where the participial clause headed by *exiónta* 'going out' fills the complement slot of the governing verb *eporâi* 'sees'.

(13) Ancient Greek
　　kaí hē gynḕ　eporâi min　　exiónta
　　and the woman sees　me.ACC going.out.ACC
　　'And the woman sees him go out.' (Cristofaro, this volume: ***)

In between the two extremes, Lehmann (1988) distinguishes four degrees of hierarchical downgrading: "adjoined clause", "correlative diptych", "medial clause" and "conjunct participle". We will only illustrate one of the intermediate types. A correlative diptych, which is "halfway between parataxis and hypotaxis", as Lehmann (1988: 185, referring to Haudry 1973) puts it, is discussed under the heading "correlative relative clause" by Nefedov (this volume) (cf. 14). There is one complete (independent) clause (C2) containing a pronominal element (*tunbes*[i]) which serves as a place holder for an adjacent wh-clause (C1).

(14) Ket

   [*as^jes^j*   *kɛʔt*   *tl^juverɔavet*]_C1 [*tunbes^j* *abaŋa* *diks^jives^j*]_C2
    what.kind.of person I.love   such   to.me   comes.here
    'What kind of man I love, such (a man) comes to me (i.e. The man I love
    will come to me.).'
    (Werner 1997: 349; quoted from Nefedov, this volume: ***)

Lehmann's (1988) "syntactic level of linking" is basically equivalent to Foley & Van Valin's (1984) "level of nexus" and Bickel's (1991) "scale of centrality". Lehmann (1988) distinguishes two major types of clause linkage: (i) attachment of a subordinate clause to some other category, and (ii) complex predicate formation. Within (i), a subordinate clause may be located (a) outside the main clause, (b) at the margin of the main clause, (c) inside the main clause, or (d) inside the VP. For case (ii), Lehmann (1988) distinguishes (a) verb serialization, (b) auxiliary periphrasis, and (c) verbal derivation.

   An example of a subordinate clause that is located outside the main clause – the highest level of linking, i.e. case (ia) – is provided by a pre-posed adverbial clause that does not form a phonological phrase with the main clause (cf. Bickel 1991: 58). This applies to conditionals at the speech act level (cf. Sweetser 1990, Dancygier & Sweetser 2005), among other types of subordinate clauses:

(15) *If you need my help, my name is Ann.*
      (Dancygier & Sweetser 2005: 113)

An example of verb serialization – an instance of complex predicate formation (case [iia]) – is given in (16).

(16)   Alamblak

   wa-rim-ak-ni-n-m
   IMP-DIR-get-go-2SGA-3PLU
   'Get them and go away from me!' (Foley & Van Valin 1984: 262)

Differences between levels of linking may be rather subtle. As Schackow et al. (this volume) argue, the converb constructions of Puma can be sub-classified into those that attach to a "core", in RRG terminology – called "embedded" by Schackow et al. (this volume) and located "inside the main clause" in terms of Lehmann (1988) – and those that attach to a clause ("adjoined", instantiating "peripheral subordination", located "at the margin of the main clause" in Lehmann's terms). This difference is reflected in the compatibility of the relevant constructions with different types of focus markers. While embedded converbs (unlike adjoined ones) can co-occur with the focus marker =*ŋa~ŋe* 'just', which regularly combines with sub-clausal constituents (e.g. *mu-so=ŋa* in (17), with the simultaneous converb marker -*so*), adjoined clauses (unlike embedded ones) can host a clitic =*ku*, which can only attach to clauses (cf. the two negative converbal clauses headed by *men-li* in 18).

(17)   Puma

   risiwa=cha   *mu-so=ŋa*   *mʌ-ta-a=ku*,
   shamanic.rhythm=NMLZ do-SIM.CVB=FOC 3SG-come-PST=NMLZ
   bura-ci.
   old.man-NSG
   'Of course they came playing the shamanic drum also, the old men.'
   (Schackow et al., this volume: ***)

(18)   *ai-sʌmmʌ tan   sapten-do yoŋni-ci=oŋ   khoniŋ=lo*
   today-until village village-LOC friends-NSG=COM be.angry.3=ADV

   men-li=ku   rʌ   cain=lo   men-li=ku   hunale=a ...
   NEG-be=NMLZ and be.not.nice.3=ADV NEG-be=NMLZ because=ERG

   'Because until today, they were not behaving in a bad way and they were not angry with friends in the village…'
   (Schackow et al., this volume: ***)

The Puma examples in (17) and (18) illustrate how a typology of clause linkage can be fine-tuned. Distributional differences are not always obvious and we often have to use language-specific diagnostics. Still, concepts such

as "operator scope" are cross-linguistically applicable and have in fact been used as determinants of specific types of juncture by Foley & Van Valin 1984) (cf. Section 2.3 above). It should be borne in mind, however, that operator scope should not be used as the only diagnostic for the level of linking, as scope properties may vary from one operator to another, and also among constructions (cf. Bickel 2010 and Section 4.2 below; cf. also Forker et al. this volume, Palancar this volume and Schackow et al. this volume).

3.5. Expansion vs. reduction

The distinction between "expansion" and "reduction" refers to structural properties of (i) the subordinate element, i.e. its degree of "desententializa-tion", and (ii) the superordinate or governing one, i.e. the attachment site ("grammaticalization of main verb").

"Desententialization" is (roughly) equivalent to "finiteness" as conceived of by Givon (1990), and to "deranking" as used by Cristofaro (2003) (who adopts this term from Stassen 1985). A loss of "clausal" properties leading to a "less finite" or "deranked" status has mostly been discussed with respect to morphological properties of the relevant clauses, e.g. TAM, person, case, etc., as well as the availability of specific operators (e.g. of illocutionary force). Lehmann (1988) distinguishes fifteen such parameters which are indicative of the degree of "sententiality" or "nominality" of a clause. Given that central aspects of finiteness were discussed in Section 2 already, we will here focus on an aspect of desententialization that has been largely neglected in the finiteness discussion, i.e. the availability of specific structural slots within a clause, in particular slots relating to information structure.

In English as well as in many other languages participles (or converbs) do not have a structural position at their left margin which can be used for information structurally privileged material, e.g. topics or foci. For instance, a wh-question corresponding to the sentence *John sat at the table, reading [a magazine]*$_F$ can only be formed with the wh-pronoun remaining *in situ* (note that extraction across the clause boundary is not possible in this case; cf. Section 4.1 for this parameter):

(19) a. *John sat at the table* [*reading what*]*?*
      b. **John sat at the table* [*what*$_i$ *reading t*$_i$]*?*
      c. **What*$_i$ *did John sit at the table* [*reading t*$_i$]*?*

Whether or not participial clauses have a left-marginal position (associated with specific information structural effects) is a matter of cross-linguistic (and also cross-constructional) variation. Unlike their English counterparts, Lithuanian (agreeing) participles as described by Arkadiev (this volume) exhibit a relatively elaborate clause structure with a left-peripheral slot for wh-elements. This is illustrated in (20), where the bracketed (participial) complement clause is introduced by the interrogative subordinator *ar* 'whether'.

(20)   Lithuanian

Prokuror-as   sak-ė   dar ne-žin-ąs,
prosecutor-NOM.SG say-PST(3) yet NEG-know-PRS.PA.NOM.SG.M

[*ar   rašy-si-ąs   kasacin-į   skund-ą*
whether write-FUT-PA.NOM.SG.M cassation-ACC.SG.M appeal-ACC.SG

Aukščiausi-ajam   Teism-ui]
higher-DAT.SG.M.DEF court-DAT.SG.

'The prosecutor said he did not yet know whether to write an appeal to the Higher Court.' (Arkadiev, this volume: ***)

Note that English infinitives, unlike participles, do have a left-marginal structural position, more or less like the agreeing participles of Lithuanian, e.g. in *He did not know* [*what to do*] (cf. also the translation of 20). There are thus clear structural differences between the two major nonfinite clause types of English, i.e. participles/gerunds and infinities. It seems to us that the (non-)availability of such information structurally relevant slots present another interesting parameter of cross-linguistic and cross-constructional variation which deserves more attention than it has received so far.

The second parameter within the "expansion vs. reduction" continuum – "degree of grammaticalization" – has figured centrally in main stream research on the development of grammatical categories, but it has not played a prominent role in the area of clause linkage. Junctures at low levels of sentence structure often develop into grammatical constructions, e.g. for the expression of TAM categories or motion (cf. the classical case of future tense formation as in the English *going to*-future). We will only discuss one example of "incipient grammaticalization" from this volume. In the purpose construction of San Ildefonso Otomi illustrated in (21) (from Palancar this volume), the first element, which occurs in a bound (as opposed to free) form has to be taken from a closed class of a few words, thus displaying what Lehmann (1982/1995) has called "paradigmatization".

(21) San Ildefonso Otomi

xtá = 'ě-' = [ga   tsǐx-i = ri
1.PERF.R=come.B=1.PRES.IRR   take.animate.AS[3OBJ]-B=2POSS

jödö]
brother.of.man

'I've come to take your brother.' (Palancar, this volume: ***)

Even though such cases have been widely discussed in literature on grammaticalization, from the perspective of a typology of clause linkage there are still many open questions. For example, constructions in which the main verb exhibits indications of grammaticalization may differ in the division of labour in the expression of morphosyntactic categories, i.e. in the type of "interlacing" (cf. Section 3.3) or "cross-clausal dependencies" (cf. Section 4). In most European languages, the former main verb – i.e. the auxiliary in the grammaticalized construction – tends to encode grammatical information (TAM, agreement, etc.), while the former dependent verb tends to convey lexical information (e.g. *He* [*is going to*]$_{\text{AUX.PRES.3SG}}$ *die*$_{\text{LEX}}$). In other languages, at least some of the morphosyntactic information is encoded only at the former dependent verb, e.g. in the directed motion construction of Tzotzil as illustrated in (22), where the auxiliary only encodes aspect while person is expressed on the main verb (cf. Gast & van der Auwera forthcoming).

(22) Tzotzil

Ch-ba   ve'-ik-on
IPF-go(aux) eat-SBJ-1SG
'I am going (somewhere) to eat.'

The question arises whether any generalizations can be made concerning the "locus of marking" for specific categories in such constructions, e.g. whether TAM-marking tends to go to a specific verb, and under what circumstances or in what type of language.

3.6. Isolation vs. linkage

Finally, the dimension of "isolation vs. linkage" captures the degree of structural and semantic inter-dependency holding between the clauses, i.e. the amount of shared morphosyntactic and semantic material ("interlacing"), and the degree of "explicitness of linking". The first parameter

is particularly interesting from a typological point of view, as it is, in our view, decidedly understudied. We will therefore discuss it in a section of its own, under the heading of "cross-clausal dependencies" (Section 4). The following discussion will thus be restricted to "explicitness of linking".

The parameter of "explicitness of linking" (approximately) corresponds to the traditional (binary) distinction between "syndetic" and "asyndetic" linkage. The main difference between the traditional view and Lehmann's (1988) parametric approach is, once again, that Lehmann regards "explicitness of linking" as a gradual or at least non-binary parameter. On one end of the scale there are instances of clause combining with a maximally explicit – ideally, monosemous – linking element, e.g. a subordinator such as Port. *a fim de que*, which is unambiguously purposive. On the other extreme, no linking element is used at all (see also Breindl & Ferraresi 2011 for some more recent contributions on connectives).

As Palancar (this volume) points out, asyndetic linkage is often regarded as a typical feature of coordination, but (a)syndeticity is in fact independent of the coordination vs. subordination distinction. Palancar makes this point using data from San Ildefonso Otomi. Like many other native American languages, San Ildefonso Otomi does not make extensive use of explicit subordinators and uses different means to identify inter-clausal relations. Intonation plays an important role, e.g. insofar as it distinguishes coordinate structures from subordinate ones. Coordinate clauses are separated from the attachment category by a boundary signal. The two examples in (23) only differ with respect to their degree of "phonological integration", i.e. the presence vs. absence of a pause between the two clauses, here represented by a hash ("#"). While the bracketed part of (23a) is interpreted as a semantically subordinate (purpose) clause, the one in (23b) is rendered using a coordinating conjunction in the English translation.

(23) San Ildefonso Otomi

    a. *ntǒnses ya (dá̜=)'bǎ̜=hé= 'pu̜*   [*dá=ntxǒndá̜=hé*] #
       then   P   1.PST=stand=1PL.EX=there 1.PST=have.a.look=1PL.EX
       'We then stood up there to have a look.'

    b. *ntǒnses ya (dá=)'bǎ̜=hé= 'pu̜*   #
       then   P   1.PST=stand=1PL.EX=there PAUSE
       [*dá=ntxǒndá̜=hé*] #
       1.PST=have.a.look=1PL.EX
       'We then stood up there (and) had a look.'
       (Palancar, this volume: ***)

Next to asyndesis, close to the right end of the scale of explicitness of linking, Lehmann (1988) lists "universal subordinators", i.e. subordinators which do not carry any semantic information. The only example discussed by Lehmann (1988) is Port. *que*, which has a distribution similar to Engl. *that*. These elements are primarily used in relative clauses and complement clauses. An even more extreme case of underspecification is provided by the Laz clitic *=na*, discussed by Lacroix (this volume). This marker is used for all major types of subordinate clauses distinguished in Table 1 (Section 2). (24a) provides examples of an adverbial clause (cf. 24b) and a complement clause (cf. 24c).

(24) Laz

   a. adverbial clause

   ha   bič'i-ti [o-čil-u-ši   vaxti=na
   DEM1 boy-too PV-marry-VN-GEN time=SUB

   m-u-xt-u   ko-gama-xt-u   do
   PV-II3.VAL4-come-AOR.I3SG PV-PV-go.out-AOR.I3SG and

   go-um-s
   court-THS-I3SG

   'When the time came to get married, this boy went out and started to court women.' (Lacroix, this volume: ***)

   b. complement clause

   bere-k   [mgey-epe=na] t'uk-ox-o-c'on-u.
   child-ERG wolf-PL=SUB   be.IMPF.I3SG

   'The child understood that it was the wolves.'
   (Lacroix, this volume: ***)

As Kortmann (1996) has shown, explicitness of linking can be correlated with the form of adverbial subordinators. More complex subordinators (e.g. multi word expressions such as Port. *a fim de que*) typically provide more information about the inter-clausal relationship in question than short subordinators like Port. *que* or Laz *=na*. Note moreover that the amount of information associated with a given subordinator correlates negatively with its phonological substance. While subordinators with a relatively "high information value" may carry stress, highly polysemous items elements such as Port. *que* are stressed only under very specific circumstances, and the Laz subordinator *=na* is a clitic and may thus not be stressed at all.

It is probably because subordinators are easily identifiable and lend themselves to straightforward semantic and also quantitative distributional

analyses that they are rather well studied. Except in research on complex sentences (e.g. Kortmann 1996), they have also widely been studied in grammaticalization research. Our knowledge of matters relating to "interlacing" is much more restricted, especially with respect to semantic interclausal ties. We believe that such "cross-clausal dependencies" deserve much more attention than they have received so far. As will be seen in the next section, many contributions to this volume contain interesting observations relating to interlacing. For a comprehensive parametric typology of clause linkage such cross-clausal dependencies provide an invaluable source of insight, and mapping the space of variation in this domain should, in our view, be one of the main priorities in the typological study of complex sentences.

4.   Cross-clausal dependencies

We can distinguish two major categories of cross-clausal dependencies, "argument-related" ones and "predicate-related" ones. We will start with the former in Section 4.1 and turn to the latter in Section 4.2.

4.7. Argument-related dependencies

The sharing of participants is not only one of the most frequent *symptoms* but also an important *indicator* of clause linkage. Specific types of subordinate clauses necessarily share an argument with their attachment category. Most obviously, this applies to relative clauses. They typically contain either a gap or a relative pronoun (cf. Lehmann 1984 for a comprehensive structural typology of relative clauses). In specific cases, resumptive pronouns (i.e. pronominal copies of the head noun) are used within the relative clause. As is well known, there is a clear correlation between the accessibility of an argument and the use of resumptive pronouns in relative clauses (cf. Keenan & Comrie 1977, 1979), insofar as less accessible argument positions tend to require resumptive pronouns more often than argument positions located higher on the Accessibility Hierarchy do. For example, in Ket resumptive pronouns are only used in combination with "secondary" cases, i.e. dative, ablative and adessive (cf. Nefedov this volume). Note that Ket is typologically exceptional insofar as it uses resumptive pronouns in preposed relative clauses (which are, incidentally, quite rare crosslinguistically even without resumptive pronouns). A pertinent example is given in (25).

(25)   Ket

āt daŋa di·mes[j] ket

[*ād   da-ŋa   d{i}^{8}-ik^7-n^2-bes^0*]   *ked*

[1SG 3M.POSS-DAT 1SG^8-here^7-PST^2-move^0] person

'the man$_i$ [I came to (him$_i$)]' (Nefedov, this volume: ***)

While relative clauses necessarily involve argument sharing, this type of cross-clausal dependency is probabilistic in other types of subordinate clauses. For example, complements of verbs of wanting and purpose clauses typically, but not necessarily, have a subject argument that is coreferential with the matrix subject (cf. Haspelmath 2005, Schmidtke-Bode 2009). Such tendencies may be more or less strictly grammaticalized. The (asyndetic) purpose construction of San Ildefonso Otomi mentioned in Section 3.2 is only possible with coreferential subjects (cf. 26). In cases of non-coreferentiality, a different construction has to be used. The sharing of arguments is thus a necessary condition and, together with the absence of an intonational break, an indicator of the purposive sense of such sentences.

(26)   San Ildefonso Otomi

ntŏnses ya (dá́=)'bǎ=hé́=ʼpu̱   [*dá́=ntxǫndá́=hé́*] #

then   P   1.PST=stand.AS=PL.EXCL=there 1.PST=have.a.look=PL.EXCL

'We then stood up there to have a look.' (Palancar, this volume: ***)

Obligatory coreference is often reflected in the absence of person marking in the subordinate clause. This is what we typically find in European languages, e.g. in infinitival or participial complements. (27) is an example of "obligatory control" from Lithuanian, i.e. the implicit argument of the embedded clause is necessarily controlled by an argument from the main clause.

(27)   Lithuanian

Kiekvien-as   žmog-us$_i$ nor-i   [PRO$_i$ *bū-ti laiming-as*].

every-NOM.SG.M man-NOM.SG want-PRS.3 be-INF happy-NOM.SG.M

'Everyone wants to be happy.' (not: 'Everybody wants someone to be happy.') (Arkadiev, this volume: ***)

In European languages, it is typically in the subordinate clause that argument-related information is omitted (cf. the remarks on the grammaticalization of the main verb made in Section 3.2). However, the opposite situation can also be found. In San Ildefonso Otomi, the category of number is sometimes expressed in only one of the clauses involved. In this case, the

relevant markers (enclitics) can only be omitted in the main clause and have to appear in the subordinate clause (cf. 28).

(28)   San Ildefonso Otomi
    dá̬=năng-i   [*dá̬=nế̃=hế*]
    1.PST=get.up-F   1.PST=dance.A=1PL.EX.P
    'We got up to dance.' (lit. 'I got up we danced.')
    (Palancar, this volume: ***)

The omission of morphosyntactic information relating to arguments is per-haps the most important type of "overt" cross-clausal dependency in the domain of argument sharing. In a second type of dependency, an argument is expressed in a position other than where it is interpreted. This applies to common raising structures, e.g. in English constructions of the type *Mary's husband turned out to be a drinker*, where *Mary's husband* – a semantic argument of the predicate *be a drinker* – functions as a syntactic argument of the matrix predicate *turned out*. This type of construction is often regarded as a movement operation in (pre-Minimalist) generative grammar. In a closely related type of argument sharing, sometimes also called "raising", an argument of the subordinate clause is "copied" to the main clause. This type of construction is traditionally called *prolepsis* ("anticipation"; cf. also Lehmann 1988). For example, in Latin complement clauses the subordinate subject may, under certain circumstances, function as an object of the superordinate clause while still being encoded in the subordinate clause. Lehmann (1988: 208) provides the example in (29).

(29)   Latin

    vides-ne   me ut   rapior
    you.see-Q   me that I.am.kidnapped
    'Don't you see (me) that I am being kidnapped?' (Plautus, *Rudens*, 869)

Raising and prolepsis are to be kept apart from extraction across clause boundaries. While in raising there is a "mismatch" between the syntactic and semantic arguments associated with the predicates involved, in extrac-tion there is just one (semantic and syntactic) argument, but it appears in a different clause from where it is interpreted. The most straightforward case of extraction across clause boundaries is wh-movement. Whether or not arguments may cross clause boundaries is a property of the relevant con-structions. For instance, in English extraction out of an adjunct participle clause is not normally possible (cf. 30a), as opposed to extraction out of

gerunds occupying an argument position of the superordinate verb (cf. 30b). This is an indication that the degree of interlacing between gerunds (in complement function) and their main clause is higher than the one between adjunct participles and their main clause.

(30) a. *What$_i$ did he die singing* t$_i$?
     b. *What$_i$ did he enjoy doing* t$_i$?

To our knowledge, cross-linguistic investigations of the circumstances under which cross-clausal extraction is (or is not) allowed have not been carried out (cf. Hawkins 1986 for a comparison of English and German; cf. also Hawkins 2004: Ch. 7). This may be due to the fact that grammars hardly ever contain such information (they tend to lack negative evidence altogether). For such investigations, detailed studies of the relevant constructions are thus indispensable. Forker at al. (this volume) report that converbal clauses of Bezhta do not allow movement out of converbal clauses. This is illustrated in (31).

(31) Bezhta

??*okko*$_i$ *öždi*   [t$_i$ *y-ĩqo-ł*]   *sayγat*   *b-ox-iyo*
money(IV) boy.ERG   IV-get-ANT present(III) III-buy-WPST
int.: 'As for the money, when the boy got it, he bought a present.'
(Forker et al., this volume: ***)

While in the constructions illustrated above an argument crosses a clause boundary, there are also cases where constituents exhibit agreement across clauses without an argument being visibly moved or copied. This is described under the heading of "external agreement" by Creissels (this volume) for Akhvakh. In (32), The converb *wuʟ̄ī* 'dying' agrees with its (notional) subject *mola rasadi* in gender and with the (plural) subject of the main predicate *māne bak'ī goli* 'they were going to the graveyard' in number.

(32) Akhvakh

moḹa rasadi *w-uʟ'-ī* [*šʷela-ī-a*   *m-āne*
Molla Rasadi M-die-HPL graveyard-OR-ALL HPL-go.PROG

bak'-ī   *goli*]
HPL-be-HPL COP.HPL

'Molla Rasadi died, and they were going to the graveyard.'
(Creissels, this volume: ***)

As in converbal clauses, agreement may cross clause boundaries in relative clauses. This can be observed in some North Asian languages (cf. Pakendorf this volume). For example, in Enets the head noun agrees in person and number with the subject of the relative clause (cf. 33).

(33) Enets

    otï-da-r   *enči-r*   *ni*
    wait-SIM.PTCP-POSS.2SG.NOM person-POSS.2SG.NOM NEG.S:3SG
    tu?
    come.CONNEG
    'The person you are waiting for didn't come.'
    (Pakendorf, this volume: ***)

Just like person and number features may "percolate" across clause boundaries, so may case features. In Ancient Greek, there is a well-known phenomenon called "case attraction", where a relative pronoun receives case not from the predicate within the relative clause, but from the superordinate predicate. Alternatively, we may say that the case of the head noun is copied to (or attracted by) the relative pronoun. In (34) the predicate within the relative clause *kekte:sthe* 'you have gained' requires an accusative object, but the relative pronoun *hê:s* appears in the case of the head noun *eleutherías* 'freedom.GEN'.

(34) Ancient Greek

    Áxioi ésesthe tê:s   eleutherías, hê:s   kekte:sthe
    worthy you.are of.the freedom   REL.GEN you.have.gained
    'You are worthy of the freedom that you've gained.'
    (Bornemann & Risch 1978: 302)

A similar phenomenon is reported for Apsheron Tat by Authier (this volume). In (35) there is an internally headed relative clause 'the dog whose ears we pull'. Within the relative clause, the dog functions as a possessor ('we pull the dog's ears'). However, the dog receives accusative case marking, as it functions as the head noun of the entire relative clause. The genitive marker which is expected to show up on *seg-* 'dog' appears on the relative pronoun *-kitam*:

(35)   Apsheron Tat

[*e-kitam   seg-e   ki guşye-yi-re   keş-ren-im*]   *mo-kuf!*
GEN-which dog-ACC KI ears-POSS3-ACC pull-PRS-1-PL PROH-beat
'The dog whose ears we pull, do not beat it!'
(Authier, this volume: ***)

To summarize this section, argument-related cross-clausal dependencies can be classified along at least two dimensions. First, we can distinguish between cases where the argument itself crosses a clause boundary and those cases where one of its features percolates to another clause. Second, we can distinguish between cases where an argument is copied from one clause to another as opposed to those cases where it is absent from the clause in which it functions as an argument. It seems to us that a typological investigation of the conditions licensing the various cases of cross-clausal dependencies could reveal interesting cross-linguistic tendencies. Obviously, such an undertaking requires fine-grained descriptions and analyses and thus represents a major challenge for a typological investigation.

4.8. Predicate-related dependencies

Among the best known predicate-related dependencies in complex sentences are those relating to tense. This is probably due to the fact that tense dependencies play an important role in the "classical" languages. Especially Latin has a well-defined system of tense dependencies traditionally dealt with under the rubric of *consecutio temporum* ("sequence of tenses"). Depending on the tense of the main clause predicate, and on the relationship between the main clause tense and the tense of the subordinate clause, specific choices have to be made. Sometimes, the temporal choice of a subordinate clause may also depend on the meaning of the main clause verb. This is described for San Ildefonso Otomi by Palancar (this volume).

TAM-dependencies are also an inherent property of converbal clauses. Just like the traditional category of participles, they are often marked for relative tense, i.e. anteriority, simultaneity or posteriority (see for instance Forker et al. this volume). The same applies to clause chaining constructions. As Fedden (this volume) shows, there is a close relationship between temporal and referential information encoded in medial verbs of Mian. He hypothesizes that the switch-reference construction of Mian emerged from former TAM-affixes. As a matter of fact, there is almost a one-to-one correspondence between switch-reference markers used on medial verbs and

the tense markers suffixed to final verbs. For example, a suffix *-b* is used on final verbs for the encoding of imperfective aspect; on medial verbs, it indicates 'different subject, simultaneous'. The suffix *-n*, which indicates 'realis' on final verbs, is used as a marker of 'different subject, sequential' on medial verbs (though unambiguously so only with first person subjects). As Fedden points out, there is an obvious correlation between (i) imperfectivity, simultaneity and disjoint reference between the arguments of conjoined clauses, and (ii) sequentiality and coreference of arguments, as one protagonist usually does not perform two actions at the same time. In (36a), *-b* appears on the medial verb (different subject, simultaneous), while it is used on a final verb in (36b) (imperfective aspect).

(36) Mian

   a. *ngaan-b-e=a*   *naka=i*   *wentê-n-ib=a*
      call.IPFV-DS.SIM-3SG.M.SBJ=MED man=PL.AN hear.PFV-SEQ-
                                                                              2/3PL.AN.SBJ=MED
      'While he was calling, the men heard (him), and then…' [Dafinau]

   b. *met   te   yomin-am=o   gen-b-io=be*
      upriver come.PFV initiation-house=N2 build.IPFV-IPFV-
                                                                     2/3PL.AN.SBJ=DECL
      'They came upriver and were building the initiation house.'
      [Initiation rituals] (Fedden, this volume: ***)

In fact, Fedden shows that in some cases, it is hard to tell whether the relevant affixes primarily encode TAM-related or referential information. He compares this situation to the Tucanoan language Guanano, where "information on temporal structure is more basic than information on S/R" (Fedden this volume: ***), and the latter basically has the status of a cancellable implicature. While the Mian system as described by Fedden seems to be more reference-oriented than the one of Guanano, it is not purely referential either and thus provides an interesting example of the interdependencies between argument-related and predicate-related types of cross-clausal dependencies.

   Next to tense dependencies, those having to do with negation are perhaps the most prominent aspects of interlacing at the level of propositional interpretation. Again, it is a property of the constructions in question whether or not a given scope configuration is allowed. For instance, for converbal clauses there are three possibilities: (i) the negator takes scope over both the main clause (MC) and the converbal clause (cf. 37a), (ii) it takes scope over the main clause only (cf. 37b), or (iii) it takes scope over the converbal clause only (cf. 37c):

(37) a. NOT [$_S$[$_{MC}$ …] [$_{CONV}$ …]]

  b. [$_S$ [NOT [$_{MC}$ …]] [$_{CONV}$ …]]

  c. [$_S$ [$_{MC}$ …] NOT [$_{CONV}$ …]

In research on European languages, it is often assumed that the scope of
a negation operator is basically determined syntactically, e.g. insofar as
it must be located in the c-commanding domain of the relevant operator.
However, cross-linguistically there is considerable variation in the scope
behaviour of operators. Schackow et al. (this volume) provide the example
in (38), which allows only two readings, one with negation scope over the
main clause only, and one with negation scope over the converb only. A
reading where negation takes scope over both clauses is excluded ("disjunct
scope").

(38) Puma

  gaph   mu-so   kama   pʌ-mu-e-min
  talk[NOM] do-SIM.CVB work[NOM] NEG-do-1SG-pNEG
  1. 'Chatting, we do not work.' or
  2. 'We work without chatting.' (Schackow et al., this volume: ***)

While the situation in Puma as described in (38) leads to scope ambigui-
ties, other languages differentiate clearly between the various (theoretically
possible) options. For instance, in Tsezic languages "most converbs have
negative equivalents, so that it is impossible to limit the scope of negation
to the converbal clause" (Forker et al. this volume: ***). The scope of nega-
tion may also be fixed when both of the clauses involved (more or less) have
the make-up of main clauses (i.e. if they are finite, traditionally speaking).
For example, in the asyndetic purpose clause of San Ildefonso Otomi, the
subordinate clause cannot be independently negated, and main clause nega-
tion will always apply to the content of the subordinate clause. A relevant
example is given in (39).

(39) San Ildefonso Otomi

  hím=bi   ma   [bá=tsi-the='yá='na]
  NEG=3.PST SS/go 3.HITHER.PST=ingest-water.AS=P=QUOT

  bi=ma='yá   tá   Ntʉi
  3.PST=SS/go=P up.to Amealco
  'They say he didn't go [to have a drink]$_F$, he went [to Amealco]$_F$.'
  (Palancar, this volume: ***)

Detailed investigations of operator scope in converbal constructions are provided by Schackow et al. (this volume) and Forker et al. (this volume: ***). In addition to proposition-level scope operators such as tense and negation, speech-act related operators are also taken into account. The examples in (40) and (41) illustrate the ways in which the scope relations between a question operator and a converbal clause may differ. In the Hinuq example in (40), the operator may take scope either over the entire sentence, or over the main clause; it may not, however, be restricted to the converb. This is different in the Puma example in (41) (the interrogative version of 17), where all of the three options are available.

(40) Hinuq

    Šamil   [*biša-n   r-ac'-no*]   *Ø-i*   *'i–ye*?
    Shamil(I)   food(V)-and   V-eat-NARRCVBI-go-WPST.Q

    a. 'Did Shamil eat the food and go away?'
    b. 'Did Shamil go away, having eaten the food?'
    c. not: 'Did Shamil eat the food (before he went away)?'

(41) Puma

    risiwa=cha   *mu-so=ŋa*   *mʌ-ta-a=ku*,
    shamanic.rhythm=NMLZ do-SIM.CVB=FOC 3SG-come-PST=NMLZ

    bura-ci?
    old.man-NSG

    a. 'Did they came and play the drum?' (conjunct scope)
    b. 'Did they play the drum while coming?' (only converbal clause in scope)
    c. 'Playing the drum, did the come?' (only main clause in scope) (Schackow et al., this volume)

Such subtle aspects of clause combining, which are essential to a parametric typology of complex sentences, have been largely neglected so far. Finding a way of integrating them into a comprehensive typology of clause linkage will be a major challenge for a comprehensive typology of clause linkage.

5. Gradience in clause linkage

A multi-factorial typological approach to clause linkage as depicted above leads to a non-discrete view of clause linkage. As Bickel (2010) has emphasized (cf. also Schackow et al. this volume), specific prototypes of clause

linkage (understood as clusters of parameter values) can be identified cross-linguistically, but rigid boundaries between major types of subordinate clauses represent an idealization.

Gradience can also be observed in another respect. It is generally assumed that structural types of clause linkage are clearly associated with semantic types. As pointed out in Section 2.2, four major types of subordinate clauses are traditionally distinguished, adverbial clauses, relative clauses, nominal complement clauses and verbal complement clauses. Two of these types have the function of an adjunct and two of them are complements. Basically, adjunction is interpreted semantically as specification, and complementation as the filling of an argument position of a governing predicate. However, the distinction between adjunction and complementation is also gradual, both in the domain of non-clausal constituents and in clause linkage. As Schmidtke-Bode (2009: Sect. 4.1.4) has shown, purpose clauses – normally grouped under "adverbial clauses" – are akin to complement clauses in many respects (cf. also Verstraete 2008). This type of gradience can at least partly be captured by Lehmann's (1988) non-discrete account, where different degrees of "hierarchical downgrading" are distinguished.

Yet another type of "non-discreteness" in the domain of clause linkage is discussed by Gast & Schäfer (this volume). They point out that the function of "participant modification" – prototypically associated with relative clauses – and the one of "event modification" – normally expressed by "adverbial clauses" – overlap in certain cases. Specifically, there is a relative clause construction in Latin which in addition to a participant-modifying function has an event modifying function. The relevant clauses require the conjunctive mood. Such relative clauses can thus have a causal, concessive, purposive or consecutive "secondary function". An example of a consecutive function is given in (42). Gast & Schäfer (this volume) offer a corpus-based analysis of the (basically semantic) factors determining the specific reading in each case.

(42)   Latin

   quae   tam firma   civitas   est,
   which so   strong community   is

   quae non odiis   funditus   possit   everti?
   REL   not   hatred.ABL   from.the.bottom   can.CONJ   be.overturned

   'Which community is so strong that it (lit. 'which') could not be thoroughly overturned by hatred?' (Cicero, *Laelius de amicitia* 23)

As pointed out above, Latin conjunctive relative clauses are normally grouped into four major semantic categories (purposive, consecutive, causal and concessive). Another inter-propositional relation that is often expressed by relative clauses is the one of a condition (or concessive condition, cf. König & van der Auwera 1988, Haspelmath & König 1998). Such clauses overlap in systematic ways with free choice expressions such as *whatever*. A pertinent example from Apsheron Tat (Authier this volume) is given in (43).

(43)   Apsheron Tat

   hansı iş-ə   əl   at-ır-am,   o-nu   qadağan elə-yir.
   which work-DAT hand throw-PRS-1 DIST-ACC forbidden do-PRS
   'Whatever work I take on, he forbids it.'   (Authier, this volume: ***)

A "hybrid" function of subordinate clauses can also be observed in participial complement clauses as described by Arkadiev (this volume) and Cristofaro (this volume). From a structural point of view, these clauses are primarily nominal adjuncts, as they agree in gender, number and case with the nominal argument taken by the relevant predicate. (44) (= 13) is a relevant example:

(44)   Ancient Greek

   kaí hē̄ gynḕ   eporâi min   exiónta
   and the woman sees   me.ACC going.out.ACC
   'And the woman sees hom go out.' (Cristofaro, this volume: ***)

While (44) allows both interpretations – (i) 'the woman sees him when he is going out' and (ii) 'the woman sees that he is going out' – in other cases only one reading is possible. For instance, as Cristofaro (this volume) points out, knowledge predicates only allow the "eventive" reading. In many languages, originally adnominal constructions as in (44) have been grammaticalized as regular complementation strategies. A precise characterization of the relevant strategies of Lithuanian is provided by Arkadiev (this volume).

   Examples like those provided above present another challenge for the top-down view of clause linkage, which takes major categories like those distinguished in traditional grammar as a basis. A parametric account of clause linkage as proposed by Lehmann (1988) and Bickel (1991) can also be useful in this respect, as it allows us to distinguish semantic from structural parameters, and thus to identify patterns of covariation of such parameters both within and across languages.

6. Explaining complex sentences

Finally, we can ask what underlies the parametric variation in the morpho-syntactic structure of complex sentences. As Lehmann (1988) and others have pointed out, although the various parameters of complex sentences are in principle independent of each other, there are some clear cross-linguistic correlations between them, suggesting that the structural organization of complex sentences is governed by some general principles.

While most of the papers in the present volume concentrate on the description and documentation of complex sentence systems, there is one paper that seeks to explain the cross-linguistic patterns of complex sentences from a more general theoretical perspective. Schmidtke-Bode (this volume) argues that the morphosyntactic structures of complex sentences are motivated by aspects of communication and processing. Drawing on recent research in functional and cognitive linguistics, he outlines a usage-based approach to the cross-linguistic study of complex sentences that combines evidence from grammar-based research in linguistic typology and quantitative analyses of usage data in corpus linguistics.

The usage-based approach rejects the rigid division between grammar and usage which has crucially influenced syntactic research since the beginning of modern linguistics. Challenging the distinction between competence and performance (and langue and parole), usage-based linguists have argued that linguistic structure is fundamentally grounded in usage, i.e. in the way grammatical patterns are produced and processed in language use (cf. Bybee 2010, Hawkins 1994, 2004, Tomasello 2003). A usage-based grammar is conceived of as a dynamic system that is always changing under the influence of cognitive and communicative pressures involved in language comprehension and production. In this approach, syntactic structures are seen as functional adaptations to recurrent usage problems that have become conventionalized through repetition (cf. Bybee & Hopper 2001).

This view of linguistic structure is at the heart of Hawkins' (2004) "Performance-Grammar-Correspondence Hypothesis". According to Hawkins (2004: 3), "[g]rammars have conventionalized syntactic structures in proportion to their degree of preference, as evidenced by patterns of selection in corpora and by ease of processing in psycholinguistic experiments." Starting from this hypothesis, Schmidtke-Bode reviews a wide range of studies from linguistic typology and corpus linguistics demonstrating that cross-linguistic constraints on the morphosyntactic structure of complex sentences are often mirrored by the preferred usage patterns of complex

sentences in discourse. The discussion of this chapter concentrates on two structural phenomena, the linearization of complex sentences and the encoding of co-reference relationships between main and subordinate clauses. Both phenomena have been extensively studied and are much debated in the typological and usage-based literature on complex sentences.

That clause order is motivated by general principles of language use has been emphasized both by linguistic typologists (e.g. Lehmann 1974, Kuno 1973) and by psycholinguists (e.g. Miller & Isard 1963, Gibson 1998). One basic principle that influences the linear organization of complex sentences is iconicity of sequence. There is evidence that the positioning of certain semantic types of subordinate clauses is motivated by the preference for an iconic clause order. Other things being equal, speakers tend to arrange the ordering of main and subordinate clauses in such a way that clause order mirrors the order of the events they describe (cf. Diessel 2008). Other usage-based principles that seem to affect the positioning of subordinate clauses are related to their discourse pragmatic functions (cf. Ford 1993, Thompson et al. 2007) and to the way complex sentences are planned and produced (cf. Diessel 2005, Hawkins 2004).

The encoding of coreference relationships has been discussed in connection with Givón's (1980) Binding Hierarchy (Givón 1980), which in turn is related to Foley & Van Valin's (1984) Syntactic Bondedness Hierarchy (cf. Section 2.3). As pointed out above, Foley & Van Valin proposed a hierarchy of syntactic clause linkage that correlates with semantic features of the relevant constructions. To simplify matters somewhat, the stronger the semantic bond between main and subordinate clauses, the stronger the degree of syntactic integration. This suggests that the morphosyntactic organization of complex sentences is crucially motivated by semantic (or conceptual) factors (cf. Cristofaro 2003, Croft 2001). As pointed out in Section 4.1, coreference is an important semantic aspect of clause combining that influences the way in which semantic arguments are expressed and organized in complex sentences. Schmidtke-Bode (this volume) shows that if there are semantic (or conceptual) factors that strongly favour (or disfavour) the occurrence of co-referential arguments in main and subordinate clauses, languages often grammaticalize specific constraints on the semantic interpretation and encoding of subject and object that can give rise to various types of "control constructions" (cf. Haspelmath 2008, Kortmann 1995).

Obviously, there are many other properties of complex sentences that can be analyzed from a usage-based perspective. The paper by Schmidtke-Bode provides a first overview of relevant research in this domain, arguing

for the Performance-Grammar-Correspondence Hypothesis and the importance of quantitative corpus data for the cross-linguistic analysis of complex sentences. It is our hope that this way of bridging the gap between typological and usage-based investigations will gain momentum in the near future, with considerable benefit for both sides.

7. Summary and outlook

We have given an overview of cross-linguistic research on clause combining and subordinate clauses. We have tried to show that it is one of the central challenges of typological research into complex sentences to "decompose" the traditional categories of clause combining into more specific features, thus making a data-driven (bottom-up) research design possible without being committed to too many theoretical presuppositions. We have also considered some recent theoretical work on gradience and prototypicality and on the role of language use in the morphosyntactic analysis of complex sentences. While these are important theoretical and methodological issues, typological research on clause combining will not make any significant progress if we do not fully appreciate the complexity and diversity of the cross-linguistic data. What is needed most urgently now are thus in-depth analyses of clause combining strategies in languages across the world, and – if necessary – new ways of analysing these strategies. We hope to make a contribution to this research programme in the present volume.

References

Aarts, Bas. 2007. *Syntactic Gradience. The Nature of Grammatical Indeterminacy.* Oxford: Oxford University Press.

Bickel, Balthasar. 1991. *Typologische Grundlagen der Satzverkettung. Ein Beitrag zur allgemeinen Grammatik der Satzverbindung und des Fährtenlegens.* Zürich: Seminar für Allgemeine Sprachwissenschaft.

Bickel, Balthasar. 1993. Belhare subordination and the theory of topic. In Karen H. Ebert (ed.), *Studies in Clause Linkage*, 23–55. Zürich: Seminar für Allgemeine Sprachwissenschaft.

Bickel, Balthasar. 2010. Capturing particulars and universals in clause linkage: A multivariate analysis. In Isabelle Bril (ed.), *Clause-Hierarchy and Clause-Linking: The Syntax and Pragmatics Interface*, 51–101. Amsterdam: John Benjamins.

Bisang, Walter. 1998. The view from the far East. Comments on seven thematic areas. In Johan van der Auwera (ed.), *Adverbial constructions in the languages of Europe*, 641–812. Berlin & New York: Mouton de Gruyter.

Bisang, Walter. 2007. Categories that make finiteness: discreteness from a functional perspective and some of its repercussions. In Irina Nikolaeva (ed.), *Finiteness. Theoretical and Empirical Foundations*, 115 – 137. Oxford: Oxford University Press.

Bornemann, Eduard & Ernst Risch. 1978. *Griechische Grammatik*. 2nd edn. Frankfurt: Diesterweg.

Breindl, Eva, Gisella Ferraresi & Anna Volodina (eds.). 2011. *Satzverknüpfungen. Zur Interaktion von Form, Bedeutung und Diskursfunktion* (Linguistische Arbeiten 534). Berlin & New York: Mouton de Gruyter.

Bril, Isabelle (ed.). 2010. *Clause Linking and Clause Hierarchy: Syntax and Pragmatics*. Amsterdam: John Benjamins.

Bybee, Joan. 2010. *Language, Usage and Cognition*. Cambridge: Cambridge University Press.

Bybee, Joan & Paul J. Hopper. 2001. *Frequency and the Emergence of Linguistic Structure*. Amsterdam: John Benjamins.

Chafe, Wallace. 1988. Linking intonation units in spoken English. In John Haiman & Sandra A. Thompson (ed.), *Clause Combining in Grammar and Discourse*, 1–27. Amsterdam: John Benjamins.

Comrie, Bernard. 1975. Causatives and universal grammar. *Transactions of the Philological Society* 1974: 1–32.

Comrie, Bernard. 1998. Rethinking the typology of relative clauses. *Language Design* 1: 59–86.

Comrie, Bernard & Kaoru Horie. 1995. Complement clauses versus relative clauses. In Werner Abraham, Talmy Givon & Sandra A. Thompson (eds.), *Discourse Grammar and Typology. Papers in Honor of John W. M. Verhaar*, 65–75. Amsterdam: John Benjamins.

Cristofaro, Sonia. 2003. *Subordination*. Oxford: Oxford University Press.

Cristofaro, Sonia. 2007. Deconstructing categories: finiteness in a functional-typological perspective. In Irina Nikolaeva (ed.), *Finiteness. Theoretical and Empirical Foundations*, 91–114. Oxford: Oxford University Press.

Croft, William A. 2001. *Radical Construction Grammar. Syntactic Theory in Typological Perspective*. Oxford: Oxford University Press.

Dancygier, Barbara & Eve Sweetser. 2005. *Mental Spaces in Grammar: Conditional Constructions*. Cambridge: Cambridge University Press.

Diessel, Holger. 2005. Competing motivations for the ordering of main and adverbial clauses. *Linguistics* 43: 449–470.

Diessel, Holger. 2008. Iconicity of sequence. A corpus-based analysis of the positioning of temporal adverbial clauses in English. *Cognitive Linguistics* 19: 457–482.

Dixon, R. M. W. & Alexandra Y. Aikhenvald (eds.). 2009. *The Semantics of Clause Linking: A Cross-Linguistic Typology*. Oxford: Oxford University Press.

Dik, Simon C. 1997. *The Theory of Functional Grammar: Part 2: The Structure of the Clause*. Dordrecht: Foris.

Ehrich, Veronika, Christian Fortmann, Ingo Reich & Marga Reis (eds.). 2009. Koordination und Subordination im Deutschen. Special issues of *Linguistische Berichte* 16. Hamburg: Buske.

Evans, Nicholas & Alan Dench. 2006. Introduction: Catching language. In Nicholas Evans, Alan Dench & Felix K. Ameka (eds.), *Catching Language: The Art and Craft of Grammar Writing*, 1–39. Berlin & New York: Mouton de Gruyter.

Fabricius-Hansen, Cathrine. 2011. Was wird verknüpft, mit welchen Mitteln – und wozu? Zur Mehrdimensionalität der Sazuverknüpfung. In Eva Breindl, Gisella Ferraresi & Anna Volodina (eds.), *Satzverknüpfungen. Zur Interaktion von Form, Bedeutung und Diskursfunktion* (Linguistische Arbeiten 534), 15–40. Berlin & New York: Mouton de Gruyter.

Foley, William A. & Robert D. Van Valin. 1984. *Functional Syntax and Universal Grammar*. Cambridge: Cambridge University Press.

Foley, William A. 2010. Clause linkage and nexus in Papuan languages. In Isabelle Bril (ed.), *Clause Linking and Clause Hierarchy: Syntax and Pragmatics*, 27–50. Amsterdam: John Benjamins.

Ford, Cecilia E. 1993. *Grammar in Interaction. Adverbial Clauses in American English Conversations*. Cambridge: Cambridge University Press.

Fox, Barbara A. 1987. The noun phrase accessibility hierarchy reinterpreted: Subject primacy or the absolutive hypothesis? *Language* 63: 856–870.

Gast, Volker & Johan van der Auwera. Forthcoming. What is 'contact-induced grammaticalization'? Examples from Mesoamerican languages. In Björn Wiemer & Björn Hansen (eds.), *Grammaticalization and Language Contact*. Berlin & New York: Mouton de Gruyter.

Gibson, Edward. 1998. Linguistic complexity: Locality and syntactic dependencies. *Cognition* 68: 1–76.

Givón, Talmy. 1975. Cause and control: on the semantics of interpersonal manipulation. In John P. Kimball (ed.), *Syntax and Semantics 4*, 59–90. New York: Academic Press.

Givon, Talmy. 1980. The binding hierarchy and the typology of complements. *Studies in Language* 4: 333–377.

Givón, Talmy. 1990. *Syntax. A functional-typological introducion. Vol. II.* Amsterdam: John Benjamins.

Haiman, John & Sandra A. Thompson. 1984. Subordination in 'universal grammar'. *Berkeley Linguistics Society* 10: 510–523.

Haiman, John & Sandra A. Thompson (eds.). 1988. *Clause Combining in Grammar and Discourse*. Amsterdam: John Benjamins.

Hale, Kenneth. 1976. The adjoined relative clause in Australia. In R. M. W. Dixon (ed.), *Grammatical Catgeories of Australian Languages*, 78–105. Canberra: Australian Institute of Aboriginal Studies.

Halliday, M. A. C. 1985. *An Introduction to Functional Grammar*. London: Arnold.

Haspelmath, Martin. 1995. The converb as a cross-linguistically valid category. In Martin Haspelmath & Ekkehard König (eds.), *Converbs in cross-linguistic perspective*, 1–55. Berlin & New York: Mouton de Gruyter.

Haspelmath, Martin. 2005. 'Want' complement clauses. In Martin Haspelmath, Matthew S. Dryer, David Gil, & Bernard Comrie (eds.), *The World atlas of Language Structures*, 502–505. Oxford: Oxford University Press.

Haspelmath, Martin. 2008. Creating economical morphosyntactic patterns in language change. In: Good, Jeff (ed.) 2008, *Language Universals and Language Change*, 185–214. Oxford: Oxford University Pres.

Haspelmath, Martin & Ekkehard König (eds.). 1995. *Converbs in Cross-Linguistic Perspective*. Berlin & New York: Mouton de Gruyter.

Haspelmath, Martin & Ekkehard König. 1998. Concessive conditionals in the languages of Europe. In Johan van der Auwera (ed.), *Adverbial constructions in the languages of Europe*, 563–640. Berlin & New York: Mouton de Gruyter.

Haudry, Jean. 1973. Parataxe, hypotaxe et corrélation dans la phrase latine. *Bulletin de la Societe Linguistique de Paris* 68 (1):147–186.

Hawkins, John A. 1986. *A Comparative Typology of English and German: Unifying the Contrasts*. Austin: University of Texas Press.

Hawkins, John A. 1994. *A Performance Theory of Order and Constituency*. Cambridge: Cambridge University Press.

Hawkins, John A. 2004. *Efficiency and Complexity in Grammars*. Oxford: Oxford University Press.

Hengeveld, Kees. 1998. Adverbial clauses in the languages of Europe. In Johan van der Auwera (ed.), *Adverbial constructions in the languages of Europe*, 335–419. Berlin & New York: Mouton de Gruyter.

Keenan, Edward L. & Bernard Comrie. 1977. Noun phrase accessibility and Universal Grammar. *Linguistic Inquiry* 8: 63–99.

Keenan, Edward L. & Bernard Comrie. 1979. Data on the Noun Phrase Accessibility Hierarchy. *Language* 55 (2): 333–351.

Kortmann, Bernd. 1995. Adverbial participial clauses in English. In Martin Haspelmath & Ekkehard König (eds.), *Converbs in Cross-Linguistic Perspective*, 189–237. Berlin & New York: Mouton de Gruyter.

Kortmann, Bernd. 1996. *Adverbial Subordination. A Typology and History of Adverbial Subordnators Based on European Languages*. Berlin & New York: Mouton de Gruyter.

Kortmann, Bernd. 1998. Adverbial Subordinators in the Languages of Europe. In Johan van der Auwera (ed.), *Adverbial Constructions in the Languages of Europe*, 457–561. Berlin & New York: Mouton de Gruyter.

König, Ekkehard und Johan van der Auwera. 1988. Clause integration in German and Dutch conditionals, concessive conditionals, and concessives. In John Haiman & Sandra A. Thompson (eds.), *Clause Combining in Grammar and Discourse*, 101–133. Amsterdam: John Benjamins.

Kuno, Susumu. 1973. Constraints on internal clauses and sentential subjects. *Linguistic Inquiry* 4: 363–385.

Lehmann, Winfried P. 1974. Prinzipien für 'Universal 14'. In Hansjakob Seiler, (ed.), *Linguistic Workshop II*, 69–97. München: Wilhem Fink.

Lehmann, Christian. 1982/1995. *Thoughts on Grammaticalization*. München & Newcastle: Lincom Europa. Revised version of *Arbeiten des Kölner Universalienprojekts* 48.

Lehmann, Christian. 1984. *Der Relativsatz. Typologie seiner Struktur. Theorie seiner Funktion. Kompendium seiner Grammatik*. Tübingen: Gunter Narr.

Lehmann, Christian. 1988. Towards a typology of clause linkage. In John Haiman & Sandra A. Thompson (eds.), *Clause Combining in Grammar and Discourse*, 181–225. Amsterdam: John Benjamins.

Matsumoto, Yoshiko. 1997. *Noun-Modifying Constructions in Japanese: A Frame-Semantic Approach*. Amsterdam: John Benjamins.

Matthiessen, William C. & Sandra A. Thompson. 1988. The structure of discourse and 'subordination'. In John Haiman & Sandra A. Thompson (eds.), *Clause Combining in Grammar and Discourse*, 275–329. Amsterdam: John Benjamins.

Miller, G. & S. Isard. 1963. Free recall of elf-embedded English sentences. *Information and Control* 7: 292–303.

Mithun, Marianne. 1988. On the grammaticalization of coordination. In John Haiman & Sandra A. Thompson (eds.), *Clause Combining in Grammar and Discourse*, 31–60. Amsterdam: John Benjamins.

Nikolaeva, Irina (ed.). 2007. *Finiteness. Theoretical and Empirical Foundations*. Oxford: Oxford University Press.

Noonan, Michael. 2007. Complementation. In Timothy Shopen (ed.), *Language Typology and Syntactic Description. Vol. II,* 52–150. Cambridge: Cambridge University Press.

Olson, Michael L. 1981. *Barai clause junctures: Toward a functional theory of interclausal relations*. Canberra: Australian National University dissertation.

Reesink, Ger P. 1983. Switch reference and topicality hierarchies. *Studies in Language* 7: 215–46.

Schmidtke-Bode, Karsten. 2009. *A Typology of Purpose Clauses*. Amsterdam: John Benjamins.

Shibatani, Masayoshi. (ed.). 1976. *The Grammar of Causative Constructions*. Syntax and Semantics 6. New York: Academic Press.

Stassen, Leon. 1985. *Comparison and Universal Grammar*. Oxford: Blackwell.

Sweetser, Eve E. 1990. *From Etymology to Pragmatics: Metaphorical and Cultural Aspects of Semantic Structure*. Cambridge: Cambridge University Press.

Thompson, Sandra A., Robert E. Longacre, & Shin Ja J. Hwang. 2007. Adverbial clauses. In Timothy Shopen (ed.), *Language Typology and Syntactic Description: Complex Constructions*, 237–300. Cambridge: Cambridge University Press.

Tomasello, Michael. 2003. *Constructing a Language: A Usage-Based Theory of Language Acquisition*. Cambridge, MA: Harvard University Press.

van der Auwera, Johan. (ed.). 1998. *Adverbial Constructions in the Languages of Europe*. Berlin & New York: Mouton de Gruyter.

Van Valin, Robert D. 2007. Recent Developments in the Role and Reference Grammar Theory of Clause Linkage. *Language and Linguistics* 8: 71–93.

Verstraete, Jean-Christophe. 2008. The status of purpose, reason, and intended endpoint in the typology of complex sentences: implications for layered models of clause structure. *Linguistics* 46 (4): 757–788.

Werner, Heinrich. 1997. *Die keltische Sprache*. Wiesbaden: Harrassowitz Verlag.