

THE ORDERING DISTRIBUTION OF MAIN AND ADVERBIAL CLAUSES: A TYPOLOGICAL STUDY

HOLGER DIESEL

Max Planck Institute for Evolutionary Anthropology

This article examines the ordering distribution of main and adverbial clauses in crosslinguistic perspective. Using a representative sample of forty languages, the author shows that the ordering of main and adverbial clauses correlates with the position of the subordinator in the subordinate clause. In languages in which adverbial clauses have a final subordinator, adverbial clauses tend to precede the main clause, whereas in languages in which adverbial clauses are marked by an initial subordinator, adverbial clauses commonly occur in both sentence-initial and sentence-final position. In the latter language type, the position of an adverbial clause varies with its meaning or function: conditional clauses precede the main clause more often than temporal clauses, which in turn are more often preposed than causal, result, and purpose clauses. The distributional patterns are explained in terms of competing motivations; it is suggested that they arise from the interaction between structural and discourse-pragmatic factors.*

Since Greenberg's seminal work on word-order correlations it has been well known that the order of certain linguistic elements tends to correlate with the order of verb and object. For instance, in languages in which the object precedes the verb (henceforth OV languages), adpositions usually follow NP and genitives occur before the head noun, whereas in languages in which the object follows the verb (henceforth VO languages), adpositions tend to precede NP and genitives occur after the head noun. This article examines the positional patterns of adverbial clauses, which have been largely ignored in the literature on word-order correlations.¹ This is the first large-scale, crosslinguistic investigation in this domain and thus fills an important gap in the literature. Based on a representative sample of forty languages, I show that adverbial clauses are overall more common before the element that they modify, i.e. the main clause or main clause predicate.² More precisely, I show that there are two major crosslinguistic ordering patterns: (1) either a language uses adverbial clauses both before and after the main clause/predicate (and both orders are common), or (2) the adverbial clause usually precedes the main clause/predicate. What does not seem to occur is the rigid use of adverbial clauses after the main clause/predicate: if a language uses adverbial clauses in final position, it also makes common use of adverbial clauses before the main clause/predicate. In such a case (i.e. when both orders are common), the position of the adverbial clause varies with its meaning or function: conditional clauses usually precede the main clause/predicate; temporal clauses may precede or follow it; causal clauses

* I would like to thank Mark Aronoff, Orin Gensler, David Kemmerer, Maria Polinsky, Mike Tomasello, and three anonymous referees for their comments and suggestions on earlier versions of this paper. I am of course responsible for all remaining errors.

¹ Greenberg (1963:83–84) observed that in rigid OV languages adverbial clauses always precede the main clause/predicate and that all languages tend to place conditional clauses before the consequence, but the ordering of main and adverbial clauses has never been examined in detail. In all typological word-order studies with which I am familiar, adverbial clauses are either mentioned in passing or not mentioned at all (Lehmann 1973, 1978, Vennemann 1973, 1974, 1976, Vennemann & Harlow 1977, Keenan 1978, Hawkins 1980, 1983, Dryer 1980, 1991, 1992b, Payne 1992, Downing & Noonan 1995).

² Like other adverbial constituents, adverbial clauses can modify both S (i.e. the main clause) and VP (i.e. the main clause predicate). Bickel (1998) points out that some languages employ different types of adverbial clauses for ad-verbial and ad-sentential modification, but the adverbial clauses in my corpus are usually ambiguous between these two readings.

tend to occur in sentence-final position, but occasionally they are preposed; and result and purpose clauses almost always follow the associated element.

While adverbial clause constructions that tend to precede the main clause/predicate only occur in OV languages in my sample, adverbial clauses that are commonly pre- and postposed occur in both VO languages and a significant minority of OV languages. If we look at the latter more closely, we find that (almost) all of them are marked by an initial conjunction or adverb, while adverbial clauses that usually precede the main clause/predicate always include a final subordinator (i.e. a final conjunction, adverb, or suffix). There is thus a strong correlation between the ordering of main clause/predicate and adverbial clause and the position of the subordinator in the subordinate clause: adverbial clauses including a final subordinator tend to precede the main clause/predicate, whereas adverbial clauses that are marked by an initial subordinator are commonly found in both initial and final position regardless of the order of verb and object.

My analysis is based on a sample of forty languages, which I selected on the basis of two criteria: genetic diversity and geographical distance. A complete list of these languages, including information about their genetic affiliations and the areas in which they are spoken, is given in Appendix A. The genetic affiliations are adopted from the *Ethnologue* (Grimes 1996, <http://www.sil.org/ethnologue>); the geographical divisions are similar to the ones suggested in Dryer 1989, 1992b. I divided the world into six large areas: (1) North America, (2) South America, (3) Asia, (4) Europe, (5) Africa, and (6) Oceanic, Australia and New Guinea. Each area is represented by at least six languages in my sample.

The bulk of my data comes from reference grammars and other published sources, supplemented by information from native speakers and language specialists (see Appendix A).³ Although most reference grammars include a chapter or section on adverbial clauses they often do not explain their criteria for classifying a construction as an adverbial clause. Thus, to ensure crosslinguistic comparability I used my own operational criteria to decide whether a certain construction qualifies as an adverbial clause.

1. TOWARDS AN OPERATIONAL DEFINITION OF ADVERBIAL CLAUSES. Adverbial clauses are subordinate clauses that comprise a wide variety of constructions. Two major subtypes can be distinguished: finite adverbial clauses and nonfinite adverbial clauses (i.e. converbs, participial and infinitival constructions, and certain types of nominalized clauses). Example 1 shows a finite adverbial clause from Babungo, example 2 a nonfinite adverbial clause construction in Malayalam.⁴

³ Thanks to the following native speakers and language specialists for providing relevant information: David Gil (Indonesian, Tagalog, Modern Hebrew), Orin Gensler (Modern Hebrew, French), Martin Haspelmath (Lezgian), Wataru Nakamura (Japanese), Jeanette Sakel (West Greenlandic), and Ewa Dabrowska (Polish). I am of course fully responsible for any data errors.

⁴ Abbreviations: ABL = ablative, ACC = accusative, ADV = adverbial clause, COMP = complement clause, CTP = complement taking predicate, DAT = dative, DECL = declarative, DO = direct object, DS = different subject (switch reference marker), F = feminine, FACT = factual, FUT = future tense, G = genitive/possessor noun, GEN = genitive, IF = conditional clause marker, IO = indirect object, M = masculine, MOOD = mood marker, NOM = nominative, NP = noun phrase, PAST = past tense, PL = plural, PO = postposition, PP = prepositional phrase, PR = preposition, PURP = purpose clause marker, Q = question marker, REL = relative clause, S = clause, SG = singular, SS = same subject (switch reference marker), SUB = (adverbial) subordinator, VP = verb phrase.

- (1) Babungo (Schaub 1985:40)
 [kí à gàntè m̀], m̀ k̀ fá tí ghô.
 if you help me I give thing to you
 ‘If you help me, I have to give you something.’
- (2) Malayalam (Asher & Kumari 1997:87)
 [avan vann-**aal**] parayaam.
 he come-IF tell.FUT.MOOD
 ‘If he comes, I shall tell (him).’

Note that both 1 and 2 include an adverbial subordinator (in boldface) that indicates the semantic relationship between main and adverbial clauses (see Dryer 1992a; see also Kortmann 1997, 1998). Babungo expresses this relationship by a subordinate conjunction at the beginning of the adverbial clause, and Malayalam indicates the same (conditional) relationship by a suffix that is attached to the verb in the subordinate construction. All languages included in my sample employ adverbial clauses that are marked by an adverbial subordinator (which might be a conjunction, adverb, adposition, clitic, or affix). Languages in which adverbial clauses do not include a subordinator (e.g. Yimas, Foley 1991:437) are relatively infrequent and have not been considered in this work.

Adverbial clauses must be distinguished from various other clause-linkage constructions, specifically, they must be separated from other types of subordinate clauses and from coordinate sentences. The criteria that distinguish adverbial clauses from these constructions are discussed in the next two sections.

1.1. DISTINGUISHING ADVERBIAL CLAUSES FROM OTHER SUBORDINATE CLAUSES. Apart from adverbial clauses, there are two other common types of subordinate clauses: complement clauses and relative clauses. Complement clauses function as core arguments of a predicate (Noonan 1985:42); they are usually obligatory constituents of the main clause and thus cannot be omitted. By contrast, adverbial clauses are adjuncts functioning as adverbial or ad-sentential modifiers (Thompson & Longacre 1985:171). Since adjuncts are not obligatory, adverbial clauses can always be omitted. Moreover, while adverbial clauses are marked by adverbial subordinators, which indicate a specific semantic relationship between main and adverbial clauses, complement clauses are often formally unmarked or they include a complementizer, which tends to be semantically much less specific than the subordinator of an adverbial clause.⁵

Like adverbial clauses, relative clauses are adjuncts that can be omitted. But while adverbial clauses modify an associated (main) clause or verb phrase, relative clauses are modifiers of a noun or noun phrase (Keenan 1985). Moreover, while adverbial clauses are marked by an adverbial subordinator, relative clauses include a gap or (pro)noun (disregarding internally headed relative clauses) that is coreferential with the head noun, i.e. the noun that they modify (Lehmann 1984).⁶

⁵ Since the semantic relationship between main and complement clauses is primarily defined by the meaning of the complement-taking predicate (CTP) in the main clause, complementizers usually have little semantic content and can therefore often be omitted.

⁶ Note that relative clauses may also include a relative marker that, unlike the gap or relative (pro)noun, is not co-indexed with the head noun. Such nonreferential relative markers are sometimes classified as complementizers. However, since relative clauses, unlike complement clauses, also include a gap or (pro)noun, relative clause complementizers are not relevant for the definition of relative clause used in this study.

	ADV-clause	COMP-clause	REL-clause
SYNTAX	adjunct	complement	adjunct
SEMANTICS	modifier of S/VP	argument of CTP	modifier of N(P)
MARKING	adv. subordinator	zero or complementizer	gap or (pro)noun

TABLE 1. Criteria distinguishing adverbial, complement and relative clauses.

Table 1 presents the three criteria I used to distinguish adverbial clauses from complement clauses and relative clauses.

Although the criteria in Table 1 are usually sufficient to separate adverbial clauses from other types of subordinate clauses, it must be emphasized that the division between the three types of subordinate clauses is not always clear-cut. In particular, there are many languages in which certain semantic types of adverbial clauses take the form of relative clauses (Thompson & Longacre 1985:178–85). Consider, for instance, ex. 3, from Somali.

(3) Somali (Saeed 1999:218)

[**waagii** ay inanta ahayd] Dhegdheer way qurux badnaan jirtey.
 time.the she girl.the was Dhegdheer she beauty much.be used
 ‘When she was a girl, Dhegdheer was very beautiful.’

Although the subordinate clause in 3 is semantically equivalent to a temporal adverbial clause in English, it has the structure of a relative clause that modifies a generic head noun meaning ‘time’ (*waagii* ‘time.the’). Relative clauses of this sort provide a common historical source for certain types of adverbial clauses such as temporal, manner, and locative clauses (Thompson & Longacre 1985:178–79; see also Givón 1991). I have treated such subordinate constructions as adverbial clauses if they are routinely used to express a typical adverbial relationship such as time and if the (generic) head noun has been either delexicalized (i.e. reanalyzed as a subordinate marker) or omitted in this specific use. Adverbial clauses that are structurally relative clauses occur, for instance, in Turkana, Sopyire, Amele, Hungarian, and Lezgian.

Like adverbial clauses and relative clauses, adverbial clauses and complement clauses may share some of their formal properties. In Turkish, for instance, adverbial clauses are nominalized clauses having basically the same (internal) syntactic structure as complement clauses (4).

(4) Turkish (Kornfilt 1997:50, 71)

- a. (ben) [Ahmed-in öl-düğ-ün]-ü duy-du-m.
 I Ahmet-GEN die-F.NOM-3SG-ACC hear-PAST-1SG
 ‘I heard that Ahmet died.’
- b. [[müdür tatil-e çık-tığ-ın]-dan **beri**] ofis kapalı.
 director vacation-DAT go-F.NOM-3SG-ABL since office closed
 ‘The office has been closed (ever) since the director went on vacation.’

Both subordinate clauses in 4 are nominalizations marked by the nominalizing suffix *-dik* (allomorphs *-düğ* and *-tığ*) and a case marker. However, unlike the complement clause in 4a, the adverbial clause in 4b is followed by a postposition (and marked by a different case suffix), which indicates that the two clauses have different functions: while 4a serves as a complement of the main clause predicate, 4b is an adjunct. Additional evidence for this analysis comes from the fact that the embedded clause in 4b, unlike the one in 4a, can easily be omitted. Since these subordinate clauses serve different syntactic functions I treat them as distinct types of subordinate clauses despite

the fact that they have basically the same (internal) syntactic structure. Similar adverbial clause constructions occur in Meithei, Tibetan, Japanese, Barasano, and Lakota.⁷

1.2. DISTINGUISHING ADVERBIAL CLAUSES FROM COORDINATE SENTENCES. While it is not difficult to distinguish adverbial clauses from other types of subordinate clauses, it is quite problematic to determine a sharp division between adverbial (subordinate) clauses and coordinate sentences. Following recent crosslinguistic work on clause combining, I assume that (adverbial) subordination and (clausal) coordination form a continuum rather than two distinct types of interclausal connections (Foley & Van Valin 1984, Haiman & Thompson 1984, Lehmann 1988, Matthiessen & Thompson 1988; Givón 1990:ch. 19, Van Valin & LaPolla 1997:ch. 8, Johannessen 1998:238–51). But for the purpose of this study I sought to divide the cline of clause-linkage constructions into two groups that roughly correspond to the traditional classes of subordinate clauses and coordinate clauses.

To begin with, there are two pragmatic criteria widely used in the literature to distinguish subordinate clauses from coordinate sentences: (1) while subordinate clauses serve to provide given or background information, independent clauses (including coordinate sentences) tend to provide foreground information (Tomlin 1985, Thompson 1987, Matthiessen & Thompson 1988);⁸ (2) while coordinate clauses are independent speech acts, (adverbial) subordinate clauses lack illocutionary force (Haiman & Thompson 1984, Lehmann 1988, Cristofaro 1998a,b).

While pragmatic features are probably the only universal features of subordinate clauses (Croft 1994, Cristofaro 1998a), they are too difficult to measure to be used to establish a clear division between adverbial clauses and coordinate sentences. I therefore used a variety of (nonuniversal) formal criteria that are characteristic of subordinate clause constructions in order to distinguish adverbial clauses from coordinate sentences.⁹

First, I employed a series of syntactic tests (or operations) that have been suggested in the literature to identify adverbial (subordinate) clauses:

1. While (preposed) adverbial clauses may include a cataphoric pronoun that is controlled by a coreferential noun in the following main clause, coordinate clauses do NOT allow for 'backwards pronominalization' (Reinhart 1983, Haspelmath 1995):

- a. When he_i came to Paris, Peter_i met John. (subordination)
- b. *He_i came to Paris, and Peter_i met John. (coordination)

2. While it is possible to extract an element from a clause that is modified by an

⁷ Apart from nominalized clauses, infinitival constructions are sometimes ambiguous between an interpretation as complement clause and adverbial clause. Specifically, the distinction between nonfinite complement clauses and (adverbial) purpose clauses is not always clear-cut (see for instance the discussion of purpose clauses in Usan, which, according to Reesink (1987:261), function 'as object complements of the verb "to say"'). Haspelmath (1989) shows that in many languages infinitival complement clauses and purpose infinitive clauses are historically related.

⁸ This (pragmatic) view of subordination is closely related to the gestalt conception of sentence embedding, in which subordinate clauses are seen as the conceptual ground of the central event, i.e. the figure, expressed in the main clause (Talmy 1978, Reinhart 1984, Croft 1994).

⁹ A number of studies have shown that across languages pragmatic subordination (as defined by lack of illocutionary force and background information) tends to coincide with formal subordination, which may involve a variety of syntactic and morphosyntactic features (see Givón 1980, Foley & Van Valin 1984, Lehmann 1988, Van Valin & LaPolla 1997; Cristofaro 1998a,b).

adverbial clause, nothing can be extracted from a clause that is accompanied by a coordinate clause (Ross 1967, van Oirsouw 1987):

- a. What did you tell her__when you left? (subordination)
- b. *What did you tell her__and you left? (coordination)

3. While the adverbial clauses of many languages may occur in various positions relative to the associated main clause/predicate (3a–c), the position of coordinate clauses is usually invariable vis-à-vis the other conjunct (3d–f) (Haspelmath 1995):

- a. Peter admitted that Mary was right [before he left]. (subordination)
- b. [Before he left] Peter admitted that Mary was right. (subordination)
- c. Peter admitted, [before he left], that Mary was right. (subordination)
- d. Peter admitted that Mary was right [and (he) left]. (coordination)
- e. *[And he left] Peter admitted that Mary was right. (coordination)
- f. *Peter admitted, [and he left], that Mary was right. (coordination)

4. While adverbial clauses cannot occur with a tag question, a tag question can always be added to a coordinate clause (Cristofaro 1998a,b).¹⁰

- a. *She will assist you if she is there, isn't she? (subordination)
- b. She will assist you, but she isn't there, is she? (coordination)

5. Finally, while the coordinate clauses of many languages allow for GAPPING (deletion of the verb in one of the conjuncts of a coordinate structure; Ross 1970, see also Hudson 1976), gapping is not permissible in (adverbial) subordinate clauses.

- a. *Bill played the guitar when John__the piano. (subordination)
- b. Bill played the guitar and John__the piano. (coordination)

In addition to these tests, which I employed whenever I could obtain the relevant information (either from informants or published sources), I used a variety of morpho-syntactic criteria to distinguish adverbial (subordinate) clauses from coordinate sentences. One of these criteria is the phenomenon called DERANKING (Stassen 1985), i.e. the reduction or elimination of verbal morphology such as tense, aspect, and mood (Givón 1980, Hengeveld 1998, Cristofaro 1998a,b). Since in many languages deranking is restricted to subordinate clauses (but see the discussion of medial verb clauses below), it provides a useful operational criterion to distinguish adverbial (subordinate) clauses from coordinate sentences (on a language-specific basis). In addition to deranking, there are often other syntactic and morphosyntactic features that distinguish adverbial (subordinate) clauses from (independent) coordinate sentences. The following five features were relevant for the classification of adverbial clauses in my sample.

1. the occurrence of specific verb forms such as subjunctive, which in some languages is restricted to subordinate clauses (e.g. West Greenlandic)
2. the use of case suffixes that mark adverbial clauses in languages in which subordinate clauses are formed by nominalization (e.g. Turkish)
3. the occurrence of topic and definite markers, which some languages use to indicate the information status of adverbial clauses (e.g. Ayutla Mixtec)
4. a specific word order that distinguishes subordinate clauses from independent sentences (e.g. German)
5. restrictions on the occurrence of negative, focus, and speech act markers in subordinate clauses (e.g. Urubu-Kaapor)

¹⁰ This is, according to Cristofaro (1998a), immediately related to the fact that (adverbial) subordinate clauses lack illocutionary force.

Although none of these criteria is universally applicable, together with the syntactic tests they have been sufficient to distinguish the vast majority of adverbial clause constructions from coordinate sentences based on formal grounds.¹¹ That does not mean, however, that there are no problematic cases. On the contrary, since subordination and coordination form a continuum, one would expect to find at least some intermediate constructions. Two of them are well known from the typological literature on clause combining: medial verb clauses, which frequently occur in New Guinea languages (Foley 1986), and the adjoined dependent clause type that is characteristic of many Australian languages (Hale 1976).

Like deranked adverbial clauses, medial verb clauses are unmarked for tense, aspect, and mood. Unlike adverbial clauses, however, medial verb clauses are nonembedded (Foley & Van Valin 1984, Longacre 1985, Foley 1986). Consider, for instance, the following examples from Amele, which Roberts (1988) provides in order to illustrate that medial verb clauses are syntactically distinguished from adverbial clauses.¹²

(5) Amele (Roberts 1988:53–55)

medial clause

- a. [ho busale-ce-b] dana age qo-ig-a.
pig run.out-DS-3SG man 3PL hit-3PL-PAST
'The pig ran out and the men killed it.'
- b. *dana age [ho busale-ce-b] qo-i-ga.
man 3PL pig run.out-DS-3SG hit-3PL-PAST
'The men, as the pig was running out, killed it.'
- c. *dana age qo-i-ga [ho busale-ce-b].
man 3PL hit-3PL-PAST pig run.out-DS-3SG
'The men killed the pig as it was running out.'

adverbial clause

- d. [ho qo-qag-an **nu**] dana age ho-ig-a.
pig hit-3PL-FUT PURP man 3PL come-3PL-PAST
'To kill the pig the men came.'
- e. dana age [ho qo-qag-an **nu**] ho-ig-a.
man 3PL pig hit-3PL-FUT PURP come-3PL-PAST
'The men came to kill the pig.'
- f. uqa sab man-igi-an [ija ja hud-ig-en **fi**].
3PL food roast-3SG-FUT I fire open-3SG-FUT if
'She will cook the food if I light the fire.'

(6) Amele (Roberts 1988:56–57)

medial clause

- a. *[(uqa)_i bi-bil-i] Fred_i je-i-a.
3SG sit-3SG-SS Fred eat-3SG-PAST
'While he sat, Fred ate.' (= *'He_i sat and Fred_i ate.')

adverbial clause

- b. [(uqa)_i sab j-igi-an **nu**] Fred_i ho-i-a.
3SG food eat-3SG-FUT PURP Fred come-3SG-PAST
'Fred came to eat food.'

¹¹ Since many languages employ a variety of adverbial clause constructions, it was not always possible to distinguish ALL constructions that are classified as adverbial clauses in reference grammars from coordinate sentences based on formal criteria. But all languages included in my sample employ at least one adverbial clause construction (e.g. participial temporal clauses) that is formally distinguished from coordinate clauses.

¹² Like other Papuan languages (Foley 1986:198–205), Amele has both medial verb clauses and adverbial clauses.

Examples 5a–c show that medial verb clauses, unlike adverbial clauses (cf. 5e–f), have to precede the main clause (i.e. their position is invariable); and example (6a) shows that medial verb clauses, unlike adverbial clauses (cf. 6b), do not allow for backwards pronominalization. Since these examples suggest that medial verb clauses are non-embedded, I restricted my analysis to adverbial clauses in Amele and other languages that employ medial verb clauses (i.e. medial verb clauses are not included in my corpus).

Like medial verb clauses, the adjoined dependent clauses of Australian languages are nonembedded (Hale 1976). But, several recent studies—Dixon 1980, Austin 1981, articles in Austin 1988—have shown that most Australian languages employ at least some subordinate clauses. The occurrence of embedded adverbial clauses is, however, often restricted to a few isolated constructions, notably to purpose and *lest* clauses (see for instance the grammatical descriptions in Dixon & Blake 1979–1991 and the articles in Austin 1988). Ungarinjin and Arabana-Wangkungurru, the two Australian languages that are included in my sample, have been selected because they employ adverbial clauses that express a wider range of semantic relationships (i.e. purpose, *lest*, temporal, causal, and conditional relations); however, their status as subordinate clauses is at least in one case problematic (see below).

Finally, I must emphasize that although most languages employ a rather homogeneous class of adverbial clauses there are some languages in which adverbial clauses form a mixed bag of constructions ranging from clauses that are tightly integrated into the associated main clause to clauses that are relatively independent and nonembedded (e.g. Carlson 1994:549–50). Although such languages have not been in principle precluded from my sample, I DID exclude individual types of their ‘adverbial clause constructions’ if they did not qualify as adverbial clauses according to my definition.¹³

Having identified the adverbial clause constructions being used in a particular language, I determined their distribution. Here are the results of my investigation.¹⁴

2. RESULTS

2.1. ORDERING DISTRIBUTION: GENERAL PATTERNS. Languages differ in how they arrange main clause/predicate and adverbial clause. Six distribution classes can be distinguished.

1. Rigid ADV-S/VP languages: adverbial clauses (almost) always precede the main clause/predicate; e.g. Lezgian:

Just like other dependent constituents, Lezgian adverbial clauses as a rule precede their heads, i.e. the verb of the superordinate clause. Since they are generally heavy, they tend to precede all other elements of the superordinate clause. Less commonly the adverbial clause is embedded in the center of the superordinate clause. (Haspelmath 1993:375)

2. Non-rigid ADV-S/SVP languages: adverbial clauses usually precede the main clause/predicate but also readily occur in sentence-final position; e.g. Turkish:

In an unmarked word order, all types of adverbial clauses are placed at the beginning of the main clause. However, given the general flexibility of word order in Turkish, the adverbial clause can surface in any position, even post-verbally. (Kornfilt 1997:68)

¹³ There are, for instance, several languages in my sample in which causal, result, and/or purpose clauses are classified as adverbial clauses in reference grammars despite the fact that they are nonembedded. Compare, for instance, Buechel’s (1939:254) discussion of causal, result, and purpose clauses in Lakota.

¹⁴ Let me emphasize that I only considered languages for which I was able to obtain grammatical descriptions that explicitly discuss the ordering distribution of main clause/predicate and adverbial clause. Since many reference grammars do not provide sufficient information on this issue, I had to exclude many languages that I considered at some point for inclusion in my sample.

3. Flexible ADV-S/VP + S/VP-ADV languages: adverbial clauses commonly precede and follow the main clause/predicate; e.g. Modern Hebrew:

Adverbial clauses 'readily precede or follow the main clause, or even interrupt it'. (Glinert 1989:338)

4. Mixed ADV-S/VP + S/VP-ADV languages: adverbial clauses as a class occur both before and after the main clause/predicate, while specific semantic types of adverbial clauses always precede or always follow the main clause/predicate; e.g. Babungo (except for time and restrictive clauses):

The position of adverbial clauses depends on the type of adverbial clause. There is only one type which obligatorily precedes the superordinate clause: the conditional clause. Two types, i.e. time clause and restrictive clause, may precede or follow the superordinate clause, although the time clause usually follows it. All other types, i.e. manner clause, cause clause, result clause, equative clause and circumstantive clause have to follow the superordinate clause. (Schaub 1985:37)

5. Nonrigid s/VP-ADV languages: adverbial clauses usually follow the main clause/predicate but also readily occur in sentence-initial position; e.g. Arabana Wangkangurru:

There is considerable liberty in the relative position of subordinate clause and main clause: normally the main clause precedes the subordinate clause, but the situation differs according to the type of clause . . . (Hercus 1989:273)

6. Rigid s/VP-ADV languages: languages in which adverbial clauses (almost) always follow the main clause/predicate:

No example

The boundaries between the six distribution classes are fluid; they form a continuum rather than six distinct classes. But for the purpose of this study I assigned each of the forty languages in my sample to a specific class even though some of them are borderline cases. Figure 1 summarizes my findings.

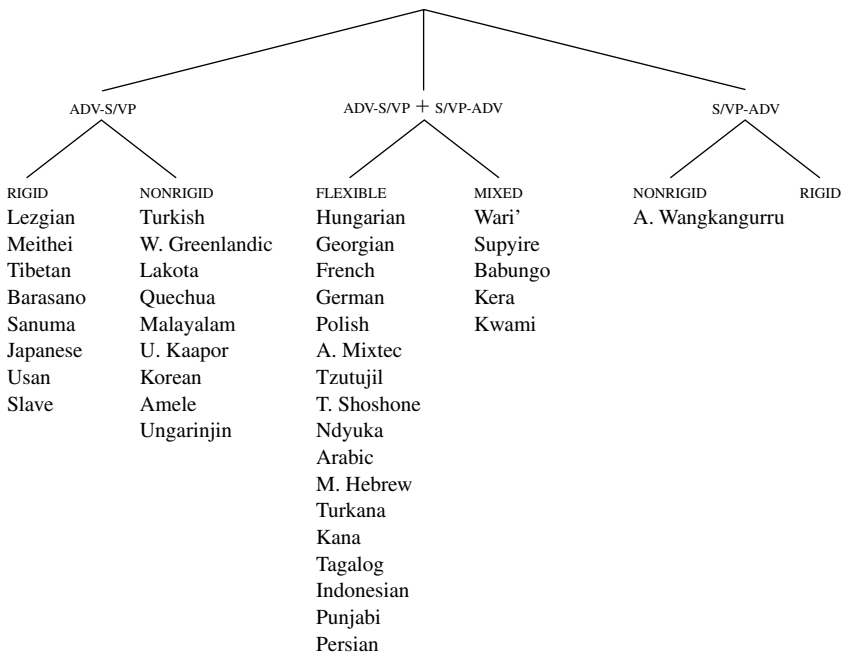


FIGURE 1. Ordering distribution of main clause/predicate and adverbial clause.

As can be seen in Fig. 1, about half of the languages employ adverbial clauses that tend to precede the main clause/predicate,¹⁵ while the other half makes common use of both orders, ADV-S/VP and S/VP-ADV. Only one language, Arabana Wangkangurru, tends to place adverbial clauses after the main clause; however, the occurrence of adverbial clauses in sentence-initial position is also quite common (cf. Hercus 1989: 273–78). As pointed out above, Arabana Wangkangurru is one of the two Australian languages in my sample in which adverbial clauses are often nonembedded. In fact, although Hercus classifies the adverbial clauses in Arabana Wangkangurru as subordinate clauses, she points out that they are similar to the adjoined dependent clauses in Walbiri, which according to Hale 1976 are nonembedded (see Hercus 1989:266). If we disregard the adverbial clauses in Arabana Wangkangurru, which seem to be only loosely integrated in the associated main clause, there is not a single language in my sample, in which adverbial clauses tend to follow the main clause.

Table 2 shows the correlation between the ordering of main clause/predicate and adverbial clause and the ordering of verb and object (cf. Appendix B).

	VO	OV	OV/VO	TOTAL
ADV-S/VP	–	17	–	17
ADV-S/VP + S/VP-ADV	15	4	3	22
S/VP-ADV	–	1	–	1
Total	15	22	3	40

TABLE 2. Positional patterns of adverbial clauses.

All of the languages in which adverbial clauses tend to precede the main clause/predicate are OV languages in my sample. However, languages in which adverbial clauses are commonly pre- and postposed to the main clause/predicate are more diverse in this regard. While most of them have VO order there are also four OV languages, Georgian, Persian, Supyire, and Punjabi, and three OV/VO languages, German, Hungarian, and Tümpisa Shoshone, in which adverbial clauses commonly occur in both initial and final position. If we look at the latter more closely, we find that they have either flexible word order (notably Georgian and Tümpisa Shoshone) or mixed word order characteristics. For example, while Persian is rather rigidly OV, it employs prepositions and the genitive follows the head noun, and while Supyire uses the direct object before the main verb, the indirect object follows it (for more information see Appendix B). Moreover, with the exception of Tümpisa Shoshone, all of these languages share one interesting feature with VO languages (which is obviously related to the fact that they have mixed or unusual word order characteristics): while OV languages in which adverbial clauses tend to precede the main clause/predicate employ final subordinators to mark adverbial clauses (as one would expect in a head final language), the four exceptional OV languages as well as two of the three OV/VO languages mark adverbial clauses by initial subordinators like all VO languages in my sample. There is thus a strong correlation between the ordering of main and adverbial clauses and the position of the adverbial subordinator: in languages in which adverbial clauses are marked by final subordinators, as in the majority of OV languages, adverbial clauses tend to precede the main clause/predicate, whereas in languages in which adverbial clauses include

¹⁵ Note that in two of the languages in which adverbial clauses tend to occur in sentence-initial position, Usan and Ungarinjin, purpose clauses always follow the main clause. In both cases, however, purpose clauses have been excluded because they do not qualify as adverbial clauses according to my definition: in Usan purpose clauses are complement clauses of the verb 'to say' (cf. Reesink 1987:261), and in Ungarinjin purpose clauses are so 'impoverished' that Rumsey (1982:155) doubts that 'they can be called clauses'.

an initial subordinator, as in VO languages and a significant minority of OV and OV/VO languages, adverbial clauses commonly occur both before and after the main clause/predicate.¹⁶

	SUB-S	S-SUB	TOTAL
ADV-S/VP	–	17	17
ADV-S/VP + S/VP-ADV	21	1	22
S/VP-ADV	–	1	1
Total	21	19	40

TABLE 3. Order of main and adverbial clauses and position of subordinator.

As can be seen in Table 3, there are only two languages in my sample in which the ordering of main clause/predicate and adverbial clause does not correlate with the position of the subordinator as described in the preceding paragraph: Arabana Wangkangurru, in which adverbial clauses marked by final subordinators tend to follow the main clause (Hercus 1989:273), and Tümpisa Shoshone, in which adverbial clauses marked by final subordinators commonly occur in both initial and final position (Dayley 1989:349). As pointed out above, the unusual distribution of adverbial clauses in Arabana Wangkangurru is probably due to the fact that they are only loosely integrated in the main clause, and the free order of main and adverbial clauses in Tümpisa Shoshone might be attributed to the general flexibility of constituent order in this language (Dayley 1989:17).

2.2 DISTRIBUTION OF DIFFERENT SEMANTIC TYPES OF ADVERBIAL CLAUSES. I turn now to the distribution of different semantic types of adverbial clauses in languages in which adverbial clauses commonly occur in both initial and final position. In particular, I will examine the positional patterns of five common types of adverbial clauses: (i) conditional clauses, (ii) temporal clauses, (iii) causal clauses, (iv) result clauses, and (v) purpose clauses. There are other adverbial clauses, such as concessive and manner clauses, which will not be considered because they often are not discussed in reference grammars.

CONDITIONAL clauses describe a condition for the realization of the event denoted in the main clause;¹⁷ TEMPORAL clauses indicate a specific temporal relationship between main and adverbial clauses; CAUSAL clauses provide a cause or reason for the associated proposition; RESULT clauses describe a consequence or conclusion derived from the main clause; and PURPOSE clauses indicate the intention or goal of the activity denoted in the main clause. Attested examples of these five types are given in 7–11, respectively:

- (7) **If** you change jobs you won't necessarily have to sell the farm.
- (8) **When** it was cool, the fat was skimmed off and bottled.
- (9) We want no part in such discussions, **because** we think them largely futile.

¹⁶ Punjabi is especially interesting in this regard: while finite adverbial clauses marked by initial subordinators are common in both initial and final position, nonfinite adverbial clauses marked by final subordinators usually precede the main clause/predicate (Bhatia 1993:67). (Note that the latter have been disregarded in the classification of Punjabi in Fig. 1 and Tables 2 and 3).

¹⁷ Conditional clauses are often divided into various subtypes: hypothetical conditionals, counterfactual conditionals, predictive conditionals, negative conditionals, speech act conditionals, concessive conditionals, and several others (Thompson & Longacre 1985, Traugott et al. 1986, Athanasiadou & Dirven 1997, Dancygier 1998). In my analysis I will concentrate on hypothetical and predictive conditionals (see Sweetser 1990, 1996); however, other types of conditional clauses have been excluded only if they are marked differently from hypothetical/predictive conditionals such as negative, counterfactual, and concessive conditional clauses in Supyire (Carlson 1994:574–80).

- (10) Then I dry the sheet under mild pressure **so that** it will lie flat as a board.
 (11) . . . which I shall call mimesis **in order to** distinguish it from earlier theories of imitation.

Table 4 shows the positional patterns of conditional, temporal, causal, result, and purpose clauses in English. The numbers (and percentages) are based on initial and final adverbial clauses in the Brown corpus, which is freely available on the Internet (<http://www ldc.upenn.edu/>).

	CONDITIONAL	TEMPORAL	CAUSAL	RESULT	PURPOSE
Initial	435 (53%)	361 (18.5%)	30 (5.5%)	– (0%)	1 (1%)
Final	387 (47%)	1604 (81.5%)	511 (94.5%)	227 (100%)	84 (99%)
Total	822 (100%)	1965 (100%)	541 (100%)	227 (100%)	85 (100%)

TABLE 4. Conditional, temporal, causal, result, and purpose clauses in the Brown corpus.

The Brown corpus is a large computerized database including texts from four different genres: press reports, belles lettres and biography, learned and scientific writing, and fiction: adventure and western. The figures in Table 4 are based on adverbial clauses marked by the following subordinators: *if* (conditional), *when* (temporal), *after* (temporal), *before* (temporal), *until* (temporal), *because* (causal), *so that* (result), and *in order to* (purpose). Though some of these subordinators may occur in various types of adverbial clauses (Quirk et al. 1985), all of them have one basic meaning (which I indicated in parenthesis). For the purpose of this study, I assume that the basic meaning of the subordinators determines the meaning of the adverbial clause; that is, I assume that *if* clauses are generally conditional, *when* clauses are always temporal, and so on.

The figures in Table 4 are based on both finite and nonfinite adverbial clauses. Precluded are *if* clauses functioning as sentential complements, truncated *if* clauses such as *if possible* or *if so*, concessive conditional clauses introduced by *even if* (or *even when*), and temporal clauses that occur in apposition to a time expression in the main clause, as in 12.

- (12) Its building was first proposed in 1791, **when** a group of citizens, mostly Newburyport men, petitioned the General Court for an act of incorporation.

The temporal clause in 12 provides additional information about a temporal expression in the preceding main clause. Temporal clauses of this sort are not included in my sample because they cannot be preposed. Also excluded are adverbial clauses that are inserted into the main clause as in 13.

- (13) What most people don't seem to realize, **if** they aren't tied up with the thing as I am, is that 90% of the production is transportation.

The figures in Table 4 are consistent with the percentages of initial and final adverbial clauses reported elsewhere in the literature (Quirk et al. 1985:1107, Ford & Thompson 1986, Ramsay 1987, Ford 1993, Diessel 1996). However, the percentages of initial conditional clauses and initial temporal clauses are relatively low in the BROWN corpus compared to the percentages of initial conditional and temporal clauses in other corpora. For instance, in the corpus examined in Ford & Thompson 1986, 79 percent of all conditional clauses precede the main clause and only 21 percent follow it, and in the data presented in Ford 1993, 34 percent of the temporal clauses occur sentence-initially and (only) 66 percent occur in sentence-final position. Similar proportions of pre- and postposed conditional and temporal clauses are reported in Ramsay 1987 and Diessel 1996. While it is unclear why conditional and temporal clauses are relatively infrequent in sentence-initial position in the Brown corpus, it is important to note that in all corpora

that have been examined, conditional clauses precede the main clause more frequently than temporal clauses, which, in turn, are more often preposed than causal, result, and purpose clauses.

Table 5 indicates the positional patterns of conditional, temporal, causal, result, and purpose clauses in other languages in my sample for which I was able to obtain the relevant data.¹⁸ Five of these languages are mixed ADV-S/VP + S/VP-ADV languages, in which specific semantic types of adverbial clauses either always precede or always follow the main clause/predicate: Babungo, Supyire, Wari', Kera, and Kwami.¹⁹ The four other languages, German, Ndyuka, Kera, and Persian, are flexible ADV-S/VP + S/VP-ADV languages, in which (most) adverbial clauses may in principle precede or follow the associated main clause/predicate. The positional patterns that are indicated for adverbial clauses in German are based on frequency counts reported in Diessel 1996,²⁰ while the distributional patterns of adverbial clauses in Ndyuka, Kera, and Persian are based on descriptions in reference grammars (parentheses indicate a less common pattern).

	CONDITIONAL	TEMPORAL	CAUSAL	RESULT	PURPOSE
MIXED					
Babungo	initial	initial + final	final	final	final
Supyire	initial	initial + final	final	final	final
Wari'	initial	initial + final	final	coordinate	final
Kera	initial	initial	final	final	final
Kwami	initial	initial + (final)	final	final	final
FLEXIBLE					
German	initial	initial + final	(initial) + final	final	no data
Ndyuka	initial	initial + final	final	coordinate	final
Tzutujil	initial	initial + final	(initial) + final	no data	final
Persian	initial	initial + (final)	initial + final	final	final

TABLE 5. Positional patterns of specific semantic types of adverbial clauses.

As shown in Table 5, conditional clauses usually occur in sentence-initial position. In mixed ADV-S/VP + S/VP-ADV languages, they ALWAYS precede the main clause, and in flexible ADV-S/VP + S/VP-ADV languages, they are USUALLY preposed to the main clause but may occasionally occur sentence-finally. Temporal clauses show a mixed pattern: some temporal clauses tend to precede the main clause, others, notably temporal clauses of posteriority, usually occur in sentence-final position (e.g. Supyire, Kwami, Ndyuka, German). Causal clauses typically follow the main clause; however, in flexible ADV-S/VP + S/VP-ADV languages, causal clauses are more often preposed to the main clause than result and purpose clauses, which almost always occur sentence-finally. Note that some of these languages tend to use specific conjunctions to mark initial causal clauses. In English, for instance, initial adverbial clauses are frequently marked by *since* rather than by *because* (Altenberg 1984), and in German the common causal subordinator

¹⁸ Unfortunately, the data was available only for the nine languages shown in Table 5. Let me reemphasize that I only considered languages in which the positional patterns of conditional, temporal, causal, result, and purpose clauses are explicitly and unambiguously described in reference grammars.

¹⁹ While the position of most adverbial clauses is invariable in these five languages, some of them employ a few adverbial clauses that may precede and follow the main clause, such as temporal clauses in Babungo (see above).

²⁰ Based on data from both written and spoken German, Diessel 1996 obtained the following figures: (1) conditional clauses: 70% initial and 30% final, (2) temporal clauses 49% initial and 51% final, (3) causal and result clauses together: 23% initial and 77% final.

Complement clauses function as arguments of a complement-taking predicate in the superordinate clause. In VO languages complement clauses consistently follow the main clause predicate, whereas in OV languages complement clauses may occur both before and after the verbal head (Kuno 1974, Grosu & Thompson 1977, Dryer 1980). As Hawkins (1988) and others have noted, there is a LEFT-RIGHT ASYMMETRY such that relative and complement clauses are overall more common in the position after the head (Kuno 1974, Dryer 1992b).

The ordering of main clause/predicate and adverbial clause presents, in a sense, the mirror image of this pattern. In OV languages with consistent head-dependent ordering, adverbial clauses almost always precede the main clause/predicate, whereas in VO languages and OV and OV/VO languages with mixed head-dependent and/or flexible word order, adverbial clauses commonly occur both before and after the main clause/predicate. There is thus a RIGHT-LEFT ASYMMETRY in this case such that adverbial clauses are overall more common in the position before the head. Furthermore, while relative and complement clauses show a consistent pattern in VO but not in OV languages (i.e. they consistently follow the head in VO languages), adverbial clauses behave more consistently in OV languages (where they tend to precede the main clause/predicate) than in VO languages (where they commonly occur in both initial and final position). This is summarized in Table 6.

	REL-N	N-REL	COMP-V	V-COMP	ADV-S/VP	S/VP-ADV
VO	–	x	–	x	x	x
OV	x	x	x	x	x	–

TABLE 6. Distributional patterns of relative, complement, and adverbial clauses.

Table 6 shows that while relative and complement clauses are skewed in favor of the order head-dependent, adverbial clauses tend to precede the element that they modify (i.e. they are skewed in favor of the order dependent-head if one assumes that the main clause/predicate is the head of the construction).

In the literature on word-order correlations it is commonly assumed that one of the factors determining constituent order is parsing. Specifically, it has been argued that languages tend to be either consistently right-branching (head initial) or consistently left-branching (head final) for processing reasons; that is, structures following a consistent branching direction seem to be easier to process than structures with both left- and right-branching (Kuno 1973, 1974, Frazier 1979, 1985, Dryer 1992b, Hawkins 1990, 1992, 1994, 1998). How, then, do we account for the asymmetries in Table 6, which arise from mixed left- and right-branching? In particular, how do we explain the right-left asymmetry in the distribution of adverbial clauses?²²

If processing was the only factor determining the position of adverbial clauses one would expect that adverbial clauses consistently precede the main clause/predicate in head-final languages and that they always follow the main clause/predicate in head-initial languages. This study has shown, however, that although adverbial clauses tend to precede the main clause/predicate in the majority of head final languages, there are many languages—mainly head initial but also head final—in which adverbial clauses commonly precede and follow the associated main clause/predicate. What all of the latter languages (except for Tümpisa Shoshone) have in common is that they employ initial subordinators. Since adverbial clauses that tend to precede the main clause are

²² For a possible explanation of the left-right asymmetry in the distribution of relative and complement clauses see Kuno 1974, Grosu & Thompson 1977, Dryer 1980, and Hawkins 1988, 1994.

generally marked by a subordinator at the end of the embedded clause (which is the unmarked position for a subordinator in a head-final language), one might hypothesize that the position of the subordinator is of central significance to the ordering distribution of main and adverbial clauses. In fact, I suggest that there is a general tendency to arrange clauses in such an order that the conjunction (or connecting affix) occurs between the two elements that it combines. This holds not only for complex sentences including subordinate clauses but also for coordinate constructions, in which the coordinate conjunction (or affix) typically occurs between the two conjuncts (Johannessen 1998:109).²³

If the position of the subordinator is in fact relevant to the ordering of main and adverbial clauses, one has to explain why adverbial clauses marked by an initial subordinator do not always follow the main clause/predicate. I suggest that the right-left asymmetry in the distribution of adverbial clauses is due to discourse-pragmatic factors that favor the use of certain types of adverbial clauses in sentence-initial position regardless of the position of the subordinator in the embedded clause. As argued in studies by Chafe (1984), Thompson and Longacre (1985), Givón (1990), and many others, adverbial clauses are often used to organize the information flow in the ongoing discourse. More specifically, adverbial clauses are commonly preposed to the main clause in order to provide a 'framework' or 'orientation' for the interpretation of information expressed in the main clause (and possibly in subsequent clauses). In some languages, this is immediately reflected in the morphological marking of initial adverbial clauses. As Thompson and Longacre (1985) have pointed out, there are many languages in which initial adverbial clauses are marked by the same morpheme as sentence topics (Haiman 1978, Marchese 1987). Consider, for instance, an example from Lisu.

(20) Lisu (Thompson & Longacre 1985:232)

[ame thæ nwu patsi-a dye-a ŋu bæ-a nya]
 yesterday TIME you plain-to go-DECL FACT say-DECL TOPIC
 nwu nya asa ma mu-a.
 you TOPIC Asa not see-Q

'When you went to the plain yesterday, didn't you see Asa?'

In Lisu, initial adverbial clauses are marked by *nya*, which also serves to indicate the topic in the following main clause. This suggests that adverbial clauses share certain properties with topics: both provide pragmatically presupposed information that links the following information to information that is already in the hearer's knowledge store.²⁴ It is therefore reasonable to assume that the right-left asymmetry in the distribu-

²³ Like adverbial clauses, complement clauses tend to occur in the position where the subordinator (i.e. the complementizer) occurs between the two elements that it 'combines', i.e. the complement-taking predicate and the subordinate clause. As noted by Kuno (1974) and Dryer (1980) among others, in head-final languages complement clauses are often extraposed to the position after the main clause predicate, giving rise to the left-right asymmetry in the distribution of complement clauses (see above). What is interesting in the context of the current investigation is that the extraposition of complement clauses is basically restricted to complement clauses marked by initial subordinators (i.e. initial complementizers). As Grosu and Thompson (1977) showed, complement clauses including a final subordinator and complement clauses with no overt marking are usually not extraposed to the position after the main clause predicate in this type of language (cf. Dryer 1980). One way of interpreting this finding is to argue that the left-right asymmetry in the distribution of complement clauses is due to the common occurrence of initial subordinators in both head initial and head final languages (Dryer 1992a), which motivates the extraposition of complement clauses to the position after the head where the subordinator occurs between the two elements that it combines.

²⁴ In the functional literature, it is often argued that (initial) adverbial clauses are topics (Haiman 1978, Thompson & Longacre 1985) but this hypothesis is problematic. While preposed adverbial clauses share certain properties with sentence topics (both provide pragmatically presupposed information), they are not

tion of adverbial clauses is due to their discourse-pragmatic function, which motivates the use of adverbial clauses in sentence-initial position and overrides the preference for final occurrence that arises from other factors (i.e. the use of an initial subordinator). If this analysis is correct, it raises an interesting question for future research. Given that conditional clauses precede the main clause more often than temporal clauses, which in turn are more often preposed than causal, result, and purpose clauses, one must ask why conditional clauses (and to a lesser degree, temporal clauses) are much more likely to provide an orientation or framework for subsequent information than causal, result, and purpose clauses, which tend to occur in sentence-final position, where they provide additional information concerning the preceding main clause (Ford 1993, Diessel 1996).

APPENDIX A: LANGUAGES

North America

1. West Greenlandic	Eskimo-Aleut	Fortescue 1984
2. Slave	Athapaskan	Rice 1989
3. Lakota	Siouan	Buechel 1939
4. Tümpisa Shoshone	Uto-Aztecan	Dayley 1989
5. Ayutla Mixtec	Oto-Manguean	Hills 1990
6. Tzutujil	Mayan	Dayley 1985

South America

7. Barasano	Tucanoan	Jones & Jones 1991
8. Quechua	Quechuan	Weber 1989
9. Wari'	Chapacura-Wanham	Everett & Kern 1997
10. Urubu-Kaapor	Tupí	Kakumasu 1986
11. Sanuma	Yanomam	Borgman 1990
12. Ndyuka	English-based Creole	Huttar & Huttar 1994

Asia

13. Modern Hebrew	Semitic	Glinert 1989
14. Arabic	Semitic	Holes 1995
15. Persian	Iranian	Mahootian 1997
16. Punjabi	Indic	Bhatia 1993
17. Malayalam	Dravidian	Asher & Kumari 1997
18. Japanese	Japanese	Kuno 1978
19. Korean	Isolate	Chang 1989, Sohn 1994
20. Meithei	Tibeto-Burman	Chelliah 1997
21. Tibetan	Tibeto-Burman	Denwood 1999

Europe

22. German	Germanic	Diessel 1996
23. French	Romance	Calvez 1993
24. Polish	Slavic	Bielec 1998
25. Hungarian	Ugric	Kenesei et al. 1998
26. Turkish	Turkic	Kornfilt 1997
27. Lezgian	North Caucasian	Haspelmath 1993
28. Georgian	South Caucasian	Hewitt 1987, 1995, Fähnrich 1987

topics in the sense that the whole sentence is ABOUT the event or situation described in the adverbial clause. Thus, if one characterizes initial adverbial clauses as topics (because they share certain properties with sentence topics and may be marked by the same morpheme), one has to distinguish between different types of topics—as, for instance, suggested by Lambrecht (1994:125), who differentiates between ‘primary topics’ (i.e. simple sentence topics) and ‘scene-setting topics’; the latter notion subsumes initial adverbial clauses (see also Dik’s (1980) distinction between ‘topics’ and ‘themes’).

Africa

29. Kwami	Chadic	Leger 1994
30. Kera	Chadic	Ebert 1979
31. Babungo	Benue-Congo	Schaub 1985
32. Supyire	Gur	Carlson 1994
33. Kana	Benue-Congo	Ikoru 1996
34. Turkana	Nilo-Saharan	Dimmendaal 1983
Oceanic + New Guinea + Australia		
35. Indonesian	Austronesian	Sneddon 1996
36. Tagalog	Austronesian	Schachter & Otanes 1972
37. Usan	Adelbert Range	Reesink 1987
38. Amele	Madang	Roberts 1987, 1988
39. Ungarinjin	Wororan	Rumsey 1982
40. Arabana Wangkangurru	Pama-Nyungan	Hercus 1989

APPENDIX B: WORD ORDER CORRELATIONS

	verb-object	subordinator	adposition ^a	genitive
(1) Rigid ADV-S/VP				
Barasano	OV	S-SUB	PO	GN
Japanese	OV	S-SUB	PO	GN
Lezgian	OV	S-SUB	PO	GN
Meithei	OV	S-SUB	(PO)	GN
Sanuma	OV	S-SUB	PO	GN
Slave	OV	S-SUB	PO	gn
Tibetan	OV	S-SUB	(PO)	GN
Usan	OV	S-SUB	PO	GN
(2) Nonrigid ADV-S/VP				
Amele	OV	S-SUB	PO	GN
Korean	OV	S-SUB	PO	GN
Lakota	OV	S-SUB	PO	GN
Malayalam	OV	S-SUB	(PO)	GN
Quechua	OV	S-SUB	(PO)	GN
Turkish	OV	S-SUB	PO	GN
Urubu Kaapor	OV	S-SUB	PO	GN
Ungarinjin	OV	S-SUB	PO	GN/NG
West Greenlandic	OV	S-SUB	(PO)	GN
(3) Flexible ADV-S/VP + S/VP-ADV				
Arabic	VO	SUB-S	PR	NG
Ayutla Mixtec	VO	SUB-S	PR	NG
French	VO	SUB-S	PR	NG
Georgian	OV	SUB-S	PO	GN
German	OV/VO	SUB-S	PR	NG/GN
Hungarian	OV/VO	SUB-S	PO	GN
Indonesian	VO	SUB-S	PR	NG
Kana	VO	SUB-S	PR	NG
Modern Hebrew	VO	SUB-S	PR	NG
Ndyuka	VO	SUB-S	PR	NG/GN
Persian	OV	SUB-S	PR	NG
Polish	VO	SUB-S	PR	NG
Punjabi	OV	SUB-S	PO	GN
Tagalog	VO	SUB-S	PR	NG
Tümpisa Shoshone	OV/VO	S-SUB	PO/PR	NG/GN
Turkana	VO	SUB-S	(PR)	NG
Tzutujil	VO	SUB-S	PR	NG

(4) Mixed ADV-S/VP + S/VP-ADV

Babungo	VO	SUB-S	PR	NG
Kera	VO	SUB-S	PR	NG
Kwami	VO	SUB-S	PR	NG
Supyire	DO V IO	SUB-S	PR/PO	GN
Wari'	VO	SUB-S	PR	NG

(5) Nonrigid s/VP-ADV

Arabana Wangkanguru	OV	S-SUB	(PO)	NG/GN
---------------------	----	-------	------	-------

(6) Rigid s/VP-ADV

not attested in the current sample

^a Parentheses indicate the use of locational affixes rather than adpositions.

REFERENCES

GRAMMARS

- ASHER, R. E., and T. C. KUMARI 1997. Malayalam. London: Routledge.
- BHATIA, TEJ K. 1993. Punjabi: A cognitive-descriptive grammar. London: Routledge.
- BIELEC, DANA. 1998. Polish: An essential grammar. London: Routledge.
- BORGMAN, DONALD M. 1990. Sanuma. Handbook of Amazonian languages, ed. by Desmond C. Derbyshire and Geoffrey K. Pullum (3 vols., 1986–1990), 2.15–248. Berlin: Mouton de Gruyter.
- BUECHEL, EUGENE S. J. 1939. A grammar of Lakota. The language of the Teton Sioux Indians. Saint Francis P.O., South Dakota: Saint Francis Mission.
- CALVEZ, DANIEL J. 1993. French reference grammar. Lincolnwood: NTC Publishing Group.
- CARLSON, ROBERT. 1994. A grammar of Supyire. Berlin: Mouton de Gruyter.
- CHANG, SUK-JIN. 1989. Korean. Amsterdam: John Benjamins.
- CHELLIAH, SHOBHANA L. 1997. A grammar of Meithei. Berlin: Mouton de Gruyter.
- DAYLEY, JON P. 1985. Tzutujil grammar. Berkeley: University of California Press.
- DAYLEY, JON P. 1989. Tümpisa (Panamint) Shoshone grammar. Berkeley: University of California Press.
- DENWOOD, PHILIP. 1999. Tibetan. Amsterdam: John Benjamins.
- DIMMENDAAL, GERRIT JAN. 1983. The Turkana language. Dordrecht: Foris.
- DIXON, R. M. W., and BARRY BLAKE (eds.) 1979–1991. Handbook of Australian languages, vols. 1–4. Canberra and Amsterdam: Australian National University Press and John Benjamins.
- EBERT, KAREN H. 1979. Sprache und Tradition der Kera (Tschad). Teil 3: Grammatik. Berlin: Reimer.
- EVERETT, DANIEL, and BARBARA KERN. 1997. Wari': The Pacaas Novos language of western Brazil. London: Routledge.
- FÄHRNICH, HEINZ. 1987. Kurze Grammatik der georgischen Sprache. Leipzig: VEB Verlag Enzyklopädie.
- FORTESCUE, MICHAEL. 1984. West Greenlandic. London: Croom Helm.
- GLINERT, LEWIS. 1989. The grammar of Modern Hebrew. Cambridge: Cambridge University Press.
- HASPELMATH, MARTIN. 1993. A grammar of Lezgian. Berlin: Mouton de Gruyter.
- HERCUS, LUISE A. 1989. A grammar of the Arabana-Wangkanguru language, Lake Eyre Basin, south Australia. Canberra: Australian National University.
- HEWITT, BRIAN GEORGE. 1995. Georgian: A structural reference grammar. Amsterdam: John Benjamins.
- HILLS, ROBERT A. 1990. A syntactic sketch of Ayutla Mixtec. Studies in the syntax of Mixtecan languages, vol. 2, ed. by C. Henry Bradley and Barbara E. Hollenbach, 1–26. Arlington: Summer Institute of Linguistics and University of Texas Press.
- HOLES, CLIVE. 1995. Modern Arabic: Structures, functions and varieties. London: Longman.
- HUTTAR, GEORGE L., and MARY L. HUTTAR. 1994. Ndyuka. London: Routledge.
- IKORO, SUANU M. 1996. The Kana language. Leiden: Research School CNWS.
- JONES, WENDELL, and PAULA JONES. 1991. Barasano syntax. Arlington: Summer Institute of Linguistics and University of Texas Publications in Linguistics.
- KAKUMASU, JAMES. 1986. Urubu-Kaapor. In Derbyshire and Pullum (eds.), vol. I, 326–403.

- KENESEI, ISTVÁN; ROBERT M. VAGO; and ANNA FENYVESI. 1998. Hungarian. London: Routledge.
- KORNFILT, JAKLIN. 1997. Turkish. London: Routledge.
- KUNO, SUSUMO. 1978. Japanese: A characteristic OV language. In Lehmann (ed.), 57–138.
- LEGER, RUDOLF. 1994. Eine Grammatik der Kwami-Sprache (Nordostnigeria). Köln: Rüdiger Köppe.
- MAHOOTIAN, SHAHRZAD. 1997. Persian. London: Routledge.
- REESINK, GER P. 1987. Structures and their function in Usan: A Papuan language of Papua New Guinea. Amsterdam: John Benjamins.
- RICE, KEREN. 1989. A grammar of Slave. Berlin: Mouton de Gruyter.
- ROBERTS, JOHN R. 1987. Amele. London: Croom Helm.
- RUMSEY, ALAN. 1982. An intra-sentence grammar of Ungarinjin, north-western Australia. Canberra: Australian National University.
- SAEED, JOHN. 1999. Somali. Amsterdam: John Benjamins.
- SCHACHTER, PAUL, and FE T. OTANES. 1972. Tagalog reference grammar. Berkeley: University of California Press.
- SCHAUB, WILLI. 1985. Babungo. London: Croom Helm.
- SNEDDON, JAMES NEIL. 1996. Indonesian: A comprehensive grammar. London: Routledge.
- SOHN, HO-MIN. 1994. Korean. London: Routledge.
- WEBER, DAVID JOHN. 1989. A grammar of Huallaga (Huánuco) Quechua. Berkeley: University of California Press.

OTHER REFERENCES

- ALTENBERG, BENGT. 1984. Causal linking in spoken and written English. *Studia Linguistica* 38.20–69.
- ATHANASIADOU, ANGELIKI, and RENÉ DIRVEN (eds.) 1997. On conditionals again. Amsterdam: John Benjamins.
- AUSTIN, PETER. 1981. Switch-reference in Australia. *Language* 57.309–34.
- AUSTIN, PETER (ed.) 1988. Complex sentence constructions in Australian languages. Amsterdam: John Benjamins.
- BICKEL, BALTHASAR. 1998. Review of *Converbs in cross-linguistic perspective*, ed. by Martin Haspelmath and Ekkehard König. *Linguistic Typology* 2.381–97.
- CHAFE, WALLACE. 1984. How people use adverbial clauses. *Berkeley Linguistics Society* 10.437–49.
- CRISTOFARO, SONIA. 1998a. Subordination strategies: A typological study. Pavia: University of Pavia dissertation.
- CRISTOFARO, SONIA. 1998b. Deranking and balancing in different subordinate relations: A typological study. *Sprachtypologie und Universalienforschung* 51.3–42.
- CROFT, WILLIAM. 1994. A gestalt analysis of complex sentences and its typological consequences, Manchester: University of Manchester, ms.
- DANCYGIER, BARBARA. 1998. Conditionals and prediction: Time, knowledge, and causation in conditional constructions. Cambridge: Cambridge University Press.
- DIESSEL, HOLGER. 1996. Processing factors of pre- and postposed adverbial clauses. *Berkeley Linguistics Society* 23.71–82.
- DIK, SIMON C. 1980. *Studies in functional grammar*. London: Academic Press.
- DIXON, R. M. W. 1980. *The languages of Australia*. Cambridge: Cambridge University Press.
- DOWNING, PAMELA, and MICHAEL NOONAN (eds.) 1995. *Word order in discourse*. Amsterdam: John Benjamins.
- DRYER, MATTHEW S. 1980. The positional tendencies of sentential noun phrases in universal grammar. *Canadian Journal of Linguistics* 25.123–95.
- DRYER, MATTHEW S. 1989. Large linguistic areas and language sampling. *Studies in Language* 13.257–92.
- DRYER, MATTHEW S. 1991. SVO languages and the OV:VO typology. *Linguistics* 27.443–82.
- DRYER, MATTHEW S. 1992a. Adverbial subordinators and word order asymmetries. Performance principles of word order (Eurotype Working Papers), ed. by John A. Hawkins and Anna Siewierska, 1–33. Strasbourg: European Science Foundation Programme in Language Typology, ESF Office Strasbourg.

- DRYER, MATTHEW S. 1992b. The Greenbergian word order correlations. *Language* 68.81–138.
- FOLEY, WILLIAM A. 1986. *The Papuan languages of New Guinea*. Cambridge: Cambridge University Press.
- FOLEY, WILLIAM A. 1991. *The Yimas language of New Guinea*. Stanford: Stanford University Press.
- FOLEY, WILLIAM A., and ROBERT D. VAN VALIN. 1984. *Functional syntax and universal grammar*. Cambridge: Cambridge University Press.
- FORD, CECILIA E. 1993. *Grammar in interaction: Adverbial clauses in American English conversations*. Cambridge: Cambridge University Press.
- FORD, CECILIA E., and SANDRA A. THOMPSON. 1986. Conditionals in discourse: A text-based study from English. In Traugott et al., 353–72.
- FRAZIER, LYN. 1979. Parsing and constraints on word order. *University of Massachusetts Occasional Papers in Linguistics* 5.177–98.
- FRAZIER, LYN. 1985. Syntactic complexity. *Natural language parsing: Psychological, computational, and theoretical perspectives*, ed. by David R. Dowty, Lauri Karttunen, and Arnold M. Zwicky, 129–89. Cambridge: Cambridge University Press.
- GIVÓN, TALMY. 1980. The binding hierarchy and the typology of complements. *Studies in Language* 4.333–77.
- GIVÓN, TALMY. 1984/1990. *Syntax: A functional-typological introduction*, vols. 1–2. Amsterdam: John Benjamins.
- GIVÓN, TALMY (ed.) 1985. *Quantified studies in discourse*. Special issue of *Text* 5.
- GIVÓN, TALMY. 1991. The evolution of dependent clause morpho-syntax in Biblical Hebrew. *Approaches to grammaticalization*, vol. 2, ed. by Elizabeth Closs Traugott and Bernd Heine, 257–310. Amsterdam: John Benjamins.
- GREENBERG, JOSEPH H. 1963. Some universals of grammar with particular reference to the order of meaningful elements. *Universals of language*, ed. by Joseph H. Greenberg, 73–113. Cambridge, MA: MIT Press.
- GRIMES, BARBARA F. (ed.) 1996. *Ethnologue: Languages of the world*, 13th edn. Dallas: Summer Institute of Linguistics.
- GROSU, ALEXANDER, and SANDRA A. THOMPSON. 1977. Constraints on the distribution of NP clauses. *Language* 53.104–51.
- HAIMAN, JOHN. 1978. Conditionals are topics. *Language* 54.564–89.
- HAIMAN, JOHN, and SANDRA A. THOMPSON. 1984. 'Subordination' in universal grammar. *Berkeley Linguistics Society* 10.510–23.
- HAIMAN, JOHN, and SANDRA A. THOMPSON (eds.) 1988. *Clause combining in grammar and discourse*. Amsterdam: John Benjamins.
- HALE, KENNETH. 1976. The adjoined relative clause in Australia. *Grammatical categories in Australian languages*, ed. by R. M. W. Dixon, 78–105. Canberra: Australian Institute of Aboriginal Studies.
- HASPELMATH, MARTIN. 1989. From purposive to infinitive—A universal path of grammaticalization. *Folia Linguistica Historica* 10.287–310.
- HASPELMATH, MARTIN. 1995. The converb as a cross-linguistically valid category. *Converbs in cross-linguistic perspective. Structure and meaning of adverbial verb forms—Adverbial participles, gerunds*, ed. by Martin Haspelmath and Ekkehard König, 1–56. Berlin: Mouton de Gruyter.
- HAWKINS, JOHN A. 1980. On implicational and distributional universals of word order. *Journal of Linguistics* 16.193–235.
- HAWKINS, JOHN A. 1983. *Word order universals*. New York: Academic Press.
- HAWKINS, JOHN A. 1988. On explaining some left-right asymmetries in syntactic and morphological universals. *Studies in syntactic typology*, ed. by Michael Hammond, Edith A. Moravcsik, and Jessica R. Wirth, 321–57. Amsterdam: John Benjamins.
- HAWKINS, JOHN A. 1990. A parsing theory of word order universals. *Linguistic Inquiry* 21.223–61.
- HAWKINS, JOHN A. 1992. Syntactic weight versus information structure in word order variation. *Informationsstruktur und Grammatik*, ed. by Joachim Jacobs, 196–219. *Linguistische Berichte special issue* 4.
- HAWKINS, JOHN A. 1994. *A performance theory of order and constituency*. Cambridge: Cambridge University Press.

- HAWKINS, JOHN A. 1998. Some issues in a performance theory of word order. *Constituent order in the languages of Europe*, ed. by Anna Siewierska, 729–80. Berlin: Mouton de Gruyter.
- HENGEVELD, KEES. 1998. Adverbial clauses in the languages of Europe. In van der Auwera (ed.), 335–419.
- HEWITT, BRIAN GEORGE. 1987. *The typology of subordination in Georgian and Abkhaz*. Berlin: Mouton de Gruyter.
- HUDSON, RICHARD A. 1976. Conjunction reduction, gapping, and right-node raising. *Language* 52.535–562.
- JOHANNESSEN, JANNE BONDI. 1998. *Coordination*. Oxford: Oxford University Press.
- KEENAN, EDWARD L. 1978. The syntax of subject-final languages. In Lehmann (ed.), 267–327.
- KEENAN, EDWARD L. 1985. Relative clauses. In Shopen, vol. 2, 141–70.
- KORTMANN, BERND. 1997. *Adverbial subordination: A typology of adverbial subordinators based on European languages*. Berlin: Mouton de Gruyter.
- KORTMANN, BERND. 1998. Adverbial subordinators in the languages of Europe. In van der Auwera, 457–561.
- KUNO, SUSUMO. 1973. Constraints on internal clauses and sentential subjects. *Linguistic Inquiry* 4.363–85.
- KUNO, SUSUMO. 1974. The position of relative clauses and conjunctions. *Linguistic Inquiry* 5.117–36.
- LAMBRECHT, KNUD. 1994. *Information structure and sentence form: Topic, focus and the mental representation of discourse referents*. Cambridge: Cambridge University Press.
- LEHMANN, CHRISTIAN. 1984. *Der Relativsatz. Typologie seiner Strukturen. Theorie seiner Funktionen. Kompendium seiner Grammatik*. Tübingen: Narr.
- LEHMANN, CHRISTIAN. 1988. Towards a typology of clause linkage. In Haiman & Thompson, 181–225.
- LEHMANN, WINFRED P. 1973. A structural principle of language and its implications. *Language* 49.42–66.
- LEHMANN, WINFRED P. 1978. The great underlying ground-plans. In Lehmann (ed.), 3–55.
- LEHMANN, WINFRED P. (ed.) 1978. *Syntactic typology: Studies in the phenomenology of language*. Austin: University of Texas Press.
- LONGACRE, ROBERT E. 1985. Sentences as combinations of clauses. In Shopen, vol. 2, 235–86.
- MARCHESE, LYNELL. 1987. On the role of conditionals in Godie procedural discourse. In Tomlin, 263–80.
- MATTHIESSEN, CHRISTIAN, and SANDRA A. THOMPSON. 1988. The structure of discourse and 'subordination'. In Haiman and Thompson, 275–329.
- NOONAN, MICHAEL. 1985. Complementation. In Shopen, vol. 2, 42–140.
- PAYNE, DORIS L. (ed.) 1992. *Pragmatics of word order flexibility*. Amsterdam: John Benjamins.
- QUIRK, RANDOLPH; SIDNEY GREENBAUM; GEOFFREY LEECH; and JAN SVARTVIK. 1985. *A grammar of contemporary English*. London: Longman.
- RAMSAY, VIOLETTA. 1987. The functional distribution of preposed and postposed 'if' and 'when' clauses in written discourse. In Tomlin, 383–408.
- REINHART, TANYA. 1983. *Anaphora and semantic interpretation*. Chicago: University of Chicago Press.
- REINHART, TANYA. 1984. Principles of gestalt perception in the temporal organization of narrative texts. *Linguistics* 22.779–809.
- ROBERTS, JOHN R. 1988. Amele switch-reference and the theory of grammar. *Linguistic Inquiry* 19.45–63.
- ROSS, JOHN R. 1986 (1967). *Infinite syntax!* Norwood, NJ: Ablex (1967. Cambridge, MA: MIT dissertation).
- ROSS, JOHN R. 1970. Gapping and the order of constituents. *Progress in linguistics*, ed. by Manfred Bierwisch and Karl Erich Heidolph, 249–59. The Hague: Mouton.
- SHOPEN, TIMOTHY (ed.) 1985. *Language typology and syntactic description*, 3 vols. Cambridge: Cambridge University Press.
- STASSEN, LEON. 1985. *Comparison and universal grammar*. Oxford: Basil Blackwell.

- SWEETSER, EVE. 1990. *From etymology to pragmatics*. Cambridge: Cambridge University Press.
- SWEETSER, EVE. 1996. Mental spaces and the grammar of conditional constructions. *Spaces, worlds and grammars*, ed. by Gilles Fauconnier and Eve Sweetser, 318–33. Chicago: University of Chicago Press.
- TALMY, LEONARD. 1978. Figure and ground in complex sentences. *Universals of human language*, vol. 4, ed. by Joseph H. Greenberg, Charles A. Ferguson, and Edith A. Moravcsik, 625–52. Stanford: Stanford University Press.
- THOMPSON, SANDRA A. 1985. Grammar and written discourse. Initial and final purpose clauses in English. In Givón, 55–84.
- THOMPSON, SANDRA A. 1987. 'Subordination' and narrative event structure. In Tomlin, 435–54.
- THOMPSON, SANDRA A., and ROBERT E. LONGACRE. 1985. Adverbial clauses. In Shopen, vol. 2 171–34.
- TOMLIN, RUSSELL 1985. Foreground-background information and the syntax of subordination. In Givón, 85–122.
- TOMLIN, RUSSELL (ed.) *Coherence and grounding in discourse*. Amsterdam: John Benjamins.
- TRAUGOTT, ELIZABETH CLOSS; ALICE TER MEULEN; JUDY SNITZER REILLY; and CHARLES A. FERGUSON (eds.) 1986. *On conditionals*. Cambridge: Cambridge University Press.
- VAN DER AUWERA, JOHAN (ed.) 1998. *Adverbial constructions in the languages of Europe*. Berlin: Mouton de Gruyter.
- VAN OIRSOUW, ROBERT. 1987. *The syntax of coordination*. London: Croom Helm.
- VAN VALIN ROBERT D., and RANDY J. LAPOLLA. 1997. *Syntax: Structure, meaning and function*. Cambridge: Cambridge University Press.
- VENNEMANN, THEO. 1973. Explanation in syntax. *Syntax and semantics 2*, ed. by John Kimball, 1–50. New York: Seminar Press.
- VENNEMANN, THEO. 1974. Theoretical word order studies. Results and problems. *Papier zur Linguistik* 7.5–25.
- VENNEMANN, THEO. 1976. Categorical grammar and the order of meaningful elements. *Linguistic studies offered to Joseph Greenberg on the occasion of his sixtieth birthday*, ed. by Alphonse Juilland, 615–34. Saratoga, CA: Anma Libri.
- VENNEMANN, THEO, and RAY HARLOW. 1977. Categorical grammar and consistent basic VX serialization. *Theoretical Linguistics* 4.227–54.

Max Planck Institute for
Evolutionary Anthropology
Inselstr. 22
04103 Leipzig, Germany
[diessel@eva.mpg.de]

[Received 14 June 1999;
revision received 13 June 2000;
accepted 22 August 2000]