

Empirical Approaches
to Language Typology



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Adverbial Constructions
in the Languages of Europe

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6 Adverbial clauses in the languages of Europe

1. Introduction

The aim of this chapter is to investigate the hypothesis that there is a systematic correlation between semantic types of adverbial clauses on the one hand, and the way they are expressed on the other. Semantic types of adverbial clauses are defined in terms of semantic primitives, which allows for generalization across specific types of adverbial clauses. After the presentation of some preliminary issues in § 2, a semantic classification of adverbial clauses in terms of four interacting parameters is given in § 3. § 4 studies the distribution of dependent and independent verb forms across adverbial clauses in terms of four implicational hierarchies which may be defined on the basis of the semantic parameters given in § 3. In § 5 the variation within European languages along each of the hierarchies is studied from both an areal and a genetic perspective. § 6 defines the main systems of adverbial subordination resulting from the interaction between the four hierarchies and studies the distribution of these systems, again from an areal and a genetic perspective. In § 7 the theoretical background which led to the formulation of the main semantic parameters is given.

2. Preliminaries

2.1. Subordination

2.1.1. Introduction

The generalizations made within this paper concern subordinate clauses only. A clause is considered subordinate if it depends for its occurrence on another. It is an adverbial clause if it can be omitted without affecting the grammaticality of the main clause.

2.1.2. Subordination vs. parataxis

The definition of subordinate constructions just given excludes paratactic expressions, even though these may have a similar semantic value as corresponding subordinate constructions. The paratactic constructions excluded may contain no relational element at all, as in (1), or they may contain a nonsubordinating relational expression such as the relational adverb *gainera* 'in addition' in (2).

- (1) Karachai-Balkar
 Meni teng-im mynda dzhokh-du, men any
 my friend-POSS:1SG here not:be-REAL I him
 kör-mej-me.
 see-NEG-1SG
 'My friend is not here, for I don't see him.'
 "My friend is not here, I don't see him."
- (2) Basque
 Oso berandu da, gainera euria ari du.
 very late is in.addition rain is has
 'Apart from being very late, it is raining.'
 "It is very late, in addition it is raining."

2.1.3. Direct vs. indirect subordination

The subordinate clauses subjected to investigation in this paper are furthermore only those that can be considered cases of direct subordination. Excluded are cases of indirect subordination as illustrated in the following sections.

2.1.3.1. Quotative constructions

In (3) and (4) examples are given of quotative constructions. In these, an adverbial form of the verb 'to say' introduces a clause representing a purpose (3) or a reason (4). The verb 'to say', in its turn, is the nucleus of an adverbial clause of Simultaneity. The clause representing the purpose in (3) is thus a complement clause of the verb 'to say', not an adverbial clause of Purpose. The clause representing the reason in (4) is again a complement clause of the verb 'to say', not an adverbial clause of Reason.

Quotative constructions tend to grammaticalize, in the process of which the adverbial form of the verb 'to say' is reinterpreted as a conjunction, turning

the original complement clause of the verb 'to say' into a directly subordinated construction. For this reason it is not always easy to determine whether a construction is an indirectly or directly subordinated one.

- (3) Turkish
 Allah sen-i dünya boş kal-ma-sın diy-e
 Allah 2SG-ACC world empty remain-NEG-IMP say-ADVR
 yarat-ma-mış
 create-NEG-PF
 'God did not create you just to take up room.'
 "God did not create you saying: 'Let the world not remain empty!'"
- (4) Lezgian (Haspelmath 1993: 390)
 Pul kwadar-na luhu-z buba k'wal-er-aj aqud-iz
 money lose-PART say-ADVR father house-PL-INEL take.out-INF
 ze-da-ni?
 can-FUT-INT
 'Can we kick father out of the house because he has lost his money?'
 "Can we kick father out of the house saying: 'He has lost his money?'"

2.1.3.2. Adnominal constructions

Another type of indirect subordination excluded from the investigation concerns the use of adnominal constructions such as those illustrated in (5)–(6). In these an explicit or implicit nominal antecedent is modified by a nonfinite (5) or finite (6) adnominal construction. The entire construction therefore has to be interpreted not as a subordinate clause but as a noun phrase containing a subordinate clause. Again, constructions like these tend to grammaticalize, in the process of which either the head noun or the relativizing element or both are reinterpreted as a conjunction or adposition, turning the indirectly subordinated clause into a directly subordinated one.

- (5) Georgian
 Čven-i Tbilis-ši qopn-si dro-s bevr-i
 our-NOM Tbilisi-LOC being-GEN time-ACC a.lot-NOM
 da-v-l-i-e-t.
 PREV-1-drink-VA-AOR-PL
 'When we were in Tbilisi, we drank a lot.'
 "At the time of our being in Tbilisi, we drank a lot."

- (6) Irish
 Fuair mé amach faoin timpiste nuair a tháinig sí
 find:PST I out about accident when REL come:PST she
 abhaile.
 home
 'I found out about the accident when she came home.'

2.1.3.3. Appositional constructions

A third type of indirect subordination excluded from the investigation concerns constructions such as those illustrated in (7):

- (7) Finnish
 Se-n lisä-ksi, että ole-n kiireinen,
 it-GEN addition-TRNSL COMP COP-1SG busy
 passi-ni men-i vanha-ksi.
 passport-POSS:1SG go-PST old-TRNSL
 'Apart from the fact that I am too busy, my passport ran out of date.'
 "In addition to this, that I am too busy, my passport ran out of date."

In constructions like those in (7) the relational element, in this case a postposition, combines obligatorily with a pronominal element, which is coreferential with a clause with which it entertains an appositional relationship. This clause is thus not directly, but indirectly subordinated by the relational element. Characteristic of this type of construction is the intonation break between the pronominal expression and the indirectly subordinated clause. Note that grammaticalization of this type of construction may lead to the incorporation of the pronominal element into a conjunctive expression, in which case the indirectly subordinated clause turns into a directly subordinated one. As Kortmann (this volume) shows, this formation pattern of adverbial conjunctions is widely attested in Europe, and can be illustrated by cases like French *parce que*. The French example also shows that incorporation of the pronominal element goes hand in hand with the loss of the intonation break characteristic of the appositional strategy.

2.2. Expression formats

2.2.1. Classification

As regards the expression formats of adverbial and complement clauses, this paper concentrates on the form the verb takes in the subordinate construction

under consideration. Other aspects of the expression of subordinate constructions, such as word order, the subordinating element, the expression of arguments, etc. are not taken into consideration. Verb forms in subordinate clauses may be classified in two different ways: functionally and formally. The main parameter in a formal classification would involve the category of finiteness. Given the many problems involved in determining whether or not a verb form should be considered finite in a certain language, particularly if one wants to adopt crosslinguistically valid criteria (see, e. g., Koptjevskaja 1988), this paper takes the functional perspective. In a functional classification verb forms are classified in terms of the syntactic functions they may fulfil within the language. Since these syntactic functions are crosslinguistically identifiable, the resulting classification may serve as an instrument for typological research. In this paper the functional classification given in (8) will be used.

- (8) 1. Independent: An independent verb form is one which may be used in main clauses.
 2. Dependent: A dependent verb form is one which is used in subordinate constructions only.
 2.1. Predicative: a predicative verb form is a dependent verb form which is used as the predicate of a subordinate construction.
 2.2. Attributive: An attributive verb form is a dependent verb form which, apart from being the predicate of the subordinate construction, is used directly as an attribute within a noun phrase.
 2.3. Adverbial: An adverbial verb form is a dependent verb form which, apart from being the predicate of the subordinate construction, is used directly as an adverbial modifier.

Given the fact that only adverbial clauses are studied in this paper, attributive verb forms will not be considered any further.

As stated above, by subdividing verb forms into independent and dependent ones the problem of distinguishing between finite and nonfinite verb forms is avoided. Although it is true that verb forms that can be used in main clauses can be considered finite in virtually all cases, the reverse is not true, i. e., verb forms that can be used in subordinate clauses only, although generally nonfinite, may be finite as well. Thus, the so-called "nonfinite" verb forms in Abkhaz, which show many properties of finite verbs, will here be classified as dependent verb forms, since they cannot be used in main clauses, just as infinitives, verbal nouns, and converbs, all nonfinite verb forms, cannot be used in main clauses and will thus be classified as dependent verb forms. Similarly, the conditional mood forms in Turkish, which would count as finite by most cri-

teria, will be classified as dependent adverbial verb forms here, since they can be used in subordinate adverbial clauses only, and thus receive the same treatment as the formally different but functionally equivalent nonfinite conditional converbs in, for example, Chuvash. A similar approach may be found in Stassen (1985), who distinguishes between "deranked constructions", i. e., constructions containing a dependent verb form, and "balanced constructions", i. e., constructions containing an independent verb form.

The subdivision between predicative and adverbial dependent verb forms is motivated by the fact that predicative verb forms require additional material to serve an adverbial function, whereas adverbial verb forms do not. This is illustrated in (9):

- (9) Chuvash
- a. Nina kil-e kil-ne hæssan əp'e Boris
 Nina home-DAT come-PST:NR after I Boris
 kil-ni sineen pel-t-em.
 come-PST:NR about know-PST-1SG
 'I knew about Boris's arrival after Nina came home.'
- b. Nina kil-e kil-sen əp'e Boris kil-ni
 Nina home-DAT come-SIM:ADVR I Boris come-PST:NR
 sineen pel-t-em.
 about know-PST-1SG
 'I knew about Boris's arrival when Nina came home.'

In (9 a) the nominalized verb form *kilne* 'having come' acquires an adverbial function only by virtue of the presence of the postposition *hæssan* 'after', whereas the adverbialized verb form *kilsen* 'coming' in (9 b) is put to adverbial usage directly.

In some languages one and the same verb form may have both the predicative and the adverbial usage. Consider the following examples from Lezgian:

- (10) Lezgian
- a. Nabisata-z ktab k'el-iz k'an-zawa.
 Nabisat-DAT book read-INF want-IMPF
 'Nabisat wants to read a book.'
- b. Axpа čun ġweč'i wac'u-n qerexda-l jal jağ-iz
 then we:ABS small river-GEN bank-LOC rest hit-INF
 acuq'-na.
 sit.down-AOR
 'Then we sat down at the bank of a small river to rest.'

In (10 a) the infinitival form *k'eliz* 'to read' serves the function of predicate of the complement clause. In (10 b) the infinitival form *jal jağiz* 'rest' acquires an adverbial interpretation of Purpose without there being any additional morphological material to express this function. In cases such as this one, in which one form has more than one function, the verb form is classified in two different ways.

2.2.2. Problematic cases

The classification of verb forms in terms of the classification given above is problematic in a number of cases. These cases are mentioned in this section, together with the solution that was adopted to deal with them.

(i) Within the class of adverbial verb forms a further subdivision is sometimes made (see, e. g., Nedjalkov, this volume) between specialized and contextual adverbial verb forms. A specialized adverbial verb form is one which expresses a specific adverbial function. An example is the Chechen verb form in *-šieñ*, which is used in the expression of Concession clauses only. A contextual adverbial verb form may express a whole range of adverbial functions. An example is the English verb form in *-ing*, which, depending on context, may be interpreted as expressing a whole array of adverbial functions, ranging from Manner to Condition. One of the problems in the analysis of contextual adverbial verb forms is to determine the range of functions such a verb form may have, and the contextual restrictions on the various interpretations. To avoid this problem in the present chapter, all adverbial verb forms have been treated as members of a single group of forms. Furthermore, contextual adverbial verb forms have been classified according to their basic interpretation, generally one of Simultaneity or Anteriority, and further contextually determined values have been neglected.

(ii) Subjunctives, insofar as these occur in the languages studied here, although particularly frequent in subordinate constructions, have several uses, mainly optative, adhortative, and hypothetical, in main clauses as well, and should thus be classified as independent verb forms. There are, however, considerable differences from language to language as regards the extent to which these forms may be used in main clauses, which might indicate that in some cases the verb forms involved should rather be classified as dependent ones. Since the data available made it impossible to capture the variation between languages within the present study, all subjunctives have been classified as independent verb forms whenever they showed at least some main clause uses.

(iii) In several languages, such as Basque, Dutch, German, and Spanish, infinitives may be used in the expression of direct commands, as in the following example:

- (11) Dutch
 Hier-komen jij!
 here-come.INF you
 'Come here!'

These uses could be taken as an indication that in these languages infinitives are independent verb forms. However, since these uses are restricted and heavily dependent on contextual interpretation, whereas infinitives are systematically and freely used in subordinate constructions, the verb forms involved have been classified as dependent ones.

2.3. The sample

All typological observations made in this paper are based on a sample of 45 languages, which were selected using the method of Rijkhoff et al. (1993) outlined in chapter 1, and which contains the minimal 25-language sample used in this book as a subset. The languages are distributed across the European phyla as shown in Table 1.

For five extinct (sub)phyla, Baltic-West, Celtic-Continental, Etruscan, Faliscan, and Osco-Umbrian, and one extant Caucasian subphylum, Svan, no data could be obtained. As a result, the actual sample contains 39 languages. Note that this sample deviates in one respect from the one presented in Chapter 1, in that I have substituted Megrelian for Laz, for which I could not obtain sufficient data. Note furthermore that the data for Gothic are far from complete, but have nevertheless been listed.

Apart from the sample languages, data were obtained for 14 additional languages, which are listed in the third column in Table 1. The data from this additional set of languages will be used to verify the generalizations arrived at on the basis of the data from the sample languages, and to further substantiate claims as regards the areal distribution of the phenomena studied.

3. Semantic types of adverbial clauses

After the preliminary issues I now turn to an investigation of the parameters along which the semantic types of adverbial clauses may be classified.

Table 1. The sample

Genetic stock	Sample languages	Additional languages
Semitic-West-Central (2)		
Arabic (1)	Maltese	
Aramaic (1)	Assyrian	
Altaic Proper (4)		
Oirat-Kalmyk (1)	Kalmyk	
Turkic (3)		
Common Turkic (2)		
Southern (1)	Turkish	
Western (1)	Karachai-Balkar	
Bolgar (1)	Chuvash	
Caucasian (8)		
North (5)		
Northeast (3)		
Dagestan (2)		
Lezgian (1)	Lezgian	Agul, Rutul, Tabasaran, Tsakhur
Avari-Andi-Dido (1)	Tsez	Avar, Bezhta
Lak-Dargwa		Lak
Nax (1)	Chechen	
Northwest (2)		
Abkhaz-Abaza (2)	Abkhaz	
Circassian (1)	Kabardian	
South (3)		
Georgian (1)	Georgian	
Zan (1)	Megrelian	
Svan (1)	—	
Indo-European (25)		
Germanic (5)		
North (2)		
East (1)	Danish	Swedish
West (1)	Faroese	
West (2)		
Continental (1)	Dutch	German
North Sea (1)	English	
East (1)	Gothic	
Italic (6)		
Latino-Faliscan (5)		
Romance (3)		
Continental (2)		
Western (1)	Spanish	Catalan, Italian
Eastern (1)	Rumanian	
Sardinian (1)	Sardinian	
Latin (1)	Latin	
Faliscan (1)	—	

Table 1. (continued)

Genetic stock	Sample languages	Additional languages
Osc-Umbrian (1)	—	
Balto-Slavic (5)		
Slavic (3)		
East (1)	Russian	
West (1)	Polish	
South (1)	Bulgarian	Slovene
Baltic (2)		
East (1)	Lithuanian	Latvian
West (1)	—	
Greek (1)	Greek	
Indo-Iranian (3)		
Iranian (2)		
Western (1)	Kirmanji	
West-Scythian (1)	Ossetic	
Romani (1)	Romani	
Armenian (1)	Armenian	
Albanian (1)	Albanian	
Celtic (3)		
Insular (2)		
Goidelic (1)	Irish	
Brythonic (1)	Welsh	
Continental (1)	—	
Basque(1)	Basque	
Etruscan (1)	—	
Uralic (4)		
Samoyed (1)	Nenets	
Finno-Ugric (3)		
Finnic (2)		
Permic (1)	Udmurt	
North Finnic (1)	Finnish	Estonian
Ugric (1)	Hungarian	

3.1. Entity types

The first parameter along which the semantic types of adverbial clauses can be classified is one which concerns the entity type designated by the adverbial clause. Extending the analysis proposed in Lyons (1977: 442–447), linguistic units may refer to entities of five different types, as listed in Table 2.

An individual is a first order entity. It can be located in space and can be evaluated in terms of its existence. A state of affairs, or event, is a second order

Table 2. Entity types

Entity type	Description	Evaluation
Zero order	Property or relation	Applicability
First order	Individual	Existence
Second order	State of affairs	Reality
Third order	Propositional content	Truth
Fourth order	Speech act	Informativeness

entity. It can be located in space and time and can be evaluated in terms of its reality. A propositional content is a third order entity. It can be located neither in space nor in time and can be evaluated in terms of its truth. A speech act is a fourth order entity. It locates itself in space and time and can be evaluated, among other things, in terms of its informativeness. Finally, zero order entities are properties or relations, which have no independent existence, but have to be predicated of other types of entity, and can thus only be evaluated in terms of the appropriateness of their application to those other types of entity. Thus, properties such as colour, size, and weight can only be appropriately predicated of first order entities; properties such as truth values can only be appropriately predicated of third order entities, etc. The most problematic and at the same time most crucial distinction here is the one between states of affairs, or events, and propositional contents. Unlike states of affairs, propositional contents can be asserted, known, denied or questioned, i. e., "... they are entities of the kind that may function as the objects of such so-called propositional attitudes as belief, expectation and judgement" (Lyons 1977: 445). Thus, a second order is an extensional object, a propositional content an intensional object. Propositional contents are mental constructs, thoughts about states of affairs, that only exist in the mind of their user, are user-dependent. States of affairs exist whether they are thought about or not, and are user-independent. Other pairs of terms which have been used to capture the same distinction between states of affairs and propositional contents include "event" and "fact" (Vendler 1967), "situation" and "attitude" (Barwise & Perry 1983), and "circumstance" and "thought" (Aronszajn 1988).

Within the context of adverbial subordination first order entities do not play a part, since they can only be expressed by means of noun phrases, not by means of clauses. The other four types do show up, however, in the form of adverbial clauses. Consider examples (12)–(15):

- (12) They escaped by sliding down a rope. (Means – zero order)

- (13) The fuse blew because we had overloaded the circuit/because of our overloading the circuit. (Cause – second order)
- (14) Jenny went home because her sister would visit her. (Reason – third order)
- (15) Jenny isn't here, for I don't see her. (Explanation – fourth order)

Roughly speaking, all of these examples are of a causal nature, yet they are all of a different type. The differences between them can be understood in terms of the entity types that these constructions designate.

The difference between (12) and (13) is that in (12) the adverbial clause describes a secondary relation in which one of the main clause participants is engaged, the entire clause thus describing a single event, whereas in (13) the adverbial clause describes an independent event in relation to which the occurrence of the main clause event can be understood. The crucial difference is thus that (12) describes a complex but single event, whereas (13) describes two independent events. This difference between the two constructions is reflected in the fact that in (12) there is obligatory argument-sharing between the two predicates, as shown in (16), whereas in (13) the arguments are selected independently:

- (16) *They escaped by my sliding down a rope.

The difference between Cause and Reason is in fact one that Lyons (1977) adduces to substantiate the distinction he makes between second and third order entities,¹ that is, between states of affairs and propositional contents. In (13) the subordinate clause describes the event causing the main clause event, without there being any intentional involvement on the part of an agent in the main clause event. In (14) the Reason adverbial does not cause the main clause event in any literal sense, but represents the consideration, idea, i. e., the propositional content that led a participant in the main clause event to engage in that main clause event.

There are a number of differences in the behaviour of (13) and (14) that reflect the differences between the entity types they designate. To give one example, Reason clauses being propositional, they admit the expression of a propositional attitude, whereas Cause clauses do not:

- (17) Jenny went home because her sister might visit her.
- (18) *The fuse blew because we might have overloaded the circuit.

The difference between the Reason in (14) and the Explanation in (15) (see also Bolkestein 1991) is that whereas the source of the Reason in (14) is the main clause participant Jenny, the source of the Explanation in (15) is the speaker. Consequently, the adverbial clause cannot be interpreted as the Reason for which the main clause event took place. Rather, it presents the considerations that led the speaker to arrive at the conclusion contained in the main clause, and can thus be seen as constituting a separate speech act.

Since Explanation clauses have an illocutionary component, illocutionary modifications may be expressed within them, whereas this is not the case with Reason clauses:

- (19) Jenny isn't here, for, honestly, I don't see her.
- (20) *Jenny went home because, frankly, her sister would visit her.

The classification of entity types given above forms the basis for the implicational hierarchy in (21), which will be used to describe the distribution of expression formats in § 4.

- (21) Entity Type Hierarchy
zero order > second order > third order > fourth order

The English sentences in (12)–(15) may serve as a first illustration of the relevance of this hierarchy for the expression of adverbial clauses: Means (zero order) is expressed by a dependent verb form only, Cause (second order) is expressed by both independent and dependent forms, Reason (third order) and Explanation (fourth order) are expressed by independent forms only, where in the latter case an intonation break between main and subordinate clause is obligatory.

3.2. Time-Dependency

Consider now the following examples from Estonian:

- (22) Estonian
a. Kaitse.kork põle-s läbi, sest ol-i-me
safety.plug burn-PST through because COP-PST-1PL
juhtme-d üle.koorma-nud.
conductor-PL over.load-PART:PST
'The fuse blew because we overloaded the circuit.'

- b. Tema koju tul-les sa-i-n õnnetuse-st
 3SG:GEN home come-ADVR get-PST-1SG accident-ELAT
 tea-da.
 know-INF
 'I learned about the accident when she came home.'

The adverbial clauses in (22 a–b) both describe states of affairs, i. e., second order entities. Yet there is a difference as regards their expression: the Cause clause in (22 a) has a finite expression only, the Simultaneity clause in (22 b) has a nonfinite expression only. This shows that an additional parameter has to be invoked.

The crucial difference between Cause and Simultaneity clauses, and between several other pairs of adverbial clauses, as will be shown later, can be described in terms of the concept of time dependency (Noonan 1985). Note that in both (22 a) and (22 b) main and subordinate event are simultaneous. But whereas this is necessarily the case in Simultaneity clauses, it is not in the case of Cause clauses, as shown by the following examples:

- (23) a. The streets are wet because it is raining.
 b. The streets are wet because it has been raining.
- (24) a. He cut himself while shaving.
 b. *He cut himself while having shaved.

Thus, Simultaneity clauses have dependent time reference (DTR), whereas Cause clauses have independent time reference (ITR).

We may now formulate a second hierarchy describing the distribution of expression formats in adverbial clauses, which is given in (25):

- (25) Time-Dependency Hierarchy
 dependent time reference (DTR) > independent time reference (ITR)

The parameter of time dependency is relevant within the class of second order adverbials only, since zero order adverbials necessarily have dependent time reference, whereas third and fourth order adverbials necessarily have independent time reference. Thus, the adverbial relations distinguished so far are related in the way indicated in Figure 1.

Zero order	Second order	Third order	Fourth order
Means	ITR Cause	Reason	Explanation
	DTR Simultaneity		

Figure 1. The Entity Type Hierarchy and the Time-Dependency Hierarchy

3.3. Factuality

Consider now the following examples from Lithuanian:

- (26) Lithuanian
- a. Aš su-zin-oja-u apie jo atvykim-ą kai
 I:NOM PF-know-PST-1SG about his arrival-ACC:SG as
 ji atėj-o namo.
 she:NOM come-PST.3PL home
 'I heard about his arrival when she came home.'
- b. Aš su-zin-oja-u apie jo atvykim-ą jai
 I:NOM PF-know-PST-1SG about his arrival-ACC:SG she:DAT
 grįz-us namo.
 return-PST.ADVR home
 'I heard about his arrival when she came home.'
- c. Mes atneš-ė-mė šit-ą suknel-ę kad
 we:NOM bring-PST-1PL this-ACC:F:SG dress-ACC:F:SG COMP
 tu galė-tu-m ją apsivilk-ti per gimtadien-į
 you:NOM can-SUBJ-2SG it:ACC put.on-INF on birthday-ACC
 'We brought this shirt for you to wear it on your birthday.'

In the Simultaneity clauses in (26 a–b) the event described in the adverbial clause is necessarily simultaneous with the main clause event; in the Purpose clause in (26 c) the event described in the adverbial clause is necessarily posterior to the main clause event. There is a difference as regards the expression formats that are used in those cases in which the main and subordinate clause have a different subject: an adverbial clause of Simultaneity may be expressed through independent (26 a) and dependent (26 b) verb forms, but an adverbial clause of Purpose only through an independent (26 c) verb form. Both Simultaneity clauses (26 a–b) and Purpose clauses (26 c) designate second order entities with dependent time reference, but they differ with respect to their expression. This shows that an additional parameter has to be invoked. The crucial differ-

ence between Simultaneity and Purpose clauses which is responsible for the differences in their expression is a difference in factuality: Simultaneity clauses are factual, i. e., describe an event that is considered to be real from the perspective of the temporal reference point of the main clause, whereas Purpose clauses are nonfactual, i. e., describe an event that is considered to be unreal from the perspective of the temporal reference point of the main clause. This observation is captured in the Factuality Hierarchy given in (27):

- (27) Factuality Hierarchy
 factual > nonfactual

The factual/nonfactual opposition not only applies to time-dependent events, but constitutes an independent parameter that can be applied across the various entity types distinguished earlier. Table 3 shows the results of such a cross-classification.

Table 3. Entity type and factuality

	Factual	Nonfactual
Zero order	Applied	Not applied
Second order	Real	Unreal
Third order	True	Not true
Fourth order	Assertive	Nonassertive

Within the adverbial domain the combinations listed in Figure 2 can be distinguished. The nonfactual adverbial clause types are illustrated in examples (28)–(30).

	Zero order	Second order	Third order	Fourth order
Factual	Means	ITR Cause	Reason	Explanation
		DTR Simultaneity		
Nonfactual		ITR Potential circumstance	Potential condition	
		DTR Purpose		

Figure 2. Factual and nonfactual adverbial clauses

- (28) He won't get the job if he has no qualifications. (Potential Condition – third order)
- (29) I'll come tomorrow in case Ann wants me. (Potential Circumstance – second order ITR)
- (30) I left early to catch the train. (Purpose – second order DTR)

The difference between (28) and (29) is that, whereas in (28) the adverbial clause describes a condition on the validity of the main clause,² the one in (29) describes an event potentially accompanying the main clause event. One of the effects of this difference is that the event described in the main clause in (29) occurs independently of whether or not the potential circumstance occurs, whereas in (28) the main clause is only valid if the condition is valid as well. The difference between (29) and (30) is that Potential Circumstance adverbial clauses have independent time reference, as illustrated in (31) and (32), whereas Purpose adverbial clauses have dependent time reference, as illustrated in (33):

- (31) I'm wearing my boots in case it rains.
- (32) I'm wearing my boots in case it has rained.
- (33) *I left early to have caught the train.

3.4. Presupposedness³

Consider the differences between the following sets of sentences:

- (34) Armenian
- a. Apahovič'-ə payt'-ec' vorovhetev menk' šat
 fuse-DEF blow:AOR-3SG because 1PL much
 eink' canraber-el hoasnk'-ə
 AUX:PST:1PL load:AOR-PF:PART circuit-DEF
 'The fuse blew because we had overloaded the circuit.'
- b. Baci nranic vor yes šat zbajvac em
 apart from COMP 1SG much busy COP:PRS:1SG
 im anjnagir-ə žamketanc' e.
 POSS:1SG passport-DEF out.of.date COP:PRS:3SG
 'Apart from the fact that I'm too busy, my passport is out of date.'

- c. Bac'i čaş ep'-el-uc' yes aygin em
 apart dinner cook-INF-ABL 1SG garden AUX:PRS:1SG
 xnam-um.
 look-after-IMPF:PART
 'Apart from cooking dinner, I look after the garden.'

(35) Spanish

- a. El gato te arañará, si le tiras
 the cat you scratch:3SG:FUT:IND if it pull:2SG:PRS:IND
 d-el rabo.
 of-the tail
 'The cat will scratch you if you pull its tail.'
- b. Si me hubiera dicho que le
 if me have:3SG:PST:SUBJ say.PART COMP him
 acompañara, te habría
 accompany:1SG:PST:SUBJ you have:1SG:COND:IND
 avisado.
 inform.PART
 'If he had told me to go with him, I would have let you know.'
- c. De habe-r-me dicho que le
 PREP have-INF-me tell.PART that him
 acompañara, te habría
 accompany:1SG:PST:SUBJ you have:1SG:COND:IND
 avisado.
 inform:PART
 'If he had told me to go with him, I would have let you know.'

The Cause clause in (34 a) and the Addition clauses in (34 b–c) share a number of properties: they designate second order entities, they have independent time reference, and they are factual. Still there is a difference as regards their expression in Armenian: Addition clauses can be expressed by independent and dependent verb forms, Cause clauses by independent verb forms only.

Similarly, the Potential and Unreal Conditional clauses in (35 a) and (35 b–c) have in common that they designate third order entities, and are nonfactual. Yet in Spanish the Potential Condition in (35 a) can be expressed by independent verb forms only, whereas the Unreal Condition in (35 b–c) can be expressed by both independent and dependent verb forms.

The differences between these clauses can be interpreted as differences with regard to their presupposedness: an Addition clause is factive, that is, presup-

posed to be factual, a Cause clause is not. An Unreal Condition is contrafactive, that is, presupposed to be nonfactual, a Potential Condition is not. This difference is captured in the Presupposedness Hierarchy given in (36).

- (36) Presupposedness Hierarchy
 presupposed > nonpresupposed

This hierarchy applies to adverbials of various types. First of all, as shown by the examples, it can be applied within the factual and within the nonfactual domain. Secondly, it can be applied to adverbials designating both second and third order entities. Within the factual domain, presupposition leads to factivity, i. e., the presupposition that an event is real or that a propositional content is true. Within the nonfactual domain presupposition leads to contra-factivity, i. e., the presupposition that an event is unreal or that a propositional content is not true. Finally, within the class of adverbials designating second order entities, the hierarchy can be applied to adverbials with both dependent and independent time reference. If applied to the domain of adverbial subordination, the result is as in Figure 3.

		Zero order	Second order	Third order	Fourth order
Factual	Non-presupposed	Means	ITR Cause	Reason	Explanation
			DTR Simultaneity		
	Presupposed		ITR Addition	Concession	
			DTR Anteriority		
Non-factual	Non-presupposed		ITR Potential circumstance	Potential condition	
			DTR Purpose		
	Presupposed		ITR Unreal circumstance	Unreal condition	
			DTR Negative circumstance		

Figure 3. Semantic classification of adverbial clauses

Examples of factual presupposed adverbial clauses are (37)–(39):

- (37) After doing the cooking / After I did the cooking I looked after the garden. (Anteriority – second order DTR)
- (38) Apart from doing the cooking / Apart from the fact that I do the cooking I look after the garden. (Addition – second order ITR)
- (39) He got the job although he had no qualifications. (Concession – third order)

The time-dependent Anteriority clause in (37) designates an event which is temporally presupposed, that is, the main clause event can only be properly situated on the time axis if there has been a prior temporal localization of the event described in the adverbial clause. The time-independent Addition clause in (38) is introduced by a factive conjunction which characterizes the event this clause describes as being logically presupposed. This is reflected in the possibility of adding the subordinating phrase *the fact that* to the conjunction. The concessive clause in (39) describes a piece of information which the speaker presupposes to be true and in view of which the information contained in the main clause would not be expected.

The differences between presupposed and nonpresupposed factual adverbial clauses come out most clearly under modalization (see Hengeveld & Wanders 1997). Compare the examples of factual nonpresupposed adverbial clauses in (40)–(42) with the corresponding examples of factual presupposed adverbial clauses in (43)–(45):

- (40) He probably cut himself while shaving.
- (41) The fuse probably blew because we had overloaded the circuit.
- (42) Jenny probably went home because her sister intended to visit her.
- (43) He probably looked after the garden after doing the cooking.
- (44) He probably looked after the garden apart from doing the cooking.
- (45) He probably looked after the garden even though he had been doing the cooking.

In (40)–(42) the adverbial clause may fall within the scope of the modal adverb *probably*, in which case the content of the adverbial clause is part of the modalized information. In (43)–(45), on the other hand, it is just the content of the main clause that is modalized. This difference follows directly from the fact that the adverbial clauses in (43)–(45) have a predetermined factuality value which does not permit further modalization.

The difference between second order Addition clauses and third order Concession clauses⁴ is reflected in their behaviour in questions, as is demonstrated in (46) and (47):

- (46) Does he look after the garden apart from doing the cooking?
- (47) *Did he get the job although he had no qualifications?

Whereas (46) is an acceptable question, (47) is acceptable only as an echo question, paraphrasable as “Do you really want to say/imply: ‘He got the job although he had no qualifications’?”. This is due to the fact that through the third order factive conjunction *although* the speaker commits himself to the truth of the adverbial clause, which makes it unsuitable to occur as part of an open question, whereas the second order factive conjunction *apart from* does not express truth commitment with respect to the embedded propositional content but simply implies the reality of the subordinate event.

Examples of contra-factive adverbial clauses are (48)–(50):

- (48) She left without saying goodbye. (Negative Circumstance – second order DTR)
- (49) She always greets me as if I were her best friend. (Unreal Circumstance – second order ITR)
- (50) He wouldn't get the job if he had no qualifications. (Unreal Condition – third order)

The adverbial clauses in (48) and (49) are introduced by contra-factive conjunctions which characterize the events these clauses describe as presupposed not to be real. The Unreal Condition in (50) describes a proposition presupposed by the speaker to be false, and thus forms the opposite of the concessive clause in (39).

The differences between presupposed and nonpresupposed nonfactual adverbial clauses can be demonstrated more easily than in the case of factual adver-

bial clauses. In (48)–(50) the reality or truth value assigned to the actual content of the subordinate clause (excluding the conjunction) is in each case the opposite of what the adverbial clause (including the conjunction) expresses. Thus, according to the speaker, in (48) it is not the case that *she says goodbye*, in (49) it is not the case that *I am her best friend*, and in (50) it is not true that *he has no qualifications*.

Note that under this analysis the following sentences are interpreted differently:

- (51) a. She left without saying goodbye.
b. She left while not saying goodbye.

The second clause is simply a Simultaneity clause which happens to contain a negative element but is not contrafactive, since the content of the subordinate clause corresponds to what the adverbial clause expresses. In some languages the only way to express the equivalent of (51 a) would be to use the equivalent of (51 b). These languages thus do not have clauses of Negative Concomitance. A case in point is Russian:

- (52) Russian
Ona uš-l-a ne skaza-v "Do svidanija".
she leave-PST-F NEG say-ADVR goodbye
'She left without saying goodbye.'
'She left not saying goodbye.'

3.5. Key examples

To round off this section on the semantic classes of adverbials, I present once again examples of the adverbial clauses that form the basis of the present investigation. For each type of adverbial information is given in parentheses on the semantic type of subordinate construction it instantiates. It should be stressed once more that for many of these semantic types other types of adverbial clause could have been taken as their instantiation, and that therefore this list is not meant to be an exhaustive inventory of types of adverbial clause.

Means (factual – nonpresupposed – zero order)

- (53) They escaped by sliding down a rope.

Simultaneity (factual – nonpresupposed – second order – DTR)

- (54) He cut himself while shaving.

Cause (factual – nonpresupposed – second order – ITR)

- (55) The fuse blew because of our overloading the circuit.

Reason (factual – nonpresupposed – third order)

- (56) Jenny went home because her sister would visit her.

Explanation (factual – nonpresupposed – fourth order)

- (57) Jenny isn't here, for I don't see her.

Anteriority (factual – presupposed – second order – DTR)

- (58) After doing the cooking I looked after the garden.

Addition (factual – presupposed – second order – ITR)

- (59) Apart from doing the cooking I look after the garden.

Concession (factual – presupposed – third order)

- (60) He got the job although he had no qualifications.

Purpose (nonfactual – nonpresupposed – second order – DTR)

- (61) I left early to catch the train.

Potential circumstance (nonfactual – nonpresupposed – second order – ITR)

- (62) I'll come tomorrow in case Ann wants me.

Potential condition (nonfactual – nonpresupposed – third order)

- (63) He won't get the job if he has no qualifications.

Negative circumstance (nonfactual – presupposed – second order – DTR)

- (64) She left without saying goodbye.

Unreal circumstance (nonfactual – presupposed – second order – ITR)

- (65) She always greets me as if I were her best friend.

Unreal condition (nonfactual – presupposed – third order)

(66) He wouldn't get the job if he had no qualifications.

4. The expression of adverbial clauses

4.1. Introduction

In § 3 four semantically based hierarchies have been defined which will now all be shown to be relevant to the distribution of independent and dependent verb forms. The hierarchies interact in various ways, as has been demonstrated earlier, and as is indicated in Figure 3. This interaction has to be taken into consideration when analysing the data. The only way in which this can be achieved is to compare categories pertaining to one hierarchy for each of the domains defined by the other hierarchies. Thus, to give an example, the Entity Type Hierarchy will be studied for each of the domains defined by the Factuality, Time-Dependency, and Presupposedness Hierarchies. Similarly, the effects of the Factuality Hierarchy will be studied separately for all relevant entity types defined by the Entity Type Hierarchy, etc. Given the complications involved in isolating the many categories concerned, the following sections cannot be understood without frequent reference to Figure 3. The data will be presented in § 4.2, the various hierarchies and the interactions between them will be studied in § 4.3.

4.2. The data

Table 4 lists all the relevant data for the languages of the sample. Table 5 does the same for the additional languages investigated. In both tables a "+" indicates that a dependent verb form is used to express the adverbial relation under consideration, a "-" that an independent verb form is used to express this adverbial relation, a "P" that the adverbial relation can be expressed by paratactic means only, a "Q" that it can be expressed by a quotative construction only, an "S" indicates that the adverbial relation of Negative Circumstance can be expressed via Simultaneity only, and a blank that no information could be obtained on a given adverbial relation. Tables 4 and 5 serve as master tables for the sections to follow, in which only illustrative subsets will be presented to substantiate the claims made. These claims may then be checked by the reader against the data presented in Tables 4 and 5.

4.3. The distribution of expression formats

4.3.1. The Entity Type Hierarchy

Following the classification given in Figure 3, the Entity Type Hierarchy has to be checked independently for each of the following domains: factual/nonpresupposed, factual/presupposed, nonfactual/nonpresupposed, nonfactual/presupposed. Within each of these domains a choice has furthermore to be made between the time-dependent (DTR) or the time-independent (ITR) variant of the adverbial clauses designating second order entities. As a result, there are eight different ways of checking the Entity Type Hierarchy. Tables 6–13 give a selection of the data for each of the eight possibilities. What these tables show is that for each of the eight possible ways of evaluating the Entity Type Hierarchy the use of dependent and independent verb forms is governed by this hierarchy in the way indicated in (67):

(67) Entity Type Hierarchy
 zero order > second order > third order > fourth order
 dependent verb form > independent verb form

This hierarchy should be read in the following way: if a language uses a dependent verb form for the expression of an adverbial clause designating an entity of a certain order, then it will also use a dependent form for the expression of adverbial clauses designating entities of lower order, and vice-versa for independent verb forms. The hierarchy holds for the entire sample. Within the set of additional languages there are two counterexamples, as shown in Tables 10 and 12. In Italian adverbial clauses of Potential Circumstance and Unreal Circumstance are expressed through independent verb forms only, whereas clauses of Potential and Unreal Condition have both a dependent and an independent realization. The relevant examples of Potential Circumstance and Potential Condition are given in (68):

(68) Italian
 a. Verr-ò domani, caso.mai Anna ave-ss-e
 come:FUT-1SG tomorrow in.case Ann have-SUBJ:IMPF-3SG
 bisogno di me.
 need of me
 'I'll come tomorrow in case Ann needs me.'

Table 5. Dependent and independent verb forms in adverbial clauses – additional languages

Language	Means	Simul- taneity	Cause	Reason	Expla- nation	Ante- riority	Ad- dition	Con- cession	Purpose	Potential circum- stance	Potential con- dition	Negative circum- stance	Unreal circum- stance	Unreal con- dition
Aghul	+	+	+	+	+	+	+	+	+	+	+			+
Avar	+	+	+	+	+	+	+	+	+	+	+			+
Bezhta	+	+	+	+	P	+	+	+	+	+	+			+
Catalan	+	+	+	-	-	+	+	-	+	-	-	+/	-	-
Estonian	+	+	+	-	-	+	+	-	+	-	-	+/	-	-
German	+	+	+	+	-	+	+	+/	+/	-	-	+/	-	+/
Italian	+	+	+	+	-	+	+	+/	+/	-	-	+/	-	+/
Lak	+	+	+	+	+	+	+	+/	+/	-	-	+/	-	+/
Latvian	+	+	+	+	+	+	+	+	+	+	+			+
Rutul	+	+	+	+	P	+	P	-	+	-	-	S		+
Slovene	+	+	+	+	-	+	-	+	+	+	+			+
Swedish	+	+	+	+	-	+	+	+	+	+	+			+
Tabasaran	+	+	+	+	-	+	+	+	+	+	+			+
Tsakhur	+	+	+	+	+	+	+	+	+	+	+			+

- b. Il gatto ti graffie-rà se gli
 the:M:SG cat you:ACC scratch-FUT:3SG if to:him
 tir-i la coda.
 pull-IND:PRS:2SG the:F:SG tail
 'The cat will scratch you if you pull its tail.'
- c. A tira-r-gli la coda, il gatto ti
 COMP pull-INF-to:him the:F:SG tail the:M:SG cat you:ACC
 graffie-rà.
 scratch-FUT:3SG
 'The cat will scratch you if you pull its tail.'

In clauses of Potential Circumstance (68 a) subjunctive verb forms are used. In clauses of Potential Condition either indicative verb forms (68 b) or infinitives (68 c) occur. These facts thus constitute a counterexample to the Entity Type Hierarchy. It should be added, however, that the classification of subjunctives, the only verb forms used in clauses of Potential and Unreal Circumstance in Italian, is somewhat problematic. As has been argued in § 2.2.2., for lack of a better solution all subjunctives have been treated as independent verb forms in the present study, but the use of these forms in main clauses is often restricted, as it certainly is in Italian.

Table 6. The Entity Type Hierarchy: factual nonpresupposed ITR

Language	Zero order Means	Second order Cause	Third order Reason	Fourth order Explanation
Maltese	-	-	-	-
Bulgarian	+/	-	-	-
Finnish	+	-	-	-
Assyrian	+	+/	-	-
Sardinian	+	+/	+/	-
Chechen	+	+	+	+

Table 7. The Entity Type Hierarchy: factual nonpresupposed DTR

Language	Zero order Means	Second order Simultaneity	Third order Reason	Fourth order Explanation
Romani	-	-	-	-
Danish	+/	-	-	-
Lithuanian	+	+/	-	-
Irish	+	+	+/	-
Kabardian	+	+	+	+

Table 8. The Entity Type Hierarchy: factual presupposed ITR

Language	Second order Addition	Third order Concession
Bulgarian	-	-
Armenian	+/-	-
Lezgian	+	+

Table 9. The Entity Type Hierarchy: factual presupposed DTR

Language	Second order Anteriority	Third order Concession
Megrelian	-	-
Rumanian	+/-	-
Finnish	+	-
Irish	+	+/-
Karachai-Balkar	+	+

Table 10. The Entity Type Hierarchy: nonfactual nonpresupposed ITR

Language	Second order Potential circumstance	Third order Potential condition
Russian	-	-
English	+/-	-
Tsez	+	+
but: Italian	-	+/-

Table 11. The Entity Type Hierarchy: nonfactual nonpresupposed DTR

Language	Second order Purpose	Third order Potential condition
Greek	-	-
Basque	+/-	-
Estonian	+	-
Turkish	+	+

Table 12. The Entity Type Hierarchy: nonfactual presupposed ITR

Language	Second order Unreal circumstance	Third order Unreal condition
Georgian	-	-
Ossetic	+/-	-
Karachai-Balkar	+	+
but: Italian	-	+/-

Table 13. The Entity Type Hierarchy: nonfactual presupposed DTR

Language	Second order Negative circumstance	Third order Unreal condition
Greek	-	-
Danish	+/-	-
Georgian	+	-
Nenets	+	+

4.3.2. The Factuality Hierarchy

Following again the classification in Figure 3, Tables 14–17 show the data for the Factuality Hierarchy with respect to the use of dependent and independent verb forms for adverbials designating second and third order entities. Only adverbial clauses with independent time reference will be studied here, since, as will be shown below, the Time Dependency Hierarchy operates locally within each of the factuality domains, that is, for some languages it operates primarily in the factual domain, for others in the nonfactual domain, and for others still in both domains.

Tables 14–17 show that for adverbials designating both second and third order entities the use of dependent and independent verb forms is governed by the Factuality Hierarchy in the way indicated in (69):

- (69) Factuality Hierarchy
 factual > nonfactual
 dependent verb form > independent verb form

This hierarchy should be read in the following way: if a language uses a dependent verb form for the expression of a factual clause designating an entity of a

certain order, then it will also use a dependent verb form for the expression of a nonfactual adverbial clause designating an entity of the same order. For each of the four domains this hierarchy holds without exceptions for the sample languages and the additional languages.

Table 14. The Factuality Hierarchy: nonpresupposed second order ITR

Language	Factual Cause	Nonfactual Potential circumstance
Albanian	-	-
Assyrian	+/-	-
Tsez	+	+

Table 15. The Factuality Hierarchy: nonpresupposed third order

Language	Factual Reason	Nonfactual Potential condition
Georgian	-	-
Polish	+/-	-
Karachai-Balkar	+	+

Table 16. The Factuality Hierarchy: presupposed second order ITR

Language	Factual Addition	Nonfactual Unreal circumstance
Russian	-	-
Danish	+/-	-
Chechen	+	+

Table 17. The Factuality Hierarchy: presupposed third order

Language	Factual Concession	Nonfactual Unreal condition
Ossetic	-	-
Basque	+/-	-
Turkish	+	+

4.3.3. Interaction between Entity Type and Factuality Hierarchy

The Entity Type Hierarchy has been applied to the factual and nonfactual and presupposed and nonpresupposed domains in § 4.3.1. The Factuality Hierarchy has been applied to presupposed and nonpresupposed adverbials designating various entity types in § 4.3.2. The two hierarchies may now be combined into two two-dimensional ones, one for presupposed, the other for nonpresupposed adverbials. The one for nonpresupposed adverbials is given in Figure 4.

This two-dimensional hierarchy may be read in three ways: (i) horizontally, following the Entity Type Hierarchy, (ii) vertically, following the Factuality Hierarchy, but also (iii) diagonally, combining the horizontal and vertical parameters. In this combined approach the top left angle is most likely to be expressed by dependent verb forms, while the adverbial relation in the bottom right box is most likely to be expressed by independent verb forms. This leads to some strong predictions: (i) if a language expresses the adverbial relation of Means through independent verb forms, it will express all adverbial relations in Figure 4 by means of independent verb forms. This prediction is confirmed for all languages investigated, and exemplified by Bulgarian, Danish, and Romanian; (ii) if a language expresses Potential Conditions by means of dependent verb forms, it will express all adverbial relations in Figure 4, with the possible exception of Explanation, by means of dependent verb forms. This prediction is confirmed for all languages investigated, and exemplified by Abkhaz, Lezgian and Karachai-Balkar. In the same way, any adverbial relation in Figure 4 may be taken as the point of departure for predictions concerning the expression of adverbial relations combining the horizontal and vertical axis.

		Dependent > Independent			
		Zero order	Second order	Third order	Fourth order
Dependent v Independent	Factual	Means	Cause	Reason	Explanation
	Non-factual		Potential circumstance	Potential condition	

Figure 4. The Entity Type/Factuality Hierarchy: nonpresupposed

In Figures 5–8 some instantiations of the two-dimensional hierarchy in Figure 4 are given, which clearly show the combined effects of the two hierarchies. Passing from Figure 5 to Figure 8 one witnesses dependent verb forms moving

into the system along the Entity Type Hierarchy, where the nonfactual domain often lags one step behind in comparison with the factual domain. Figure 8 shows a feature common to many languages in which dependent verb forms are the only verb forms used in adverbial clauses: the use of a paratactic expression format for Explanation.

Bulgarian		Dependent > Independent			
		Zero order	Second order	Third order	Fourth order
Dependent ∇ Independent	Factual	Means +/-	Cause -	Reason -	Explanation -
	Non-factual		Potential circumstance -	Potential condition -	

Figure 5. The Entity Type/Factuality Hierarchy: nonpresupposed (Bulgarian)

Assyrian		Dependent > Independent			
		Zero order	Second order	Third order	Fourth order
Dependent ∇ Independent	Factual	Means +	Cause +/-	Reason -	Explanation -
	Non-factual		Potential circumstance -	Potential condition -	

Figure 6. The Entity Type/Factuality Hierarchy: nonpresupposed (Assyrian)

The corresponding combined Entity Type / Factuality Hierarchy for the Pre-supposed domain is given in Figure 9.

Again, this hierarchy may be read in three different ways: (i) horizontally, following the Entity Type Hierarchy, (ii) vertically, following the Factuality Hierarchy, and (iii) diagonally, combining both parameters. The strongest predictions that can be made on the basis of this two-dimensional hierarchy are the following: (i) if a language expresses the adverbial relation of Addition through independent verb forms, it will express all adverbial relations in Figure 9 by means of independent verb forms. This prediction is confirmed for all

Spanish		Dependent > Independent			
		Zero order	Second order	Third order	Fourth order
Dependent ∇ Independent	Factual	Means +	Cause +/-	Reason +/-	Explanation -
	Non-factual		Potential circumstance +/-	Potential condition -	

Figure 7. The Entity Type/Factuality Hierarchy: nonpresupposed (Spanish)

Chuvash		Dependent > Independent			
		Zero order	Second order	Third order	Fourth order
Dependent ∇ Independent	Factual	Means +	Cause +	Reason +	Explanation P
	Non-factual		Potential circumstance +	Potential condition +	

Figure 8. The Entity Type/Factuality Hierarchy: nonpresupposed (Chuvash)

		Dependent > Independent			
		Zero order	Second order	Third order	Fourth order
Dependent ∇ Independent	Factual		Addition	Concession	
	Non-factual		Unreal circumstance	Unreal condition	

Figure 9. The Entity Type/Factuality Hierarchy: presupposed

languages investigated and exemplified by Armenian, Catalan, and Kirmanji, to mention just a few; (ii) if a language expresses Unreal Conditions by means of dependent verb forms, it will express all adverbial relations in Figure 9 by means of dependent verb forms. This prediction is again confirmed for all but

one of the languages investigated and exemplified by Abkhaz and Spanish. Italian, which was a counterexample to the Entity Type Hierarchy in the non-factual domain, reappears here as the only counterexample to the two-dimensional hierarchy in Figure 9.

Some particularly interesting instantiations of Figure 9 are given in Figures 10–11.

Armenian		Dependent > Independent			
		Zero order	Second order	Third order	Fourth order
Dependent	Factual		Addition +/-	Concession -	
Independent	Non-factual		Unreal circumstance +/-	Unreal condition -	

Figure 10. The Entity Type/Factuality Hierarchy: presupposed (Armenian)

English		Dependent > Independent			
		Zero order	Second order	Third order	Fourth order
Dependent	Factual		Addition +/-	Concession +/-	
Independent	Non-factual		Unreal circumstance +/-	Unreal condition -	

Figure 11. The Entity Type/Factuality Hierarchy: presupposed (English)

4.3.4. The Presupposedness Hierarchy

Tables 18–23 show the data for the Presupposedness Hierarchy with respect to the use of dependent and independent verb forms. The Presupposedness Hierarchy is applied separately within the factual and nonfactual domain, and within each domain for adverbials designating second order DTR, second order ITR, and third order entities.

Tables 18–23 show that for all types of adverbial clauses studied the use of dependent and independent verb forms is governed by the Presupposedness Hierarchy as indicated in (70):

- (70) Presupposedness Hierarchy
 presupposed > nonpresupposed
 dependent verb form > independent verb form

This hierarchy should be read in the following way: if a language uses a dependent verb form for the expression of a nonpresupposed adverbial clause designating an entity of a certain order in a certain factuality domain, then it will also use a dependent verb form for the expression of a presupposed adverbial clause designating an entity type of the same order in the same factuality domain.

There are three counterexamples to this claim in Table 22, which involves the expression of Unreal Circumstances in Basque, Irish, and Welsh. In all three languages only independent verb forms may be used in the expression of these adverbial clauses, whereas for clauses of Potential Circumstance both dependent and independent verb forms may be used. This is illustrated for Irish in the following examples.

- (71) Irish
- a. Bíonn rotha spáráilte liom ar eagla go
 be:PRS:HAB wheel spare with:me in case COMP
 bhfaighinn polladh.
 get:COND puncture
 'I carry a spare wheel in case I get a puncture.'
- b. Bíonn rotha spáráilte liom ar eagla polladh a
 be:PRS:HAB wheel spare with:me in case puncture to
 fháil.
 get:VN
 'I carry a spare wheel in case I get a puncture.'
- c. Beannaíonn sí dom i gcónaí amhail is dá mba í
 bless:PRES she to:me always although and if be:COND her
 an cara is fearr agam
 the friend COP:PRS best at:me
 'She always greets me as if she were my best friend.'

Again it should be noted, however, that in all three languages the verb forms used in clauses of Unreal Circumstance are subjunctive or conjunctive forms, which have been classified as independent verb forms for reasons given in 2.2.2, but could perhaps have been classified as dependent verb forms.

It is furthermore interesting to note that the Presupposedness Hierarchy is only weakly confirmed for third order adverbial clauses both in the factual (Table 20) and the nonfactual (Table 23) domain, in the sense that in each case there is only one language making a distinction between the presupposed and the nonpresupposed adverbial clause. This is due to the fact that third order adverbial clauses are highly likely to be expressed by independent verb forms on the basis of the Entity Type Hierarchy, which somewhat obscures the effects of the other hierarchies.

Table 18. The Presupposedness Hierarchy: factual second order DTR

Language	Presupposed Anteriority	Nonpresupposed Simultaneity
Romani	-	-
Faroese	+/-	-
Finnish	+	+/-
Turkish	+	+

Table 19. The Presupposedness Hierarchy: factual second order ITR

Language	Presupposed Addition	Nonpresupposed Cause
Bulgarian	-	-
Armenian	+/-	-
Karachai-Balkar	+	+

Table 20. The Presupposedness Hierarchy: factual third order

Language	Presupposed Concession	Nonpresupposed Reason
Danish	-	-
English	+/-	-
Nenets	+	+

Table 21. The Presupposedness Hierarchy: nonfactual second order DTR

Language	Presupposed Negative circumstance	Nonpresupposed Purpose
Bulgarian	-	-
Georgian	+	+/-
Abkhaz	+	+

Table 22. The Presupposedness Hierarchy: nonfactual second order ITR

Language	Presupposed Unreal circumstance	Nonpresupposed Potential circumstance
Hungarian	-	-
Ossetic	+/-	-
Karachai-Balkar	+	+
but:		
Basque	-	+/-
Irish	-	+/-
Welsh	-	+/-

Table 23. The Presupposedness Hierarchy: nonfactual third order

Language	Presupposed Unreal condition	Nonpresupposed Potential condition
Sardinian	-	-
Spanish	+/-	-
Lezgian	+	+

4.3.5. Interaction between Entity Type and Presupposedness Hierarchy

In § 4.3.1. the Entity Type Hierarchy has been applied to presupposed and nonpresupposed adverbial clauses separately. In § 4.3.4. the Presupposedness Hierarchy has been applied to each entity type separately. The hierarchies have been applied separately for both the factual and nonfactual domains, and for second order DTR and ITR clauses. This leaves room to combine the Entity Type and Presupposedness Hierarchies into a two-dimensional hierarchy in four different ways: separate combined hierarchies may be defined for the factual and the nonfactual domains, and within each of these, the DTR or ITR variants of the second order adverbial clauses may be selected.

The resulting combinations are given in Figures 12–15. Note that for reasons of presentation the hierarchical relation between dependent and independent verb forms presented vertically is the inverse of the way in which it

Estonian		Dependent > Independent			
		Zero order	Second order	Third order	Fourth order
Independent ^ Dependent	Nonpre-supposed	Means +	Cause -	Reason -	Explanation -
	Pre-supposed		Addition +	Concession -	

Figure 12. The Entity Type/Presupposedness Hierarchy: factual ITR

English		Dependent > Independent			
		Zero order	Second order	Third order	Fourth order
Independent ^ Dependent	Nonpre-supposed	Means -	Simultaneity +/-	Reason -	Explanation -
	Pre-supposed		Anteriority +/-	Concession +/-	

Figure 13. The Entity Type/Presupposedness Hierarchy: factual DTR

Ossetic		Dependent > Independent			
		Zero order	Second order	Third order	Fourth order
Independent ^ Dependent	Nonpre-supposed		Potential circumstance -	Potential condition -	
	Pre-supposed		Unreal circumstance +/-	Unreal condition -	

Figure 14. The Entity Type/Presupposedness Hierarchy: nonfactual ITR

Spanish		Dependent > Independent			
		Zero order	Second order	Third order	Fourth order
Independent ^ Dependent	Nonpre-supposed		Purpose +/-	Potential condition -	
	Pre-supposed		Negative circumstance +/-	Unreal condition +/-	

Figure 15. The Entity Type/Presupposedness Hierarchy: nonfactual DTR

was presented in earlier tables. Thus, the adverbial clauses in the bottom row are more likely to be expressed by dependent verb forms than those in the upper row. The bottom left box represents the semantic type most likely to be expressed by dependent verb forms, and the top right box represents the semantic type most likely to be expressed by independent forms. In each figure the data for one language showing the effects of the interaction between the two hierarchies most clearly is incorporated.

What these figures show is that in some languages, following the Entity Type Hierarchy, nonpresupposed clauses lag one or more steps behind as regards the possibility of using dependent verb forms.

4.3.6. Interaction between Factuality and Presupposedness Hierarchy

In § 4.3.2 the Factuality Hierarchy has been applied to presupposed and nonpresupposed second and third order adverbial clauses separately. In § 4.3.4 the Presupposedness Hierarchy has been applied to factual and nonfactual second and third order adverbial clauses separately. The two hierarchies may now be combined into the two two-dimensional hierarchies given in Figures 16 and 17, one for adverbial clauses designating second order entities and one for those designating third order entities. Since the Factuality Hierarchy does not interact with the Time-Dependency Hierarchy, as will be shown in § 4.3.9, these two-dimensional hierarchies apply to adverbial clauses with independent time reference only. Note that in Figures 16 and 17 the relevant adverbial relations from Figure 3 have been reshuffled in such a way that their interaction can be shown most clearly. In these figures the bottom left box represents the semantic type

most easily expressed by means of dependent verb forms, the top right box the one most likely to be expressed by means of independent verb forms.

Hungarian		Dependent	>	Independent
		Factual		Nonfactual
Independent ^	Nonpre-supposed	Cause —		Potential circumstance —
	Pre-supposed	Addition +/-		Unreal circumstance —
Dependent				

Figure 16. The Factuality/Presupposedness Hierarchy: second order

The counterexamples to the Presupposedness Hierarchy in the nonfactual domain mentioned earlier, which concerned the expression of the adverbial relation of Unreal Circumstance in Basque, Irish, and Welsh, equally hold for the two-dimensional hierarchy in Figure 16. The remaining languages conform to the predictions captured in this Figure. The data for Hungarian are given to show one of the possible outcomes of the interaction between the two hierarchies.

The generalization captured in Figure 17 does not meet with any counterexamples. The data for Spanish are given by way of illustration.

Spanish		Dependent	>	Independent
		Factual		Nonfactual
Independent ^	Nonpre-supposed	Reason +/-		Potential condition —
	Pre-supposed	Concession +/-		Unreal condition +/-
Dependent				

Figure 17. The Factuality/Presupposedness Hierarchy: third order

4.3.7. The Time-Dependency Hierarchy

The last hierarchy to be examined is the Time-Dependency Hierarchy. As can be seen in Figure 3, this hierarchy can be applied independently in each of the domains that can be defined in terms of the Factuality and Presupposedness Hierarchies. Tables 24–27 present the relevant data for each of these domains.

These tables show for all subclasses of adverbial clauses studied that the use of dependent and independent verb forms is governed by the Time-Dependency Hierarchy, as indicated in (72):

- (72) Time-Dependency Hierarchy
 dependent time reference > independent time reference
 dependent verb form > independent verb form

4.3.8. Interaction between Entity Type and Time-Dependency Hierarchy

The Time-Dependency Hierarchy does not interact with the Entity Type Hierarchy, since, as has been argued in § 3.2, the opposition between adverbial clauses with dependent and independent time reference obtains within adverbial clauses designating second order entities only.

Table 24. The Time-Dependency Hierarchy: factual nonpresupposed

Language	DTR Simultaneity	ITR Cause
Danish	—	—
Greek	+/-	—
Kalmyk	+	+

Table 25. The Time-Dependency Hierarchy: factual presupposed

Language	DTR Anteriority	ITR Addition
Maltese	—	—
Greek	+/-	—
Lezgian	+	+

Table 26. The Time-Dependency Hierarchy: nonfactual nonpresupposed

Language	DTR Purpose	ITR Potential circumstance
Hungarian	—	—
Polish	+/-	—
Estonian	+	—
Turkish	+	+

Table 27. The Time-Dependency Hierarchy: nonfactual presupposed

Language	DTR Negative circumstance	ITR Unreal circumstance
Greek	–	–
Danish	+/-	–
English	+	+/-
Karachai-Balkar	+	+

4.3.9. Interaction between Factuality and Time-Dependency Hierarchy

The Time-Dependency Hierarchy does not interact with the Factuality Hierarchy either. Rather, it operates locally within the factual and nonfactual domains, within which it interacts with the Presupposedness Hierarchy, as has been shown in § 4.3.4. Some languages (Bulgarian, Greek, Hungarian) use dependent verb forms for the expression of Simultaneity in the factual domain, but not for Purpose in the nonfactual domain. For other languages (Danish, Faroese, Megrelian, Swedish), the reverse situation obtains, i. e., they use dependent verb forms for the expression of Purpose but not for Simultaneity. The former group of languages uses a simultaneous converb, i. e., an adverbial verb form for the expression of Simultaneity, the latter group uses an infinitive, i. e., a predicative verb form, for the expression of Purpose. Languages from the former group lack an infinitive. Languages from the latter group lack a simultaneous converb (Megrelian) or put severe restrictions on the adverbial use of their basically adjectival participles (Danish, Faroese, Swedish). Thus, the choice between the factual and nonfactual domain seems to be related to the availability of certain dependent verb forms in the languages involved.

4.3.10. Interaction between Presupposedness and Time-Dependency Hierarchy

In § 4.3.7 it has been shown that the Time-Dependency Hierarchy interacts with the Presupposedness Hierarchy, as a result of which the two can be combined into the two two-dimensional hierarchies, one for each of the factuality domains, given in Figures 18 and 19, in which the relevant adverbial relations from Figure 3 have been reshuffled in such a way that their two-dimensional interaction can be shown most clearly. In these figures the bottom left box represents the semantic type most easily expressed by means of dependent verb

forms, the top right box the one most likely to be expressed by means of independent verb forms.

Estonian		Dependent	>	Independent
		DTR		ITR
Independent	Nonpre-supposed	Simultaneity +		Cause –
Dependent	Pre-supposed	Anteriority +		Addition +

Figure 18. The Presupposedness/Time-Dependency Hierarchy: factual

All languages investigated conform to the predictions captured in Figure 18. The data for Estonian are given to show one of the many possible outcomes of the interaction between the two hierarchies.

The counterexamples to the Presupposedness Hierarchy in the nonfactual domain mentioned earlier, which concerned the expression of the adverbial relation of Unreal Circumstance in Basque, Irish, and Welsh, equally hold for the two-dimensional hierarchy in Figure 19. For the remaining languages Figure 19 makes the correct predictions. The data for Ossetic are given by way of illustration.

Hungarian Ossetic		Dependent	>	Independent
		DTR		ITR
Independent	Nonpre-supposed	Purpose +/-		Potential circumstance –
Dependent	Pre-supposed	Negative circumstance +		Unreal circumstance –

Figure 19. The Presupposedness/Time Dependency Hierarchy: nonfactual

4.3.11 Summary

Figure 20 now summarizes the observations made in the preceding sections with respect to the distribution of dependent and independent verb forms. In this figure the direction of an arrow indicates the increasing likelihood of the use of an independent verb form.

		Zero order	Second order	Third order	Fourth order
Factual	Non-presupposed	Means	ITR Cause ↑ DTR Simultaneity	Reason	Explanation
	Presupposed		ITR Addition ↑ DTR Anteriority		
Non-factual	Non-presupposed		ITR Potential circumstance ↑ DTR Purpose	Potential condition	
	Presupposed		ITR Unreal circumstance ↑ DTR Negative circumstance	Unreal condition	

Figure 20. Dependent and independent expression of adverbial clauses

The hierarchies captured in Figure 20 interact in various ways, as has been shown in § 4.3.3, § 4.3.5, § 4.3.6, § 4.3.7, and § 4.3.10. In fact they all freely interact, with the one exception that has been discussed in § 4.3.9.: The Time Dependency Hierarchy does not interact with the Factuality Hierarchy.

5. The distribution of expression patterns

5.1. Introduction

Variation between languages as regards the expression patterns they use within their systems of adverbial subordination can be described along each of the hierarchies presented in § 4. In this section this variation is described from both an areal and a genetic perspective. The main aim of this section is to show that the hierarchies for which evidence has been provided in § 4 allow one to subdivide Europe into a number of contiguous language areas which follow isoglosses that shift in various directions depending on the hierarchy that is taken as the point of departure.

This picture of Europe will be built up gradually. First the effects of the various hierarchies are studied one by one, where in each a selection of the

many possible (combinations of) features to be taken into account has been made which best shows the characterizing features of clusters of European languages. Then these partial mappings are integrated into an overall picture of what turn out to be the four main European areas: Western Europe, Central Europe, Eastern Europe, and the Southern Caucasus.

It is to be noted that, in the maps given in the following sections, only those languages for which (i) the relevant data are available and (ii) the adverbial clause(s) under consideration can be expressed via directly subordinated adverbial clauses (see 2.1) are represented.

5.2. Instantiations of the Entity Type Hierarchy

In the case of the Entity Type Hierarchy, I shall concentrate on the realization of factual nonpresupposed adverbial clauses, excluding the class of second order DTR clauses. The reason for this delimitation is that the effects of the Presupposedness, Time Dependency, and Factuality Hierarchies will be studied separately in following sections. Thus, I concentrate here on clauses expressing Means, Cause, Reason, and Explanation. The following language types can be distinguished:

- 1 a. languages which use independent verb forms exclusively in Cause and Reason clauses;
- 1 b. languages which use independent verb forms exclusively in Means clauses;
- 2 a. languages which use dependent and independent verb forms in Cause and Reason clauses;
- 2 b. languages which use dependent and independent verb forms in Explanation clauses;
- 3 a. languages which use dependent verb forms exclusively in Cause and Reason clauses;
- 3 b. languages which use dependent verb forms exclusively in Explanation clauses.

Type 1 languages correspond to what Stassen (1985: 76) calls "balancing languages", i. e., languages using independent verb forms in subordinate clauses; type 2 languages correspond to Stassen's (1985: 84) "conditionally de-ranking languages", i. e., languages using dependent verb forms in subordinate

clauses under certain conditions only; type 3 languages correspond to Stassen's (1985: 85) "absolute deranking languages", i. e., languages using dependent verb forms in subordinate constructions unconditionally. This terminology will be adopted in what follows. Note, however, that the use of these terms should be interpreted relative to the type of adverbial clause under investigation. For instance, a language that is conditionally deranking in Simultaneity clauses may be balancing in Reason clauses.

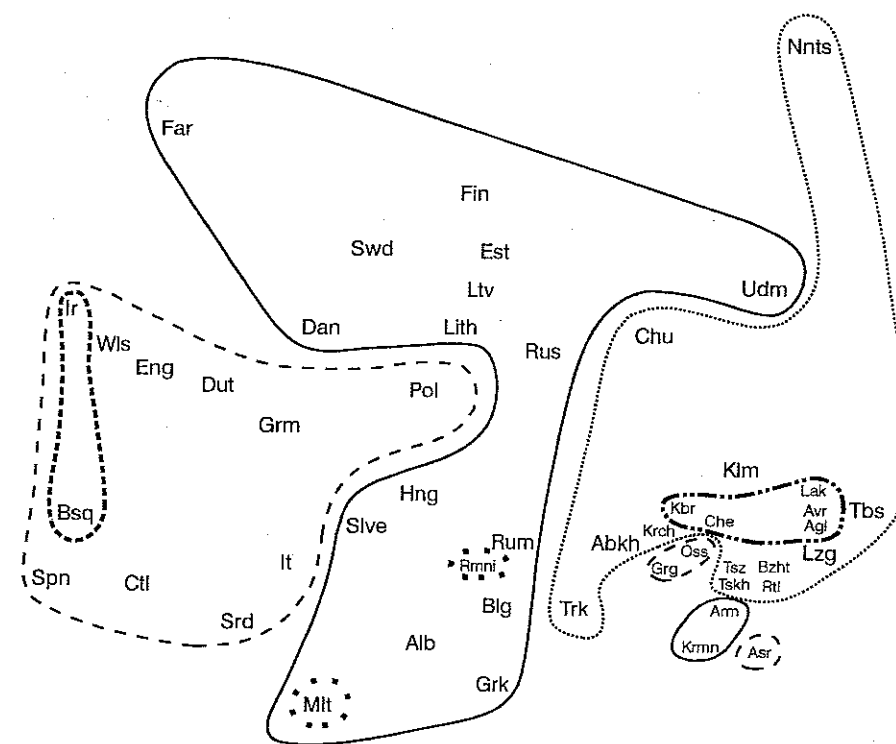
Map 1 indicates how the three main language types and their subtypes distribute across Europe. Note that type 1 b languages form a subset of type 1 a, type 2 b languages a subset of type 2 a, and type 3 b languages a subset of type 3 a.

Map 1 shows that on the basis of the instantiations of the Entity Type Hierarchy Europe can be divided into four areas: Western Europe, where type 2 is common, Northern and Central Europe, where type 1 is found, Eastern Europe, where type 3 is predominant, and the Southern Caucasus, where type 1 and 2 are found neighbouring type 3 languages, so that here the situation obtaining at the European level is repeated at a smaller scale.

The subgroupings found to a large extent correspond to genetic groupings. Type 1 is found in North Germanic, Finno-Ugric, Baltic, East and South Slavic, Indo-Iranian with the exception of Ossetic, in Albanian, Greek, and Armenian, all representing separate subbranches of Indo-European, in Maltese, and, less expected from a genetic perspective, in the Romance language Rumanian. Type 2 is found in Celtic, West Germanic, Romance with the exception of Rumanian, South Caucasian with the exclusion of Zan (see below), the isolate Basque, in Assyrian, in West Slavic, and, less expected from a genetic perspective, in Ossetic. Type 3 is found in Altaic, North Caucasian, and Samoyedic.

With respect to these genetic groupings the following subdivisions are worth noting: (i) within Caucasian between North (type 3) and South Caucasian and within South Caucasian between the type 1 Zan languages Megrelian (Vamling & Tchantouria 1993) and Laz (Holisky 1991) on the one hand, and the remaining type 2 languages Georgian and Svan (Schmidt 1991) on the other; (ii) within Germanic between North (type 1) and West (type 2) Germanic; (iii) within Uralic between Finno-Ugric (type 1) and Samoyedic (type 3); (iv) within Semitic between the Arabic language Maltese (type 1) and the Aramaic language Assyrian (type 2); (v) within Slavic between East and South Slavic (type 1) and West Slavic (type 2).

The overview just given shows that the subgroupings found do not correspond entirely to genetic groupings. Rumanian behaves exceptionally for a Romance language and goes with the Balkan type 1 languages. Ossetic behaves exceptionally for an Indo-Iranian languages and goes with the South Caucasian



- : 1a. independent verb forms exclusively for Cause
-: 1b. independent verb forms exclusively for Means
- : 2a. dependent and independent verb forms for Cause and Reason
- · - · - ·: 2b. dependent and independent verb forms for Explanation
-: 3a. dependent verb forms only for Cause and Reason
- · - · - ·: 3b. dependent verb forms only for Explanation

Map 1. Instantiations of the Entity Type Hierarchy

language Georgian. These cases hint at areal convergence rather than genetic patterns, for which further confirmation will be found in the sections to follow.

With respect to the subclasses distinguished it is interesting to note that for each of the main areas (West, Central/North, East) there are certain languages which may be considered the extreme representatives of the language type concerned. Thus, within the Central/Northern group of balancing languages the extreme case is Romani, which uses independent verb forms even in Means clauses, where the remaining languages of this group allow the use of both dependent and independent verb forms in these clauses; within the Western group of conditionally deranking languages the extreme case is represented by

Basque and Irish, which use both dependent and independent verb forms even in Explanation clauses, where the remaining languages use independent verb forms only in these clauses; and within the Eastern group of absolute deranking languages the extreme case is represented by Agul, Avar, Chechen, Kabardian and Lak, which use dependent verb forms exclusively even in Explanation clauses, where in the remaining languages of this group paratactic constructions are used.

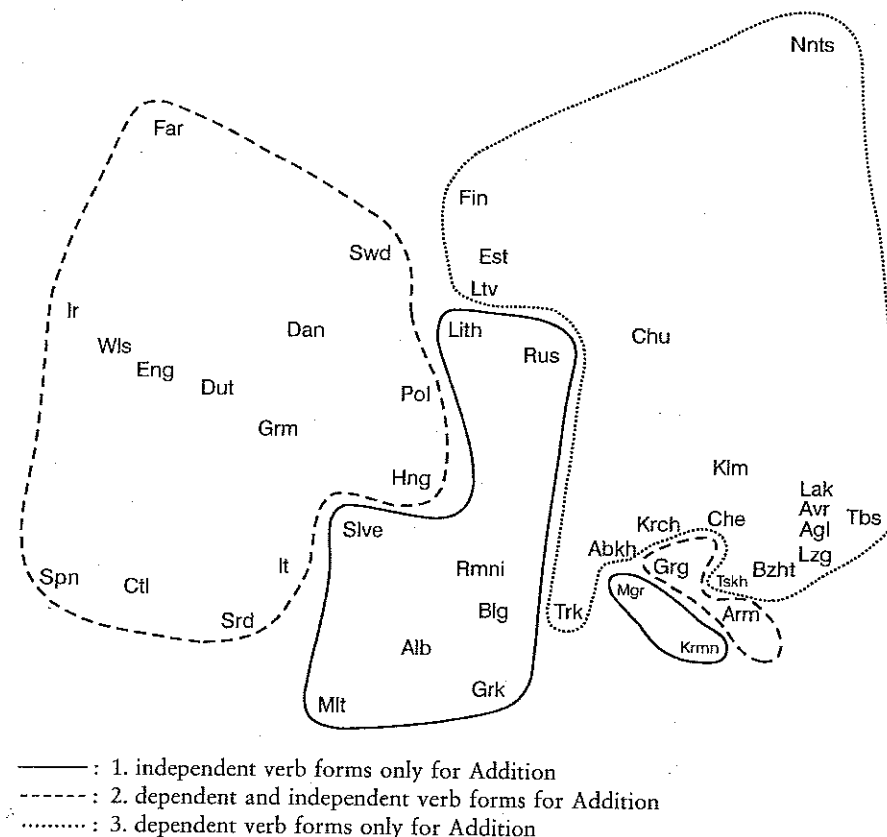
5.3. Instantiations of the Presupposedness Hierarchy – factual domain

In the present and following section I will first of all explore further the differentiation in the expression of adverbial clauses within the factual domain, and then extend the analysis to the nonfactual domain. To the perspective provided in Map 1 may be added the effects of the Presupposedness Hierarchy. Presupposed adverbial clauses are more likely to be expressed by dependent verb forms than their nonpresupposed counterparts. The adverbial clauses that I look at here from this perspective are Addition clauses, that is, second order factual presupposed adverbial clauses with independent time reference. The following language types may be distinguished:

1. Languages which use independent verb forms exclusively for Addition clauses;
2. Languages which use dependent and independent verb forms for Addition clauses;
3. Languages which use dependent verb forms exclusively for Addition clauses.

Map 2 shows how these language types are distributed across Europe.

The data represented in Map 2 should be compared with those given in Map 1, which represents the data for factual nonpresupposed clauses. This comparison shows that, as expected, the number of type 1 languages decreases and the number of type 2 and 3 languages increases. In the North the Finnic languages and Latvian go with the Eastern type 3 languages, allowing dependent expressions in subordinate Addition clauses only (next to the nonsubordinating appositional strategy discussed in 2.1.3.3); the North-Germanic languages go with the Western type 2 languages, showing both dependent and independent verb forms in Addition clauses. In Central Europe Hungarian goes with the Western type 2 languages. In the Southern Caucasus Armenian shifts from type 1 to type 2, thus joining Georgian.



Map 2. Addition clauses

Virtually all of the typeshifts mentioned here involve genetic groups: the North Germanic and the Finno-Ugric (the Finnic languages and Hungarian) languages are involved, and Armenian represents a separate subbranch of Indo-European. Latvian is an interesting exception here, since it behaves quite differently from the second Baltic language Lithuanian and shows exactly the same behaviour as the Finnic languages, that is, it allows dependent verb forms only in subordinate adverbial clauses of Addition, and apart from that uses the nonsubordinating appositional strategy that is also found in Finnish and Estonian.

Further confirmation for the patterns listed here can be found when one looks at the expression of second order nonfactual presupposed clauses, i. e., clauses of Unreal Circumstance. For many languages data on this class of ad-

verbals are lacking, but it is interesting to note that two languages for which (i) the use of dependent verb forms in clauses of Potential Circumstance is disallowed or no data are available, and (ii) no data are available on the expression of clauses of Addition, do allow the use of dependent verb forms in clauses of Unreal Circumstance. These languages are Ossetic and Udmurt. Since on the basis of the Factuality Hierarchy the use of dependent verb forms in clauses of Unreal Circumstance may be said to imply the use of dependent verb forms in clauses of Addition, these two languages may be tentatively added to those listed in Map 2 as allowing dependent verb forms in clauses of Addition. Ossetic then behaves in the same way as Georgian, as expected on the basis of earlier observations with respect to areal convergence, and Udmurt behaves in the same way as the other Finno-Ugric languages, as expected on the basis of the genetic patterns signalled in this section.

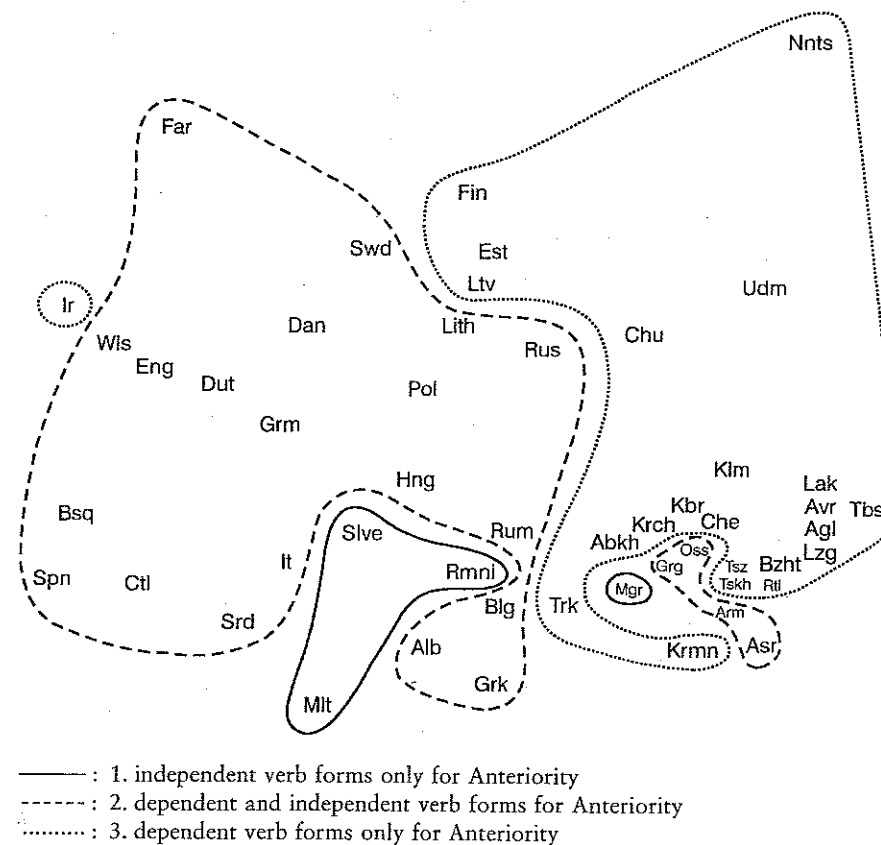
5.4. Instantiations of the Time-Dependency Hierarchy – factual domain

A third parameter may now be added, and concerns the expression of time-dependent adverbial clauses. These are expressed via dependent verb forms more often than those with independent time reference. In order to allow for a comparison with the adverbial clauses discussed in the previous sections, I will concentrate here on factual presupposed time-dependent clauses, i. e., adverbial clauses of Anteriority. The following language types may be defined:

1. Languages which use independent verb forms exclusively for Anteriority clauses;
2. Languages which use dependent and independent verb forms for Anteriority clauses;
3. Languages which use dependent verb forms exclusively for Anteriority clauses.

Map 3 shows how these language types are distributed across Europe.

A comparison of Maps 2 and 3 shows that adding the effects of the Time Dependency Hierarchy primarily affects Central Europe: Lithuanian, Russian, Albanian, Bulgarian, Greek, and perhaps Rumanian do not allow the use of dependent verb forms for the expression of Addition clauses, but do allow the use of adverbial (i. e., dependent) verb forms for the expression of Anteriority clauses. Within the group of South Slavic languages this leads to a separation of Bulgarian from Slovene, a difference which seems to correspond with the



Map 3. Anteriority clauses

subdivision within this group between a Western and an Eastern subbranch. Serbian/Croatian seems to show the same pattern as Slovene, while Macedonian has more dependent options and is thus closer to Bulgarian (see De Bray 1970).

Two further surprising facts are the behaviour of (i) Kirmanji, a language predominantly using independent verb forms otherwise, but allowing dependent verb forms exclusively in Anteriority clauses, and (ii) Irish, which is the only language in Western Europe allowing dependent verb forms exclusively in clauses of Anteriority. The latter language does, however, have the alternative strategy of using independent verb forms in a relative construction, i. e., an indirectly subordinated construction (see the example in § 2.1.3.2), which shows a high degree of grammaticalization.

5.5. Instantiations of the Factuality Hierarchy

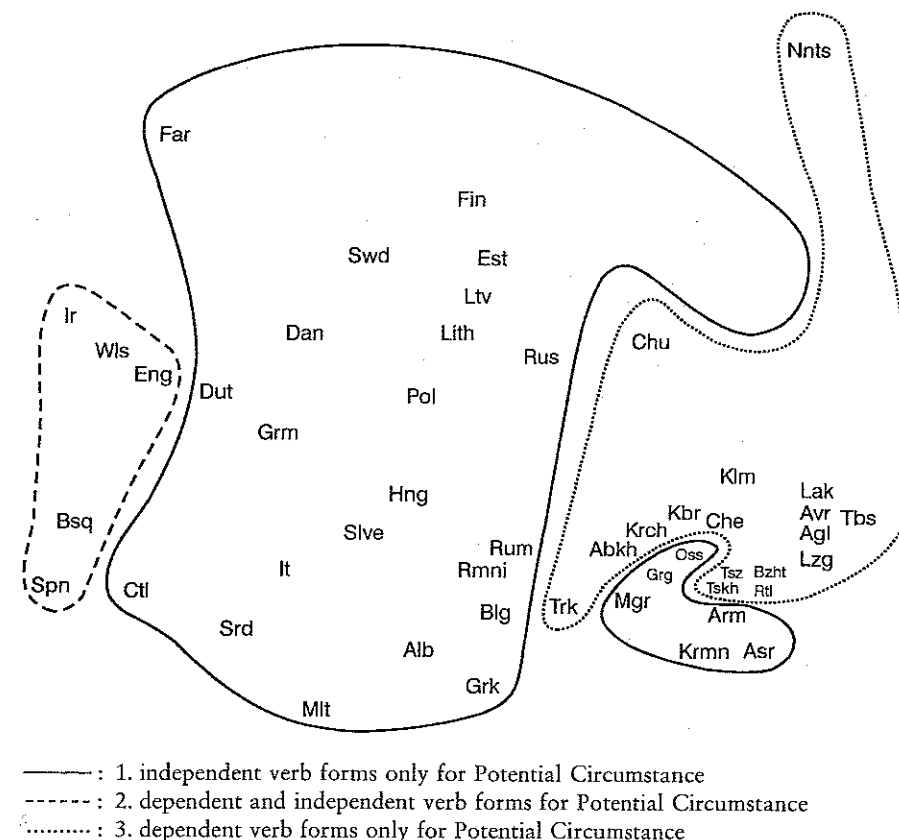
After having explored the factual domain, I now turn to the nonfactual domain. Nonfactual counterparts of factual adverbial clauses are less likely to be expressed through dependent verb forms, so that the languages within which dependent verb forms are used in nonfactual clauses may be expected to form subsets of those within which dependent verb forms are used in the corresponding factual clauses. The adverbial clauses most suitable to start with from this perspective are clauses of Potential Circumstance. The following language types may be distinguished:

1. Languages which use independent verb forms exclusively for clauses of Potential Circumstance;
2. Languages which use dependent and independent verb forms for clauses of Potential Circumstance;
3. Languages which use dependent verb forms exclusively for clauses of Potential Circumstance.

Map 4 shows how these language types are distributed across Europe.

A comparison of Maps 1 and 4 shows the effects of the Factuality Hierarchy. The group of type 3 languages in Map 1 remains unaffected by adding this additional parameter. This is due to the fact that these absolute deranking languages use dependent verb forms only for all adverbial relations investigated, in so far as these are expressible. The parameter does affect, however, several of the type 1 and type 2 languages in Map 1, in the sense that the number of languages predominantly using independent verb forms increases. This result was to be expected: in the definition of type 2 languages in Map 1 the use of dependent verb forms in Cause clauses is crucial. Since clauses of Potential Circumstance are the nonfactual counterparts of Cause clauses, they are more likely to be expressed through independent verb forms, which leads to a reduction in the number of type 2 languages.

The most interesting differences between Maps 1 and 4 are to be found in Western Europe, and can only partly be defined in genetic terms: the West Germanic languages except English and the Romance languages except Spanish shift from type 2 to type 1. The two exceptions are contiguous to the remaining languages of the small group of languages allowing the use of dependent verb forms next to independent verb forms in Map 4: the Celtic languages and Basque, which do represent genetic groupings.



Map 4. Clauses of Potential Circumstance

It is finally to be noted that the languages from the Southern Caucasus all behave in the same manner with respect to the expression of Potential Circumstance, as shown in Map 4. None of these languages allows the use of dependent verb forms in adverbial clauses of Potential circumstance.

5.6. Instantiations of the Time-Dependency Hierarchy – nonfactual domain

As noted in § 4.3.9, the Time-Dependency Hierarchy works independently in each of the factuality domains. It is therefore worthwhile to have a look at Purpose clauses, i. e., the time-dependent counterparts of the clauses of Poten-

tial Circumstance studied in the previous section. The following language types may be distinguished:

1. Languages which use independent verb forms only for Purpose clauses;
2. Languages which use dependent and independent verb forms for Purpose clauses;
3. Languages which use dependent verb forms only for Purpose clauses.

Map 5 shows how these language types distribute across Europe.

A comparison of Maps 4 and 5 shows that the step from nonfactual adverbial clauses with independent time reference to those with dependent time reference has an enormous effect on the distribution of language types, as it had in the case of factual adverbial clauses (compare Map 1 with Map 3). There are just seven languages which allow the use of independent verb forms only: these were identified as predominantly balancing languages in earlier sections (compare Map 5 with Map 2, for example). The differences between Maps 4 and 5 are furthermore largely describable in genetic terms, with some interesting exceptions:

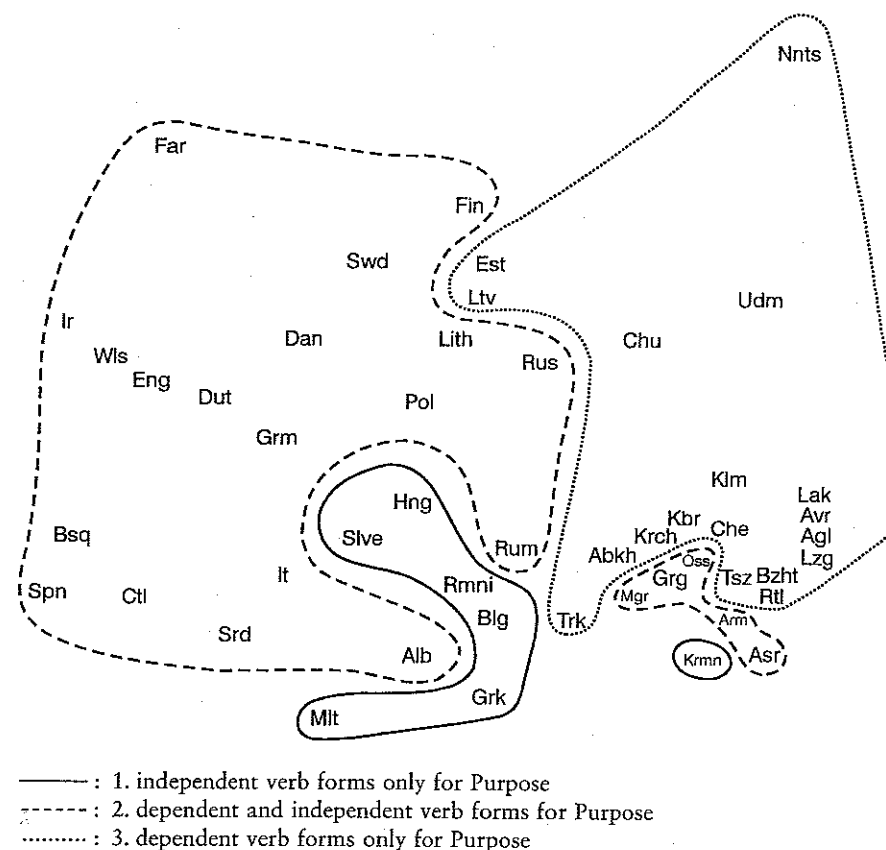
(i) Northern Europe. It is particularly noteworthy that Finnish behaves differently from the remaining Finnic languages. Latvian goes with the Finnic languages instead of with Lithuanian, as it does in other respects as well (see Maps 2 and 3).

(ii) Central Europe. Hungarian, which in certain respects behaves like a Western European language (see Maps 2 and 3), now goes with the balancing core of Central European languages, as it did in one other respect as well (see Map 1). Albanian and Rumanian, which rank among the Balkan languages with the lowest degree of infinitive loss in Joseph (1983), go with the conditionally deranking languages.

(iii) Eastern Europe. The absolute deranking group of Eastern European languages now includes the Finnic languages except Finnish.

(iv) Southern Caucasus. Megrelian, a language otherwise using independent verb forms exclusively, only in the case of clauses of Purpose (and of Posteriority, which were not included in the project) goes with the larger group of conditionally deranking languages. This appears to be the only feature that it shares with the languages of the other branches of South Caucasian.

If one compares the expression of Purpose as represented in Map 5 with the expression of its factual counterpart, Anteriority, in Map 2 it is clear that the use of independent verb forms is more extensive in Purpose clauses. Interestingly, the languages using independent verb forms exclusively in Purpose



Map 5. Clauses of Purpose

clauses but not, or not exclusively, in Anteriority clauses all use nonindicative (subjunctive, imperative) verb forms in the expression of Purpose. The languages concerned are Bulgarian, Greek, Hungarian, and Kirmanji.

5.7. Instantiations of the Presupposedness Hierarchy – nonfactual domain

A still higher degree of the use of dependent verb forms in the nonfactual domain may be expected if the effects of the Presupposedness Hierarchy are added to those of the Time Dependency Hierarchy studied in the previous section. The adverbial clauses representing the presupposed time-dependent

nonfactual type are those of Negative Circumstance. With respect to this type of clause the following language types may be distinguished:

1. Languages which use independent verb forms only for clauses of Negative Circumstance;
2. Languages which use dependent and independent verb forms for clauses of Negative Circumstance;
3. Languages which use dependent verb forms only for clauses of Negative Circumstance.

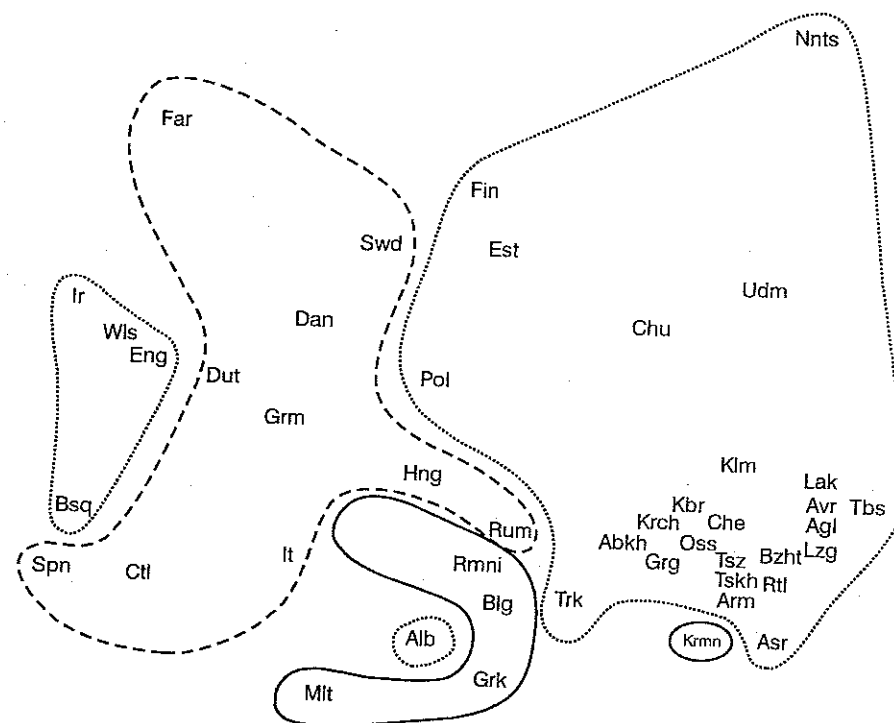
Map 6 shows how these language types distribute across Europe.

A comparison of Maps 5 and 6 shows that the extent to which dependent verb forms are used in clauses of Negative Circumstance is so high that the neat subdivision of Europe into areas of balancing, conditionally deranking and absolute deranking languages collapses, particularly in those areas where earlier maps showed conditional deranking:

(i) Western Europe: the Celtic languages, Basque, and English exclude the use of independent verb forms in clauses of Negative Circumstance, whereas neighbouring languages such as Dutch and Spanish do have this possibility. Consider the following cases:

- (73) English
- a. She left without saying goodbye.
 - b. She left without my knowing it.
 - c. *She left without that I knew it.

- (74) Dutch
- a. Zij vertrok zonder te groet-en.
she leave:PST:SG without COMP greet-INF
'She left without saying goodbye.'
 - b. *Zij vertrok zonder ik te wet-en.
she leave:PST:SG without I COMP know-INF
'She left without my knowing it.'
 - c. Zij vertrok zonder dat ik het wist
She leave:PST:SG without COMP I it know-PST:SG
'She left without my knowing it.'
'She left without that I knew it.'



- : 1. independent verb forms only for Negative Circumstance
 - - - : 2. dependent and independent verb forms for Negative Circumstance
 : 3. dependent verb forms only for Negative Circumstance

Map 6. Clauses of Negative Circumstance

Whereas in Dutch independent verb forms are used in those cases in which the subjects of main and subordinate clause do not coincide (see 74 b-c), English uses dependent verb forms under these circumstances (see 73 b-c). Both languages use dependent verb forms in cases of subject-identity (73 a, 74 a).

(ii) Eastern Europe: The territory covered by the Eastern European type of absolute deranking languages now extends to the west to include Finnish and Polish, and to the south to include most of the languages from the Southern Caucasus. This territory contains a number of languages, viz. Lithuanian, Megrelian, and Russian, which otherwise use independent verb forms to a very high degree. It cannot be a coincidence that these three languages take recourse to the alternative strategy of expressing the notion of Negative Circumstance

via Simultaneity clauses (see § 3.4). The only other language using this alternative is Latvian.

(iii) Central Europe: Noteworthy is the exclusive use of dependent verb forms in clauses of Negative Circumstance in Albanian, where the surrounding Balkan languages exclusively use independent verb forms.

5.8. Integration

5.8.1. Introduction

In order to provide an integrated view of the data presented in Maps 1–6, I will show, taking four different linguistic cores as my point of departure, how the increasing/decreasing use of dependent/independent verb forms may be described in terms of concentrically expanding nonoverlapping areas. The four linguistic cores chosen are:

(i) In Western Europe (§ 5.8.2, Map 7): the languages using dependent and independent verb forms most extensively, i. e., Basque and Irish;

(ii) In Central Europe (§ 5.8.3, Map 8): the languages using independent verb forms most extensively, i. e., Maltese and Romani;

(iii) In Eastern Europe (§ 5.8.4, Map 9): the languages using dependent verb forms most extensively, i. e., Agul, Avar, Chechen, Kabardian, and Lak;

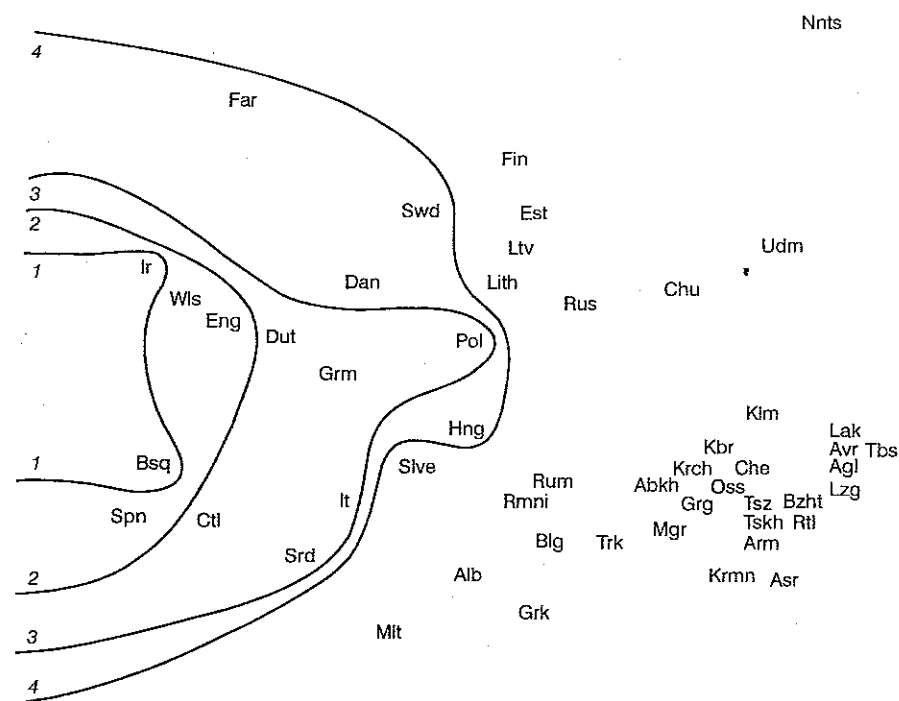
(iv) In the Southern Caucasus (§ 5.8.5, Map 10): the languages using independent verb forms most extensively, i. e., Kirmanji and Megrelian.

5.8.2. Western Europe

The languages of Western Europe are of the conditionally deranking type, that is, they allow the use of dependent verb forms under certain conditions, notably but not exclusively that of participant sharing between main and subordinate clause (see, e. g., Moreno Cabrera 1993, Ramat & Ricca 1993), while requiring the use of independent verb forms in other circumstances. It was claimed earlier that conditional deranking is a concept that should be interpreted relative to the expression of a certain adverbial relation. Thus, to compare the languages of Western Europe among themselves, the question may be asked to what extent they are conditionally deranking. The following language types can be defined and represent decreasing degrees of conditional deranking, where the description of each type is followed by a reference to the earlier map from which the information is drawn:

1. Languages allowing the use of dependent and independent verb forms for Explanation clauses (Map 1);
2. Languages allowing the use of dependent and independent verb forms for clauses of Potential Circumstance (Map 4);
3. Languages allowing the use of dependent and independent verb forms for Cause clauses (Map 1);
4. Languages allowing the use of dependent and independent verb forms for Addition clauses (Map 2).

The distribution of the four language types is given in Map 7.



1. dependent and independent verb forms for Explanation
2. dependent and independent verb forms for Potential Circumstance
3. dependent and independent verb forms for Cause
4. dependent and independent verb forms for Addition

Map 7. Western Europe

Map 7 shows that within Western Europe the use of dependent verb forms decreases the further one moves away concentrically from the core languages. Languages of groups 1–3 are included in group 4, languages of groups 1–2 in group 3, and languages of group 1 in group 2. Thus, the types of adverbial clause studied here enter into a hierarchical relation as represented in (75):

- (75) Addition > Cause > Potential Circumstance > Explanation
 dependent verb form > independent verb form

This hierarchical relation represents just one of the possible outcomes of the combined operation of the various hierarchies discussed in § 3: Addition clauses are more likely to allow the use of dependent verb forms than Cause clauses on the basis of the Presupposedness Hierarchy; Cause clauses are more likely to allow the use of dependent verb forms than clauses of Potential Circumstance on the basis of the Factuality Hierarchy; Potential Circumstance clauses are more likely to allow the use of dependent verb forms than Explanation clauses on the basis of the Entity Type Hierarchy.⁵

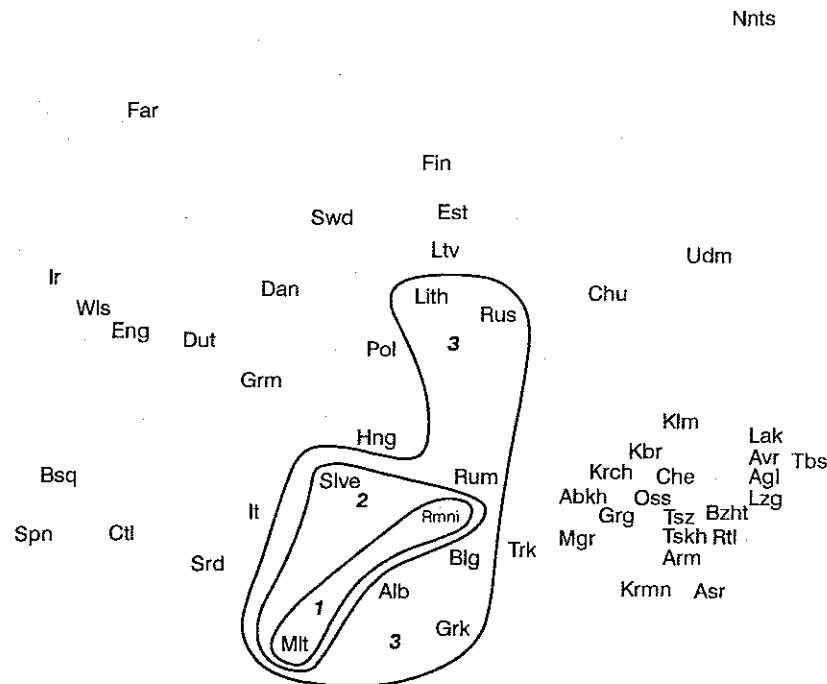
5.8.3. Central Europe

The languages of Central Europe are of the balancing type, i. e., they disallow the use of dependent verb forms to a high degree. Again, the concept of balancing should be interpreted relative to the expression of the type of adverbial clause considered, which means that the languages of Central Europe may be compared among themselves in terms of the extent to which they are of the balancing type. The following subclasses may be distinguished:

1. Languages using independent verb forms exclusively for Means clauses (Map 1);
2. Languages using independent verb forms exclusively for Anteriority clauses (Map 3);
3. Languages using independent verb forms exclusively for Addition clauses (Map 2).

Map 8 shows the distribution of these languages types across Central Europe.

Map 8 shows that within Central Europe the use of dependent verb forms decreases the further one moves away concentrically from the core languages.



1. independent verb forms exclusively for Means
2. independent verb forms exclusively for Anteriority
3. independent verb forms exclusively for Addition

Map 8. Central Europe

Languages of type 1–2 are included in type 3, and languages of type 1 in type 2. Thus, the relations studied here enter into a hierarchical relation as represented in (76):

- (76) Means > Anteriority > Addition

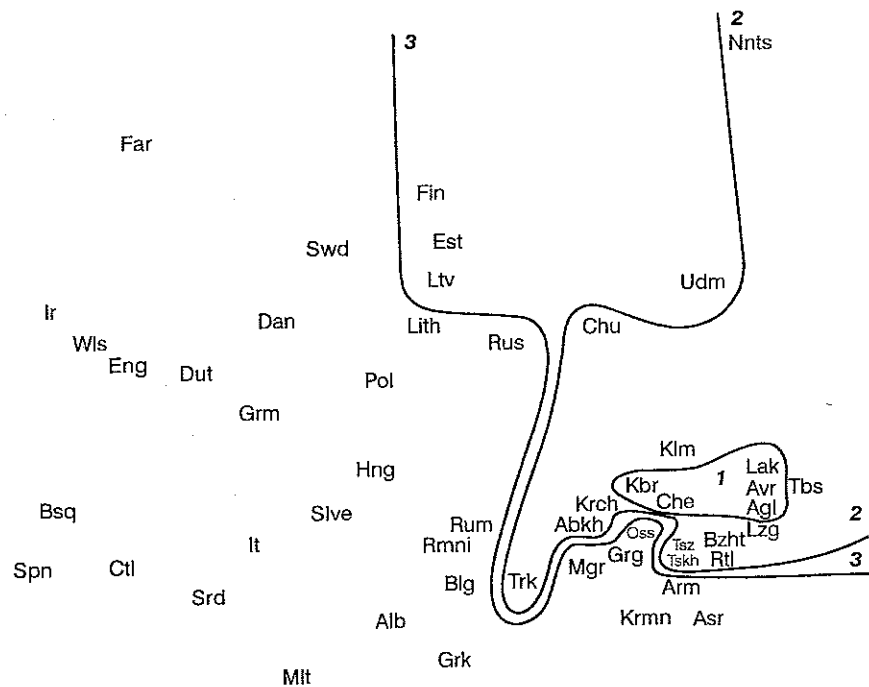
Again, (76) represents one of the possible outcomes of the combined operation of the various hierarchies discussed in § 3. Means clauses are less likely to disallow the use of dependent verb forms than Anteriority clauses on the basis of the Entity Type Hierarchy, Anteriority clauses are less likely to disallow the use of dependent verb forms than Addition clauses on the basis of the Time-Dependency Hierarchy.

5.8.4. Eastern Europe

The languages of Eastern Europe are of the absolute deranking type. They may thus be compared among themselves in terms of the differences that obtain as regards the extent to which they use dependent verb forms exclusively. The following language types may be distinguished:

1. Languages using dependent verb forms exclusively for Explanation clauses (Map 1);
2. Languages using dependent verb forms exclusively for Cause clauses (Map 1);
3. Languages using dependent verb forms exclusively for Addition clauses (Map 2);

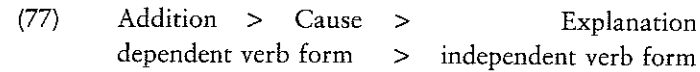
Map 9 shows the distribution of these language types.



1. dependent verb forms exclusively for Explanation
2. dependent verb forms exclusively for Cause
3. dependent verb forms exclusively for Addition

Map 9. Eastern Europe

Map 9 shows that within Eastern Europe the exclusive use of dependent verb forms decreases the further one moves away concentrically from the core languages. Languages of type 1-2 are included in type 3, and languages of type 1 in type 2. The types of adverbial clause studied thus enter into the hierarchical relation represented in (77):



Note that this hierarchy contains a subset of the adverbial clause types in (75), and that the position of the clause types is motivated by the same interactions between the hierarchies.

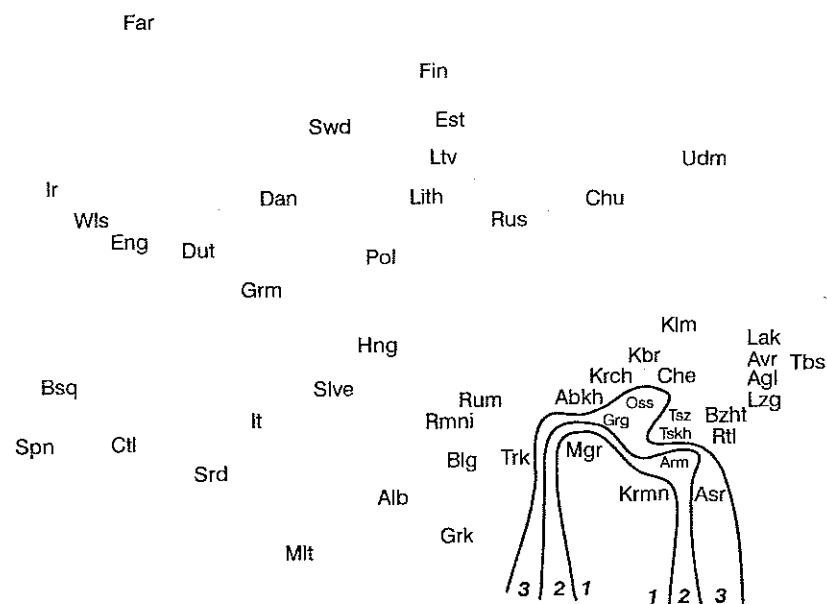
5.8.5. Southern Caucasus

If a single characterization of all languages of the Southern Caucasus is to be given, it is probably best to classify them in terms of the degree to which they are balancing, even though the differences between the languages are rather great, and some of them could equally well have been classified in terms of their degree of conditional deranking. From the perspective of balancing, the following language types may be defined:

1. Languages using independent verb forms exclusively for Addition clauses (Map 2);
2. Languages using independent verb forms exclusively for Cause clauses (Map 1);
3. Languages using independent verb forms exclusively for clauses of Potential Circumstance (Map 4).

Map 10 shows the distribution of these language types.

Map 10 shows that within the Southern Caucasus the exclusive use of independent verb forms decreases the further one moves away concentrically from the core languages. Languages of type 1 and 2 are included in type 3, and languages of type 1 in type 2. The types of adverbial clause studied thus enter into the hierarchical relation represented in (78):



- 1. independent verb forms exclusively for Addition
- 2. independent verb forms exclusively for Cause
- 3. independent verb forms exclusively for Potential Circumstance

Map 10. Southern Caucasus

(78) Addition > Cause > Potential Circumstance
 dependent verb form > independent verb form

Again, the hierarchy in (78) presents a subset of the adverbial relations presented in (73).

5.8.6. Links between the areas

In the preceding paragraphs Europe has been subdivided into four concentrically expanding areas. Such a mapping could be arrived at by making use of the interaction between the various hierarchies presented in § 3. For each area the relevant interactions have been represented in terms of a hierarchy. By way of summary, these partial hierarchies may now be combined into one. For each step on this hierarchy, defining concrete adverbial clause types, the correspond-

ing basic hierarchy, defining their abstract semantic types, is given (ETH = Entity Type Hierarchy, FAH = Factuality Hierarchy, PRH = Presupposedness Hierarchy, TDH = Time Dependency Hierarchy):

- (79) Means
 ETH → Anteriority
 TDH → Addition
 PRH → Cause
 FAH → Potential Circumstance
 ETH → Explanation

6. Systems of adverbial subordination

6.1. Introduction

In § 5 the distribution of languages along each of the hierarchies has been studied independently. The combined effects of these individual hierarchies result in a great number of systems of adverbial subordination within (groups of) languages. It is the purpose of this section to determine the main systems and to show how these systems distribute both areally and genetically across the languages of Europe.

6.2. Main system types

The main system types can be defined making use of the four hierarchies. For each type the system of adverbial subordination is given in a figure by way of example.

Type 1: Balancing languages using independent verb forms exclusively in all contexts: Maltese, Romani. An example of this system type is given in Figure 21.

Type 2: Balancing languages using independent verb forms exclusively in all contexts with independent time reference, i. e., languages restricting the use of dependent verb forms to (some) time-dependent contexts (Means, Simultaneity, Anteriority, Purpose, Negative Circumstance). The following languages exhibit this system: Albanian, Bulgarian, Greek, Kirmanji, Lithuanian, Megrelian, Rumanian, Russian, Slovene. Within this group a further distinction can be made between languages allowing the use of dependent verb forms in nonfactual time-dependent contexts only (Megrelian), languages allowing the use of depen-

Maltese		Zero order	Second order	Third order	Fourth order
Factual	Non-presupposed	Means —	ITR Cause —	Reason —	Expla- nation —
			DTR Simultaneity —		
	Presupposed		ITR Addition —	Concession —	
			DTR Anteriority —		
Non-factual	Non-presupposed		ITR Potential circumstance —	Potential condition —	
			DTR Purpose —		
	Presupposed		ITR Unreal circumstance —	Unreal condition —	
			DTR Negative circumstance —		

Figure 21. Type 1: Maltese

dent verb forms in factual time-dependent contexts only (Bulgarian, Greek, Kirmanji, Slovene) and more liberal languages allowing the use of dependent verb forms in both factual and nonfactual time-dependent contexts (Albanian, Lithuanian, Rumanian, Russian). An example of a type 2 system is given in Figure 22. Here Greek exemplifies the second subtype, allowing the use of dependent verb forms in Means, Simultaneity, and Anteriority clauses only.

Type 3: Conditionally deranking languages using dependent and independent verb forms in factual presupposed time-independent second order contexts (i. e., Addition clauses): Armenian, Danish, Faroese, Hungarian, Swedish. An example of this system type is given in Figure 23. The Faroese system represented in this figure demonstrates that the use of dependent verb forms in Addition clauses does not imply the use of dependent verb forms in all time-

Greek		Zero order	Second order	Third order	Fourth order
Factual	Non-presupposed	Means +	ITR Cause —	Reason —	Expla- nation —
			DTR Simultaneity +/-		
	Presupposed		ITR Addition —	Concession —	
			DTR Anteriority +/-		
Non-factual	Non-presupposed		ITR Potential circumstance —	Potential condition —	
			DTR Purpose —		
	Presupposed		ITR Unreal circumstance —	Unreal condition —	
			DTR Negative circumstance —		

Figure 22. Type 2: Greek

dependent contexts. Faroese excludes the use of such forms in Simultaneity clauses.

Type 4: Conditionally deranking languages using dependent and independent verb forms in factual nonpresupposed time-independent second order contexts (i. e., Cause clauses): Assyrian, Catalan, Dutch, Georgian, German, Italian, Latin, Ossetic, Polish, Sardinian. An example of this system type is given in Figure 24. The Georgian system represented here differs from the Faroese one in allowing dependent verb forms in Cause and Simultaneity clauses, the latter use being implied by the first via the Time-Dependency Hierarchy.

Type 5: Conditionally deranking languages using dependent and independent verb forms in nonfactual nonpresupposed time-independent contexts (i. e., Potential Circumstance): Basque, English, Irish, Spanish, Welsh. An example of

Faroese		Zero order	Second order	Third order	Fourth order
Factual	Non-presupposed	Means +	ITR Cause -	Reason -	Explan- ation P
			DTR Simultaneity -		
	Presupposed		ITR Addition +/-	Concession -	
			DTR Anteriority +/-		
Non-factual	Non-presupposed		ITR Potential circumstance -	Potential condition -	
			DTR Purpose +/-		
	Presupposed		ITR Unreal circumstance -	Unreal condition -	
			DTR Negative circumstance +/-		

Figure 23. Type 3: Faroese

this system type is given in Figure 25. The English system represented here differs from the Georgian system in allowing the use of dependent verb forms in clauses of Potential Circumstance and of Unreal Circumstance, the latter use being implied by the former via the Presupposedness Hierarchy.

Type 6: Absolute deranking languages using dependent verb forms exclusively in factual presupposed time-independent contexts (i. e., Addition clauses): Estonian, Finnish, Latvian, Udmurt. Note that this system type comes very close to type 3, in the sense that the same set of adverbial clauses in which dependent verb forms may be used is involved. The difference between the two types concerns the fact that in type 3 languages dependent verb forms are used conditionally, i. e., next to independent verb forms, whereas in type 6 languages dependent verb forms are used exclusively. The two types of language appear

Georgian		Zero order	Second order	Third order	Fourth order
Factual	Non-presupposed	Means +	ITR Cause +/-	Reason -	Explan- ation -
			DTR Simultaneity +/-		
	Presupposed		ITR Addition +/-	Concession -	
			DTR Anteriority +/-		
Non-factual	Non-presupposed		ITR Potential circumstance -	Potential condition -	
			DTR Purpose +/-		
	Presupposed		ITR Unreal circumstance -	Unreal condition -	
			DTR Negative circumstance +/-		

Figure 24. Type 4: Georgian

to be even more alike if one takes into account the fact that type 6 languages do make use of independent verb forms in indirectly subordinating constructions of the appositional type, as discussed in § 2.1.3.3. By way of example the Estonian system is given in Figure 26.

Type 7: Absolute deranking languages using dependent verb forms exclusively in all contexts: Abkhaz, Agul, Avar, Bezhta, Chechen, Chuvash, Kabardian, Kalmyk, Karachai-Balkar, Lak, Lezgian, Nenets, Rutul, Tabasaran, Tsakhur, Tsez, Turkish. An example of this system type is given in Figure 27. Note that it is remarkable that there are no intermediate systems in between type 6 and type 7. None of the languages investigated uses dependent verb forms exclusively in, for instance, Cause clauses, but not in the remaining expressible adverbial clause types. The generalization here seems to be that

English		Zero order	Second order	Third order	Fourth order
Factual	Non-presupposed	Means +	ITR Cause +/-	Reason -	Expla- nation -
			DTR Simultaneity +/-		
	Presupposed		ITR Addition +/-	Concession +/-	
			DTR Anteriority +/-		
Non-factual	Non-presupposed		ITR Potential circumstance +/-	Potential condition -	
			DTR Purpose +/-		
	Presupposed		ITR Unreal circumstance +/-	Unreal condition -	
			DTR Negative circumstance +		

Figure 25. Type 5: English

either a language uses dependent verb forms exclusively in dependent (i. e., time-dependent or presupposed) contexts (type 6) or it uses dependent verb forms exclusively in all expressible contexts (type 7).

6.3. Areal distribution

The seven types of system presented in § 6.2 are distributed across Europe as shown in Map 11.

Map 11 shows that Europe can be rather neatly subdivided into contiguous areas within which languages exhibiting one of the seven systems are spoken. In many cases neighbouring systems are furthermore used in contiguous areas,

Estonian		Zero order	Second order	Third order	Fourth order
Factual	Non-presupposed	Means +	ITR Cause -	Reason -	Expla- nation -
			DTR Simultaneity +		
	Presupposed		ITR Addition +	Concession -	
			DTR Anteriority +		
Non-factual	Non-presupposed		ITR Potential circumstance -	Potential condition -	
			DTR Purpose +		
	Presupposed		ITR Unreal circumstance -	Unreal condition -	
			DTR Negative circumstance +		

Figure 26. Type 6: Estonian

with major dividing lines between (i) the type 2 languages of Central Europe and the type 7 languages of Eastern Europe, and (ii) the type 7 languages of Eastern Europe and the types 2, 3, and 4 languages of the Southern Caucasus. In the north types 3 and 6 languages, which, as argued above, are actually rather closely related, are also spoken in contiguous areas.

At a higher level of generalization, Map 11 may be converted into one which distinguishes only three main types of system: A. Absolute deranking, comprising systems 6 and 7 in Map 11; B. Balancing, comprising systems 1 and 2 in Map 11; C. Conditionally deranking, comprising systems 3, 4, and 5 in Map 11.

Map 12 shows how these three main system types are distributed across Europe.

Karachai		Zero order	Second order	Third order	Fourth order
Factual	Non-presupposed	Means +	ITR Cause +	Reason +	Explanation P
			DTR Simultaneity +		
	Presupposed		ITR Addition +	Concession +	
			DTR Anteriority +		
Non-factual	Non-presupposed		ITR Potential circumstance +	Potential condition +	
			DTR Purpose +		
	Presupposed		ITR Unreal circumstance +	Unreal condition +	
			DTR Negative circumstance +		

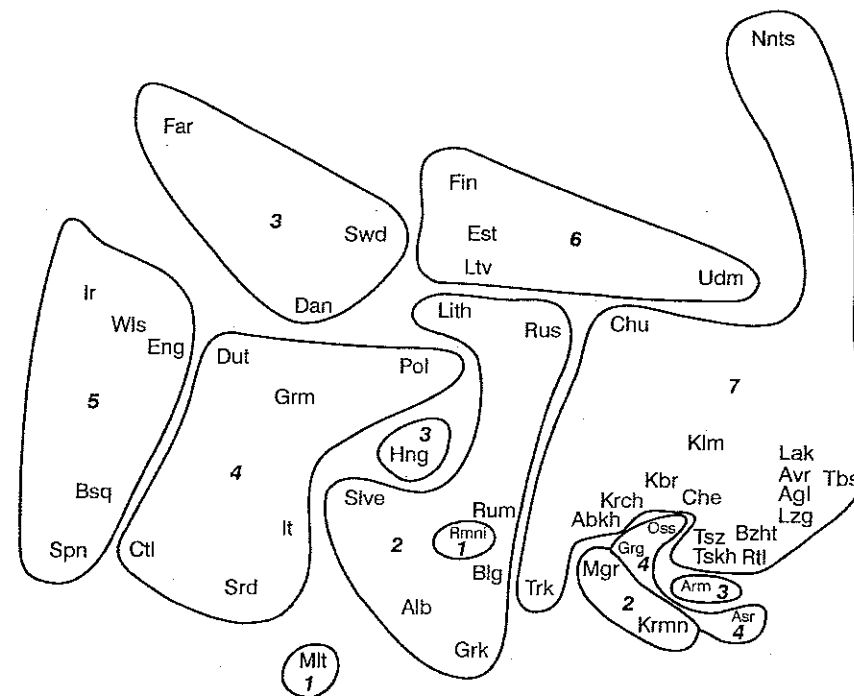
Figure 27. Type 7: Karachai-Balkar

6.4. Genetic distribution

The genetic distribution of the various system types given in § 6.2 is as represented in Table 28.

Table 28 is simplified in the sense that (sub)branches of phyla have only been given to the extent that these are relevant for the description of the distribution of systems. The letters and numbers preceding language names indicate the system of adverbial subordination they exhibit at the two levels of generalization that were used in § 6.3 as well.

Table 28 shows that, as far as the genetic distribution of systems is concerned, most genetic groupings behave quite consistently, especially if one takes the highest degree of generalization as one's point of departure. Absolute deranking languages of types 6 and 7 seem to cluster most consistently within

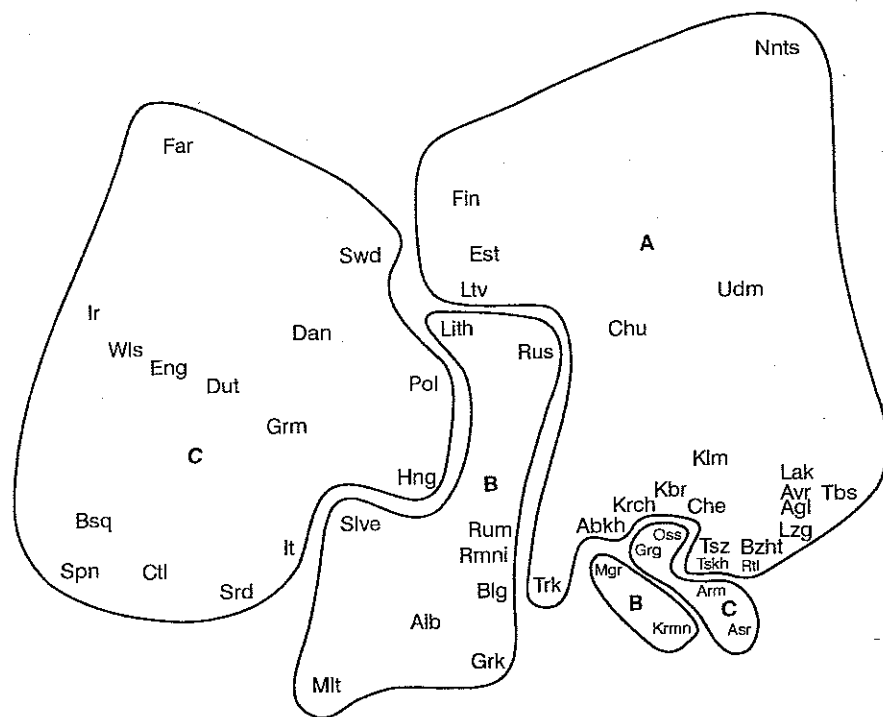


Map 11. Areal distribution of systems of adverbial subordination

higher-level genetic groupings: All Altaic languages and all North Caucasian languages are type 7, all Uralic languages (except Hungarian, see § 6.5) are absolute deranking. Balancing and Conditionally deranking languages show less consistency, although here too at the highest level of generalization the clustering seems to be rather coherent. Thus, to give an example, all Germanic, Italic (with the exception of Rumanian), and Celtic languages are of the conditionally deranking type.

6.5. Borderline languages

There are, however, some languages that clearly fall outside the predominant pattern of the genetic group they belong to, and seem to be the product of areal convergence. The most clearcut cases, given in boldface in Table 28, are Hungarian, Latvian, Ossetic, and Rumanian. Note that Polish, although it



Map 12. Areal distribution of main systems of adverbial subordination

might seem to fall outside the general Balto-Slavic pattern, in fact shows the same system as the remaining West Slavic languages (de Bray 1970).

Hungarian has apparently adapted to the surrounding Balkan languages which make extensive use of independent verb forms. Yet it is interesting to note that the Hungarian system bears a certain resemblance to the system exhibited by the remaining Finno-Ugric languages in the sample, in the sense that Hungarian allows the use of dependent verb forms in some presupposed adverbial clause types, where the remaining Finno-Ugric languages use dependent verb forms exclusively in such contexts. In both types of languages an opposition is created between presupposed and nonpresupposed adverbial clauses as far as the use of expression formats is concerned. Hungarian is clearly different from the remaining Finno-Ugric languages in not allowing the use of dependent verb forms in Purpose clauses, a feature it shares with many Balkan languages.

Latvian behaves like the surrounding Finnic languages, and not like its genetic neighbour Lithuanian. This observation finds support in Comrie's (1981:

Table 28. Genetic distribution of systems of adverbial subordination

Semitic	Arabic		B 1.	Maltese
	Aramaic		C 4.	Assyrian
Altaic			A 7.	Chuvash, Kalmyk, Karachai-Balkar, Turkish
Caucasian	North		A 7.	Abkhaz, Agul, Avar, Bezhta, Chechen, Kabardian, Lak, Lezgian, Rutul, Tabasaran, Tsakhur, Tsez
	South	Zan	B 2.	Megrelian
		Georgian	C 4.	Georgian
Indo-Eur.	Germanic	North	C 3.	Danish, Faroese, Swedish
		West	C 4.	Dutch, German
		East	C 5.	English
	Italic	Romance	?	Gothic
			B 2.	Rumanian
			C 4.	Catalan, Italian, Sardinian
			C 5.	Spanish
	Balto-Slavic	Latin	C 4.	Latin
		Slavic	B 2.	Russian
		East	B 2.	Bulgarian, Slovene
		South	C 4.	Polish
		West	A 6.	Latvian
			B 2.	Lithuanian
	Greek		B 2.	Greek
	Indo-Iranian	Iranian	B 2.	Kirmanji
			C 4.	Ossetic
		Romani	B 1.	Romani
	Armenian		C 3.	Armenian
	Albanian		B 2.	Albanian
	Celtic		C 5.	Irish, Welsh
Basque			C 5.	Basque
Uralic	Samoyed		A 7.	Nenets
	Finno-Ugric	Finnic	A 6.	Estonian, Finnish, Udmurt
		Ugric	C 3.	Hungarian

147) statement that "... to a large extent, present-day Latvians can be viewed as linguistically assimilated Balto-Finnic speakers...". The results obtained in this study show that indeed much of Balto-Finnic structure is preserved in Latvian.

Ossetic is quite different from the other Indo-Iranian languages in the sample, in that it shows a conditional deranking rather than a balancing system. As such it rather resembles some non-Indo-Iranian languages spoken in the Southern Caucasus, particularly Armenian and Georgian. Comrie (1981) lists

various other types of linguistic adaptation of Ossetic to the surrounding languages. All these facts point to areal convergence.

Rumanian, like Hungarian, has adapted to the Balkan system, and is quite different from the other Italic languages in the sample. Again the facts point in the direction of areal convergence.

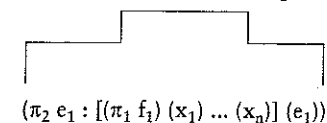
7. Theoretical background

7.1. Introduction

This paper has shown that the distribution of dependent and independent verb forms across various types of adverbial clauses can be satisfactorily described, virtually without exceptions, in terms of four interacting hierarchies. There are reasons to assume that these same parameters are relevant for the description of more specific verb forms, such as, for example, subjunctive and indicative verb forms (see Hengeveld & Wanders 1997). Furthermore, since the parameters and corresponding hierarchies are defined in terms of semantic primitives, they may be applied to other types of subordinate constructions, notably complement clauses, as well. The virtual absence of counterexamples in this study, and the generalizability of the parameters to other types of subordinate construction and to the distribution of other types of verb form raise the question of what the exact status of the parameters is. In this section I shall try, by way of conclusion, to arrive at a theoretical underpinning of the generalizations arrived at in terms of the framework of Functional Grammar (Dik 1989).

Of central importance to the typology just given is the Entity Type Hierarchy. This hierarchy was hypothesized to be relevant on the basis of the theory of subordination (Hengeveld 1989, 1990, 1996; Bolkestein 1990; Dik et al. 1990; Dik & Hengeveld 1991) that has been developed within the context of Functional Grammar, partly inspired by Foley & Van Valin (1984). Within this theory, clauses are represented as semantically based layered structures representing various functions within the utterance. The general format of underlying clause structures in Functional Grammar is given in Figure 28.

The structure in Figure 28 as a whole gives a representation of the speech act (E_1). Within this speech act a propositional content (X_1) is processed. This propositional content contains a description of a state of affairs (e_1). Within the description of this state of affairs a property or relation (f_1) is applied to one or more individuals (x_1) ... (x_n). Each of the layers thus distinguished corresponds with one of the entity types that have been used earlier in the definition of the Entity Type Hierarchy.

$$(E_1 : [(\pi_4 \text{ ILL (S) (A) } (\pi_3 X_1 : [\text{---}] (X_1))) (E_1))$$


(E_1)	Clause – fourth order	π_4	Illocution operators
(X_1)	Proposition – third order	π_3	Proposition operators
(e_1)	Predication – second order	π_2	Predication operators
(f_1)	Predicate – zero order	π_1	Predicate operators
(x_1)	Term – first order		

Figure 28. The representation of utterances in FG

Every layer has its own associated category of operators, and those which are of most interest in the present discussion are given here. Roughly speaking, predicate operators cover aspectual distinctions, predication operators temporal distinctions, proposition operators modal distinctions, and illocution operators modifications of basic illocutions.

Now, one of the most important features of this structure is that layers of lower complexity, including their associated operators, are fully contained within layers of higher complexity. For instance, every proposition contains a predication, i. e., every propositional content contains a description of a state of affairs. This allows one to break down the structure used for main clauses by peeling off higher layers and their associated operators while leaving the remaining ones intact. It is in this way that a typology of subordinate clauses is arrived at, as Figure 29 shows.

Subordinate clause:	($E_1 : [(\pi_4 \text{ ILL (S) (A) } (\pi_3 X_1)] (E_1))$
Subordinate proposition:	($\pi_3 X_1 : [(\pi_2 e_1)] (X_1)$
Subordinate predication:	($\pi_2 e_1 : [(\pi_1 f_1) (x_1)] (e_1)$
Subordinate predicate:	($\pi_1 f_1$)

Figure 29. Subordinate constructions in FG

The sentence model thus allows one not only to represent subordinate constructions designating various types of entities, but also to account for the decreasing possibilities of expressing Tense, Mood, and Aspect distinctions the lower one gets in Figure 29. Thus, the approach outlined here in fact gives a formalization

of Lehmann's (1988) Desententialization Scale. The Entity Type Hierarchy may now be rephrased as in (80):

$$(80) \quad (f_i) > (e_i) > (X_i) > (E_i)$$

Thus, we get formal representations for properties and relations (f_i), states of affairs (e_i), propositional contents (X_i), and speech acts (E_i).

The differences between subordinate constructions defined by the remaining hierarchies can now be seen as resulting from differences as regards the possibilities of applying operators with different temporal and modal values to the various types of construction recognized in Figure 29. There is a difference between the Factuality Hierarchy on the one hand, and the Time-Dependency and Presupposedness Hierarchies on the other.

The Factuality Hierarchy defines two types of subordinate constructions which differ from one another insofar as the set of operators that may be applied within them is different: within factual clauses a choice has to be made from among the set of factual operators, and within nonfactual clauses a choice has to be made from among the set of nonfactual operators. This hierarchy can be defined in terms of subsets of operators potentially filling the operator slots present in Figure 28–29. Thus, to give an example, within the class of predication operators (π_2), a distinction should be made between a factual (f) subclass (π_{2-f}) and a nonfactual (nf) subclass (π_{2-nf}).

The Time Dependency and Presupposedness Hierarchies, on the other hand, define types of subordinate constructions in terms of the presence of a fixed operator obligatorily filling an operator position (e.g., a Posterior operator in Purpose clauses) versus the presence of an open operator position, that may be filled by different operators (e.g., various temporal operators in clauses of Potential Circumstance). Thus, Purpose clauses have the underlying operator specification *Post* for Posterior, whereas clauses of Potential Circumstance have the underlying operator specification π_{2-nf} for any nonfactual operator.

The fact that adverbial clauses with dependent time reference on the one hand and presupposed ones on the other are more likely to be expressed by dependent verb forms may then be understood as a result of the fact that the predetermined values of their operator position make the nature of these operator values inferrable from the semantic functions of these adverbial clauses, whence they are more likely to remain unspecified.

The difference between the construction types taken as examples here may now be represented as in (81)–(82):

$$(81) \quad (\text{Post } e_1: [(\pi_1 f_1) (x_1)] (e_1))_{\text{Purp}}$$

$$(82) \quad (\pi_{2-nf} e_1: [(\pi_1 f_1) (x_1)] (e_1))_{\text{PotCirc}}$$

These representations show that adverbial clauses of Purpose (Purp) and Potential Circumstance (PotCirc) are alike in that they both represent second order entities (e) and both belong to the nonfactual domain (the operator Post(erior) being a member of the set π_{2-nf}). They differ in that Purpose clauses have a predetermined operator value (Post), whereas clauses of Potential Circumstance have an open operator position (π_{2-nf}).

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Notes

1. In a later publication Lyons (1989) prefers to use the term "second order extensional" for his earlier "second order" and "second order intensional" for his earlier "third order".
2. A problem in the classification of Conditions is that they may not only have a third order reading, but a second order reading as well (see Sweetser 1990). Nevertheless, they differ crucially from clauses of Potential Circumstance, in that the latter have the second order reading only.
3. This section mainly builds on the insights presented in Kiparsky & Kiparsky (1970) and Karttunen (1971). See also Bolkestein (1981), Noonan (1985), Ransom (1986), and Givón (1990).
4. As in the case of Condition clauses (see note 1), a problem in the analysis of Concession clauses is that they may have a second order interpretation, in which they describe an event which is an obstacle for the realization of the main clause event. In English the conjunction *despite the fact that* seems to introduce second order Concession clauses, whereas *although* would be more appropriate for the expression of third order Concession. This difference is reflected in the fact that clauses introduced by *despite the fact that* may occur as part of a question, whereas clauses introduced by *although* may not. Although this potential twofold interpretation of Concession clauses is problematic in the analysis of the data, there still is a crucial difference

between Addition clauses and Concession clauses, in that the latter have a third order interpretation, whereas the former have not.

5. Note that in the latter case in principle the inverse would also have been possible, since clauses of Potential Circumstance are nonfactual and for that reason more likely to disallow the use of dependent verb forms than Explanation clauses. However, the fact that Explanation clauses (fourth order) and clauses of Potential Circumstance (second order) are two full steps removed from one another, and nonfactual clauses normally lag just one step behind along the Entity Type Hierarchy (see § 4.3.3), makes the Entity Type Hierarchy win out.

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