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Structural Propensities: Translating nominal word groups
from English into German
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Preface

When George Steiner (1975:497) says in his famous book After Babel: "To a greater or lesser degree, every language offers its own reading of life", he does not think of the structural properties languages have – certainly not of the most general ones, which he excludes from his considerations explicitly. Quoting Hymes (1973:63), he states: "Most of language begins where abstract universals leave off." Surely, this is the case when we translate Schiller or Shakespeare, Arno Schmidt or James Joyce. But although the challenges of translation are most fascinating in the realms of poetic language, the 'common' translator has to come to terms with the everyday use of language, which leaves traditional grounds less often. And the everyday use of language, which may also include literary ingredients, like metaphors, puns and the whole array of intertextual features, is controlled by special conventions determining selection and interpretation of linguistic means appropriate to the communicative situation, the discourse. Such conventions may not only differ from language to language, they may also lead to different results when aiming at similar targets. If, for example, there were a common convention aiming at an economical use of linguistic means, the difference between the language systems would promote different solutions more often than not.

Differences between two language systems do not only reside in their words, they are also involved in the way in which words assemble into word groups and sentences, that is in the rules and regularities constituting the grammar of a language. But even words and grammar together are not yet sufficient to explain the differences we can observe in the use of similar linguistic forms. If we restrict attention to the linguistic forms of sentences, there are many paraphrases of an original sentence available and the question for the translator is: Why did the author choose this version and which version would really recreate the author's choice in another language?

The answer to this question has many different aspects, but one that could be considered most basic. Whether the author's choice is felt to be neutral or marked, either impact will be measured against a set of specific conditions characterizing the discourse appropriate use of language. The set of these

conditions is specific in two ways: (1) it relates to the global and local properties of the particular discourse in which the linguistic choice is made and (2) it relates to the grammatical and stylistic properties of the language from which the linguistic means are chosen. The global properties would leave a wide variety of choices open were it not for the local properties of the discourse, that is, the form and meaning of the preceding and subsequent sentences. But even so, there is still a great variety of paraphrases available and the major question remains: Why did the author choose certain linguistic forms, as for example a particular word order, and which order recreates the author's choice in a target language?

Any answer to such questions presupposes a number of linguistic and psycholinguistic hypotheses about the theoretical framework we can use to systematically analyze the special structural conditions which control the discourse appropriate use of linguistic means in an original and its translation. The different conditions will concern clausal and phrasal structures and relate to questions of word order, case frame, word class, syntactic dependencies, explicitness and the like.

Restricting attention to such structural properties will be felt to impoverish translation studies but – if we proceed slowly and patiently – it will allow us to gain some insight into the most general conditions of language use. The approach is rather modest as we will restrict attention to one pair of languages: English and German, and to unmarked, written texts of academic prose. But as the discussion of the more than hundred examples in the following will show, the complexity of the structural and functional properties determining the appropriateness of syntactic and lexical choices in original and in translation is still extremely high.

The book is the result of a series of research projects on the appropriate use of word order, perspective and structural explicitness in German translations from English texts, sponsored by the German research foundation, DFG, from the year 1991 on. Its basic methodological and theoretical claims were presented at the very beginning of this period (in LiLi, among others, 1991, under the title of 'Informationelle Holzwege/Informational garden paths'). Each of the research projects aimed at filling in one more part of the overall picture, looking into the conditions of English and German word order, case frame, clausal or phrasal structures and their different combinatorial options.

The last project focused on the details of the appropriate use of nominal word groups in English and German, the result of which is presented in Chapters 3, 4 and 5: differences between English original sentences and their German translations concerning noun phrase internal restructuring; noun phrase exter-

nal restructuring – including cleft- and cleft-like sentences; cross-sentential re-structuring involving sequences of sentences; as well as restructuring involving semantically equivalent appositions.

The first and second chapter will introduce the basic methodological and theoretical concepts used for the structural and functional descriptions of nominal word groups within their sentences and the wider linguistic and situational context. Each chapter is summarized in the end by a set of basic hypotheses.

The last, sixth chapter will suggest an extension of the basic findings onto other topics, taking a look at cultural and literal aspects, also in relation to other languages, and hold the prosaic approach of discourse appropriate translation against the opposite goal of 'literal' translation.

The empirical basis for the research projects has been accumulated over more than twenty years; we have termed it the 'Berlin corpus of translation'. Its main core consists of twelve texts from New Scientist which were originally translated by students of our Institute at the Humboldt-University, Berlin, in the 1980ies. The translations have been reworked again and again, applying the method of control paraphrases (which is illustrated in the following introduction) while concentrating on certain research topics, including the topics chosen by the students for their final papers. The procedure is still being pursued today – at present we are studying apparently redundant, 'dummy' structures in nominal word groups occurring in the original or in the translation.

The empirical work involves up to thirty students, who assess the discourse appropriateness of systematically varied translational versions after they have gone through a close analysis of what it is that a sentence contributes to its discursive context. The translational version which is in the end preferred by a clear majority of the participants (usually between seventy to ninety percent) will then be added to our corpus, replacing an older, less appropriate version. The structural and functional properties of such 'target versions' are the testing ground for particular claims about the different conditions of discourse appropriate language use in English and German.

The procedure is open-ended because of the enormous combinatorial potential of all the factors involved in the variations (and – as the majority of our work relies on native speakers of German – more speculative in English). But even if not all details of a target version can be dealt with this way (the following discussion of individual examples will concentrate on the major research topics), we are convinced that the method of control paraphrases is an efficient tool to study some of the intricacies of translation in a systematic and, to a certain extent, verifiable way.

Introduction

Idolatry

There are many traps awaiting the theorist who sets out to observe and interpret some part of the world. In "one of the most famous parts of his philosophy" (Russell 1945: 544), Francis Bacon distinguishes five idols which can mislead scientific thinking: they originate in human nature in general (*idols of the tribe*), in the individual scientist (*idols of the cave*), in views of the world inherent in language (*idols of the market place*), in traditional systems of thought (*idols of the theatre*) and in logical deduction which is not linked to empirical observation (*idols of the schools)*.

If our scientific object is the use of language itself, we risk being governed by these idols more than anyone else. Observing the use of language, we will always – in some way or other – rely on our own use of language, that is, be in danger of the *idol of the cave*. But focusing on the use of language calls in two more idols indirectly, as our investigation will always have to proceed from a special language and thus be bound to the *tribe* and the *market place* which use this language. Although we assume that we share our knowledge of this language and its uses with all other persons of the market place and tribe, we can never be sure of an identical understanding. The difficulties with our observational data are magnified if we look at other languages, and they seem to be insurmountable if the object of our scientific investigation is the 'simultaneous' use of several languages, as in translation.

One effect of this is the painfully protracted process of an "emerging discipline" (a title used by Alessandra Ricardi 2000/2001). A discipline emerging for almost half a century (the first two bibliographical volumes on "The Science of Translation", published in 1970/72 cover a period that begins in 1962) is certainly something unusual – even more so, as translation studies has not yet found its way into the Encyclopaedia Britannica, which does inform on other disciplines, like computer sciences or psycholinguistics, which also began in the 1960s/70s. While translation itself has been an issue for many centuries, evoking a wealth of fascinating questions and sophisticated comments (impressively

exemplified in Delisle/Woodsworth 1995), translation studies as an academic discipline, aiming at a theoretical understanding of its object, has not yet found its place among the generally accepted disciplines.

However, the public neglect is not only due to the complexity of the object, it is related to the *idol of the theatre,* the lack of communication between the various schools of thought that deal with the many different facets of language. This problem of translation studies is to some extent inherited from linguistics itself, where the various 'theatres' are absorbed in rather sophisticated productions, presupposing an expert's background. Moreover, translation in the linguistic sense (rather than its genetic, mathematical, physical, or mechanical sense) is essentially linked to language use, and as the philological approach to language use has eventually been diversified in linguistics, literature and cultural studies, translation studies is not only linked to the various branches of linguistics – including psycholinguistics, sociolinguistics, computer linguistics and philosophy of language – it is also related to a wide range of literary theories and culture studies. As Munday (2001) shows in his admirably transparent presentation of the major approaches translation studies has pursued during the last fifty years, cultural-political aspects of translation have recently attracted more attention than linguistic aspects. As it were, translation studies even covers aspects of translation that do not involve the use of language at all. There is, for example, the translation of specific design (as demonstrated by Peter A. Schmitt 1986, 1992, 1998), which comprises a great variety of translation problems arising from culture-specific forms of texts, concerning questions of layout, illustrations, graphic signs and the like. It is obvious that such non-linguistic aspects have to be dealt with by theoretical loans from other disciplines.

Chesterman (2002) considers translation studies a genuinely interdisciplinary endeavour, and a large portion of the interdisciplinarity of translation studies participates in the interdisciplinarity of linguistics. But the use of language for the purpose of translation is a topic in its own right and although it has its share in a great variety of other (sub)disciplines, it requires special concepts and methods for its scientific investigation. Yet to the extent that translation studies participates in linguistic questions and assumptions characteristic of the various subdisciplines of linguistics, it inherits a wide range of contentious issues and alternative views from different linguistic theories. Looking at the linguistic aspects of translation studies, we have to take sides in the linguistic debates of all the linguistic subdisciplines translation is related to and try to avoid the *idols of the theatre,* which prevent access to relevant research. Any decisions we make should improve our understanding of the spe-

cial set of questions and assumptions characterizing translation in contrast to any other use of language. But this, as the diversity of theoretical approaches in translation studies suggest, is an almost labyrinthine challenge.

The basic problem of translation studies – and the one it shares with all linguistic subdisciplines – originates in "the problem of induction by simple enumeration", which, Russell (1945:545) says, "remains unsolved to this day." Russell criticizes Bacon for not placing efficient emphasis on hypothesis and deduction. Observational data in translation studies – as in linguistics in general – is unlimited and, as Russell says, "Usually, some hypothesis is a necessary preliminary to the collection of facts, since the selection of facts demands some way of determining relevance" and "Often, when hypothesis has to be tested, there is a long deductive journey from the hypothesis to some consequence that can be tested by observation."

It is the framing of hypotheses and the long deductive way preceding the "testable", "replicable" studies (demanded by Toury 1995) which promote the unsatisfactory situation in translation studies – as in linguistics. The effect is visible in and aggravated by the idolatry of the various theoretical approaches prevalent in the area. Klein (1991:104) uses Escher's impossible object as a simile for the mutual contempt between proponents of theoretical linguistics and empirically oriented linguistics. The two parties, he says, are united in their contempt of applied linguistics, which in their eyes include translation studies. Klein's critical paper ends in an appeal to linguists, who "should take the specific problems of translation more seriously and consider them to be an integral part of their job. This would not only help to solve these specific problems but also to solve the task of linguistics in general – the task to explain the human language faculty." (p. 123) The appeal, it must be said, has not had much resonance.

At the other side of the spectrum, there have, indeed, been several attempts at applying linguistic concepts in systematic studies of translation. Over the last fifty years or so, there has been a regular stream of linguistically-based approaches in translation studies - however narrow it may be when compared with the vast amount of theoretical literature on linguistic issues 'proper'. A major part goes into the intricate problems of machine translation, which has to deal with a great variety of highly detailed linguistic properties at all levels involved in the production of texts. However, as problems of implementation promote their own, most specific aspects of translation, machine-translation-oriented approaches have lost their original appeal to conventional translation studies. Although there is a considerable part of research devoted to machine (aided) translation – as can be seen, for example, in Kay/Gawron/Norwig 1994,

Hauenschild/Heizmann 1997, Dyvik 1998, Teich 1999 etc. –, the main interest in translation studies has turned to more abstract models.

To some extent the prevalent models of translation mirror the changes in main stream linguistics: transformational grammar, which Nida attempted to adapt to translation studies (1964), was soon felt to be "not very useful, since translating is not a strictly mechanical or rule-governed activity, but a complex process for making critical judgements about a myriad of linguistic, cultural, and aesthetic matters (1986: 12)." "Capturing the 'spirit' of a text is", as Nida says, "in many cases the most crucial of all factors in translating. Whether the text is an article about computer technology or a hayku poem in Japanese, one needs to reflect not merely the words and sentences but the appropriate stylistic equivalences". (p. 13) As stylistic aspects were given more prominence, the concept of transformation was replaced by the less technical concept of *shift* (as used by Catford 1965), which underlies Vinay and Darbelnet's (1958) influential model about transfer patterns relating the linguistic expressions of an original to the expressions of its translation. Their concept of *transposition* bears some resemblance to strictly formal transformations, whereas their idea of *modulation* allows for semantic differences that go far beyond transformations proper. While the taxonomies of shifts developed for literary translations (as by Levý 1969, or Leuven-Zwart 1989) promoted ever more complex subcategorizations (Munday speaks of thirty seven subcategories in Leuven-Zwart's model), the arrival of speech act theory in linguistics promoted a theoretical and methodological reorientation in translation studies. Extending the objects of linguistic inquiries from syntactic and semantic onto pragmatic levels, in particular onto the various communicative functions of language use, and from the properties of sentences to those of texts or discourse also stimulated functional and text linguistic approaches in translation studies.

The models proposed along these lines were very abstract, stressing the importance of the communicative purpose (*skopos*) of translation (Reiss/Vermeer 1984) and of the various roles played by the participants of the communicative process (Holz-Mänttäri 1986). But the ways in which the various factors produce the translation shifts that can be read off from the linguistic structures of the original and its translation did not receive any systematic attention by the proponents of *skopos* theory and related approaches.

Nevertheless, there are linguistically-based approaches to translation which aim at connecting the functions of language use with a detailed structural view of the linguistic means involved. In this, the Hallidayean (1985) model of language and language use, *Systemic Functional Grammar,* plays a domi-

nant role (in House 1977, 1997; Steiner 1991; Baker 1992; Hatim & Mason 1990, 1997; Teich 2003, to name some of the more influential authors). But there are also studies of translation concentrating on the use of certain linguistic means which present their findings within other theoretical frameworks. To mention just a few authors who include English in their studies: Lindquist (1989) studies adverbials in translations of English and American novels into Swedish, using the taxonomy set up in the most comprehensive grammar of English (Quirk et al. 1985); Hauenschild (1991) presents her findings on anaphora resolution within Gazdar et al.'s *Generalized Phrase Structure Grammar* (1985); Behrens (1999) concentrates on the translation of *ing*-participial attributes from English into Norwegian, and Fabricius-Hansen (1999a) discusses aspects of translational sentence splitting between English, German and Norwegian – both authors relate their findings to Kamp's *Discourse Representation Theory* (1994); Mats Johannson (2001) offers a contrastive study of clefts in English and Swedish texts and translations within Fillmore's *Construction Grammar* as adopted by Lambrecht (1994); Schmid (1999) focuses on word order in German and English within the theoretical framework of *Cognitive Grammar*, especially Langacker's theory of subjectivity (1990); Doherty (1996, 1999, 2001, 2003, 2005) looks successively at passive-like structures, adverbial clauses, discourse relators, cleft-like structures and the beginnings of sentences in translations between English and German, adapting the generative framework of *Government and Binding* and *Theoretical Semantics* as used in linguistic and psycholinguistic theories on information structure (for example by Abraham 1992; Drubig 1997; Büring 1997; Bader 2000, and others).

It is certainly no coincidence that studies like these appear in journals and series related to contrastive linguistics, corpus linguistics or machine translation. Such affiliations seem to support the suspicion that contrastive studies of translations do not belong to translation studies proper. Koller (1995), discussing the concepts of equivalence in translation studies and contrastive linguistics, says that the two disciplines are seen as focusing either on the uses or on the systems of language. He quotes Ivir (1974), who views translation merely as a source of observational data for contrastive analyses. But this is not necessarily so.

Although we cannot deny that any linguistic means is subject to certain conditions of use which may be related to its morpho-syntactic properties, the linguistic properties cannot be derived from the functional properties. The conditions for the use of active or passive, different word order, coordination or subordination, fully lexicalized phrases or pro-forms and the like cannot be

read off from the syntactic-semantic properties of these means. They have to be studied in vivo, that is, in the various texts the linguistic elements occur in. And if we compare the conditions for the use of voice, word order, clefts, etc. in the texts of two languages, we will find ourselves in the centre of translation studies whenever the relation of equivalence is involved in the comparison. That is, translation studies and contrastive linguistics do not coincide, but overlap, and it is the overlapping part for which linguistic concepts and assumptions are required in translation studies.

But the fact that authors like the ones of the above studies adhere to different theoretical frameworks makes reading difficult for the outsider and limits mutual understanding or a unifying assessment of research results. The disparity is to some extent rooted in the different properties of the linguistic means compared. Even if an identical means, as for example voice, is studied, conditions for its use may be searched for at different linguistic levels. We could look at the differences between active and passive in terms of semantic roles linked to special case frames at the morphosyntactic level and focus on the language-specific conditions of lexical alternations. But different uses of voice may also be studied at the level of pragmatic conditions associated with the discourse related organisation of information. The language-specific conditions of word order can promote the use of alternative perspectives in original and translated texts. (A unifying approach to such grammatical and pragmatic aspects of the active-passive perspective in translations between German and English is attempted in Doherty 1996.) We can also neglect all the idiosyncratic details of individual examples and compare the use of voice in regard to its quantitative distributions in original or parallel texts, in monolingual or bilingual studies (as is demonstrated by Teich 2003, who looks at transitivity and voice, theme/rheme, pre- and postnominal modifiers and the like in translations between English and German).

Studying such linguistic means in translation is a frustrating experience, not only because of the sheer number of aspects that have to be taken into account, but also because of the intricate interaction between, say, voice and a virtually unlimited number of other means. But whether linguistic aspects are taken on implicitly or – despite all discouraging perspectives – explicitly, the greatest challenge which has to be met either way is inherited from the idols of the theatre in linguistics. Having worked within a certain theoretical framework for some time, it seems almost impossible to make oneself understood at any of the other 'stages'.

The incompatibilities manifest themselves to a large extent in the linguistic terminologies associated with different theories. Although most of the terms

used reoccur almost everywhere, they participate in different conceptual systems and may carry widely divergent meanings. Unless we are familiar with the individual systems, we will not be aware of the conceptual differences between apparently similar terms – a phenomenon well-known in translation as 'false friends'. The differences may even include diametrically opposite interpretations, such as the concept of 'focus', which is related to new information or to (the most active part of) given information – the latter is prevalent in research work close to Artificial Intelligence.

The greatest conceptual divide between the various linguistic approaches occurs between functionalist and structuralist frameworks. As the terms 'structural' and 'nominal phrases' in the title of the book indicate, structural aspects will be in the centre of the issues taken up in the following. The choice of a structural rather than a functional criterion for the collection of data does not preclude a functional approach, though. Thus, collecting data about the translation of nominal phrases from English into German will involve all the structural aspects of such phrases in the two languages and a great number of noun phrase internal or noun phrase external cases of restructuring in the translations, but it will also involve the various functional aspects correlated with the structural differences.

For example, if a sentence like

(R1)   *Bacon's inductive method is faulty through insufficient emphasis on hypothesis.* (Russell 1945: 544)

is translated into German as

(R2)   *Die Schwäche von Bacons Induktionsmethode besteht darin, daß sie die Bedeutung von Hypothesen verkennt.*

we find a whole cluster of differences contributing to the restructuring of the original noun phrases in the translation. To describe these differences, we need a great variety of linguistic concepts related to the lexico-syntactic forms and their functions.

At the syntactic level, the subject has been lowered from a primary into a secondary function: it is now used as an attribute of a nominal head. The head, *Schwäche/weakness*, carries the meaning of the adjective *faulty*, that is, it corresponds to part of the predicate. The nominal phrase following the causal preposition in the original *insufficient emphasis on hypothesis* is extended into a clausal object following the pronominal adverb *darin*. Everything except for the noun *hypothesis* – which is used in the plural – is reformulated in the clause.

The syntactic differences are accompanied by semantic and pragmatic differences, and the crucial question is whether the translation is equivalent to the original, and if so, what are the language-specific conditions that could account for the equivalence between such widely divergent structures? The answers to these questions require a great variety of concepts related to the semantic-pragmatic functions of the formal means involved in the comparison. They comprise the various levels of propositional, (ideational/experiential) modal, attitudinal, and illocutive (interpersonal) meaning, their discourse (textual) functions and stilistic aspects, including features of register and the like.

For the sake of simplicity, some of the variables associated with these features can be preset at certain values and thus neglected in the taxonomy of translation data. Russel's history was first published in 1945, but the linguistic means used in the sentence quoted can be assumed to remain within the borders of neutral language use which the interested reader would also today consider as unmarked within the register of academic, written language. If the purpose (skopos) of the translation is to retain the functions of Russel's text as far as is possible in German, we can fix the global functions of the translation at a default value and concentrate on the local functions of the individual means – which, as the German version shows, comprise a highly intricate set of linguistic properties at the various levels of lexico-syntactic, semantic-pragmatic uses of language.

Regarding the local functions, the question about the equivalence between original and translation can be broken down into a set of questions concerning the equivalence of all their linguistic features as determined by the formal means at the various lexico-syntactic, semantic-pragmatic levels. And the question about the language-specific conditions that could account for the equivalence between divergent structures can be broken down into a set of questions concerning the role of each individual difference between the original and its translation.

Looking at the mere number of differences and thinking of their intricate interaction, the comparison of original and translated sentences like (R1) and (R2) seem to present an insurmountable course of obstacles. But if we add the local context to the original sentence, it will help us to identify the contextually relevant segments of the linguistic forms. Sentence

(R1)   *Bacon's inductive method is faulty through insufficient emphasis on hypothesis.*

happens to be Russel's first statement in the concluding summary of his essay on Francis Bacon's role in philosophy. In fact, this sentence is returning to the initial assessment with which Russell opened the essay:

> *Francis Bacon (1561–1626), although his philosophy is in many ways unsatisfactory, has permanent importance as the founder of modern inductive method and the pioneer in the attempt at logical systematization of scientific procedure.*
>
> (Russell 1945: 541)

After having described Bacon's life and philosophical views in altogether nine appreciative critical paragraphs, Russell pronounces his verdict on what he considers to be the crucial weakness of Bacon's philosophy. The contextual analysis helps us to identify the statement *Bacon's inductive method is faulty* as a major discourse topic of the essay, and the adverbial *through insufficient emphasis on hypothesis* as the focus of Russel's comment about this topic. In the following sentences Russell elaborates his judgement:

> *Bacon's inductive method is faulty through insufficient emphasis on hypothesis. He hoped that mere orderly arrangement of data would make the right hypothesis obvious, but this is seldom the case. As a rule, the framing of hypotheses is the most difficult part of scientific work, and the part where great ability is indispensable.*
>
> (Russell 1945: 545)

Within the fixed parameters of translation purpose and register, we expect an equivalent translation to retain the discourse functions of (R1). Looking at the German translation in

(R2) *Die Schwäche von Bacons Induktionsmethode besteht darin, dass sie die Bedeutung von Hypothesen verkennt.*

we may be willing to say that this version is discourse equivalent. But if we were asked to assess the contribution of the individual structural shifts, we would quickly feel at a loss because of the great variety of features involved.

Fortunately, the assessment can be broken down into a series of shorter steps, starting from a structurally closer translation and working our way towards the version in (R2) through a set of paraphrases in which each paraphrase deviates from the preceding one in no more than one formal feature.

A structurally closer translation would be

(R3) *Bacons Induktionsmethode ist fehlerhaft aufgrund [des/eines] ungenügenden Nachdrucks auf Hypothese[n].*

(The brackets indicate grammatically necessary changes concerning the use of articles and number.) The paraphrase will be assessed as stylistically – if not grammatically – inadequate by most speakers of German.

The formally 'analogous' version, can be compared with a more acceptable paraphrase which extends the prepositional phrase of (R3) into a subclause:

>   (R4)   *Bacons Induktionsmethode ist fehlerhaft, weil sie nicht genügend Nachdruck auf Hypothesen legt.*

We can then compare (R4) with a version containing the subclause of (R2):

>   (R5)   *Bacons Induktionsmethode ist fehlerhaft, weil sie die Bedeutung von Hypothesen verkennt.*

and (R5) with a version containing the main clause of (R2) – except for the initial noun *Fehlerhaftigkeit/Schwäche*:

>   (R6)   *Die Fehlerhaftigkeit von Bacons Induktionsmethode besteht darin, daß sie die Bedeutung von Hypothesen verkennt.*

Assessment of each grammatically adequate paraphrase concerns the appropriateness of the restructured part relative to its discourse function within the local (and global) context of the paraphrase.

In a less systematic way the paraphrasing method is, as a rule, part of the search for appropriate target language versions in the process of translation. (Toury 1995, 'tracing the emergence of a translation' reproduces Hartmann's 1980 example of an original document illustrating successive stages of a dozen or so English paraphrases leading from a German sentence to the final version of its English translation, 187ff.) The paraphrase method and the discourse-based analysis together can help us stabilize intuitions about equivalence and the share of each individual element in it. The method can also be used as a research tool in determining the language-specific conditions for equivalence between original and translation.

As the example demonstrates, the comparison of an original and its set of translation paraphrases will involve questions of discourse relevance and thus linguistic categories of information structure (theme/rheme, focus/background, topic/comment and the like) as well as the language-specific forms of its encoding (questions of rank, word order, explicitness and the like). The various theoretical views associated with these issues will be taken up by the first two chapters of the book. They will also present the basic assumptions concerning discourse appropriateness and language-specific structures,

including a detailed discussion of the highly sensitive question of empirical data, intuition and objectivity.

The third chapter will concentrate on noun phrase internal differences between the original and its translation, the fourth chapter on noun phrase external differences and the fifth will take up appositions and sentence borders in translations between English and German. All sections will be presented with a critical eye on Bacon's five idols, attaching the highest degree of critical attentiveness to the idol of the theatre translation studies has inherited from linguistics.

Theoretical and methodological aspects of basic concepts

The chapter will contain five sections, successively taking up the question of empirical data, psycholinguistic assumptions about language processing, major concepts of the grammatical framework chosen, basic assumptions of a theory of information structure, some parameterized (typological) differences between German and English sentence structure, and several claims about general strategies of informative language use.

1.1   The subjectivity problem

> *Why do you believe that 8 × 7 = 56?*
> *Have you ever verified this proposition?*
>
> (Russell 1962:14)

In his famous discussion of grammatical intuitions, Levelt (1974) reports a little experiment concerning grammaticality judgements on twenty sentences. Except for four sentences, which were considered grammatical by their original authors and the test group of twenty four linguists, grammaticality judgements on all the other sentences differed widely. For example the sentence

(1)   *I did believe that John would leave until tomorrow.*

was considered grammatical by Lakoff and ungrammatical by half of the other linguists. Or a sentence like

(2)   *Her slicing of the cake was clever.*

which Frazier considered ungrammatical, was considered grammatical by all the other linguists except four (p. 15f. and 64f.).

Discussing the problems associated with the context of the linguistic presentation, the comparison with other sentences, the use of unnatural and misleading examples, Levelt finally concentrates on the impact of linguistic training and theoretical expectations. Quoting an example from Hill (1961)

(3)   *I never heard a Greenhorn smoke a dozen oranges.*

which three of Hill's subjects found ungrammatical, but two of them thought grammatical "when it was pointed out that the sentence was strictly true", Levelt (1974:64) emphasises the importance theoretical models have for intuitive linguistic judgements: "The mental representations which we have while the linguistic judgement is formed and the deductions which we make from them are not negligible epiphenomena; they are part of the essence itself of such behavior."

As far as translation involves language, judgement of translation data involves linguistic intuition. Although judgement of grammaticality plays a minor role, judgement of paraphrases and acceptability are crucial in translation studies, for its theoretical branches no less than for its applied branches. One of the oldest and most essential questions about translation concerns translational quality. As House in her systematic review of translation criticism (2000:1) shows "this question cannot be answered in any simple way because any statement referring to the quality of a translation implies a conception of the nature and goals of translation, i.e. it presupposes a theory of translation."

Different theories arrive at different judgements in their assessment of the quality of a translation. House's survey of anecdotal, response-oriented, text-oriented, literature-oriented and linguistically oriented approaches suggests that the major reason for the differences lies in the nature of the factors which are included in the evaluation. Extending the Hallidayean register concepts of field, mode and tenor by the category of genre, House presents a scheme for textual analysis, comparison and assessment of original and translated texts (p. 23).

What this could mean if translation is not restricted to "the very narrow sense of the word but rather at a version of a text or at different instantiations of a message" is shown by Steiner (1998:296) in his case study of an English and German version of Rolex advertisements. Considering translation from a register-based viewpoint, he compares lexical change in the original and translated text and the space given to certain topics in the German and English versions. He looks at grammatical features (like tense and agency) and at textual features (like headings or the placing of inserts and the like); he looks at formal and informal language at the dimension of field, or spoken medium at the dimensions of tenor and mode, and adds some observations on the specific aspects of translations from English into German concerning grammatical metaphors, anaphora and lexical cohesion. In the end, Steiner refrains from judging the translation as a whole and stresses the advantage of the register-

approach for the analysis of 'co-generated texts', which, it seems, may contain any number of 'revisional' elements in the translation.

However, commenting the translation of a descriptive paragraph where the experiential meaning of the original is not quite preserved, Steiner says "arbitrary changes are unjustified ..." (p. 312). Pursuing Steiner's thought further, we could draw up a list of partly interrelated features of the original and its translation, which are either similar or different and assess the similarities or differences as to whether they are justified by the special conditions characterizing this particular register. Unjustified features of the translation would range over minor or major deficiencies in the quality of the translation. If we take similar forms as the default case of translation relations (which does not mean that they are the dominating case of translation relations), all formal differences of the translation require justification.

If we apply this criterion to our introductory example, Russell's statement about Bacon's inductive method, and assume that the discourse functions of it should not be changed, we may suspect the structural changes from (R3) to (R4) as being justified by special conditions on the use of German – but no grammar could explain our intuitive judgement. We would simply have to claim that (R3) and (R4) are equivalent paraphrases and (R4) is more appropriate in the context than (R3). All the other changes that lead from (R4) to the final version (R2) are paraphrases which seem to be stretched further and further, presenting changes of the propositional (experiential) meanings of the original which we could not justify by any known differences in the uses of English or German. But this does not mean that such differences do not exist. If we trust our intuitive judgement on equivalence and acceptability/appropriateness, we can use this method of 'control paraphrases' as an efficient research tool helping us to determine specific conditions of language use.

However, we have to subject the method to a number of constraints restricting the variables involved in the comparisons, so as to minimize the subjectivity of our research. The restriction will concern different aspects, two of which have already been indicated: first, purpose and register of the translation should retain the properties of the original text. In our case it will be a case of unmarked language use (even if the text were to contain some marked passages). Second, two paraphrases should differ from each other only in one detail of the linguistic expressions used (which could comprise several features contributing to it as illustrated in the paraphrases of Russell's statement.)

There are another three aspects which have to be constrained to make the method of control paraphrases more objective. An obvious requirement is (thirdly) intersubjective agreement of the judgements. If paraphrase judge-

ments are shared by more individuals, they could be considered to be less subjective. The next, (fourth) aspect is closely related to this: an important precondition for any mutual agreement is a common basis of knowledge. This can be secured by a precise understanding of the discourse into which the paraphrases have to be inserted. The nature of the element distinguishing two paraphrases determines the part of the discourse deserving special attention. The last and theoretically most sensitive constraint (fifth) is predetermined by the particular aspect of the language use we want to investigate. Theoretically, we could form paraphrases by varying any of the features of the linguistic form of the original. There are many more possible paraphrases of Russell's statement. But if we do not want to study language-specific conditions on the use of compounds or technical terms, we will not compare paraphrases with different translations of the technical concept 'inductive method' (unless we could expect some direct interaction between these means and the topics of our investigation). It is clear that the choice of paraphrases cannot proceed without any theoretical hypotheses, however 'pretheoretical' they may be.

As the topic of this book is the translation of nominal word groups from English into German, we will be mainly interested in paraphrases involving nominal phrases. Such differences could play a role at both sides of a paraphrase relation, that is the original may contain a noun phrase which is subjected to changes in the translation; or the translation may use a noun phrase which did not occur in the original. A typical instance would be the nominalization of a verb phrase. Categorial differences as those between verb phrases and noun phrases are associated with a number of other structural differences for merely grammatical reasons. Although language-specific differences between the grammatically acceptable use of linguistic structures play an important role for our non-grammatical acceptability judgements, we will restrict attention to those structural differences which are not grammatically predetermined. But structural differences involving noun phrases could also concern their internal make up, in particular the form and position of the extensions of the noun. Prenominal or postnominal modifiers or complements permit a great variety of different categories, which contribute their own structural potential to that of the nominal head. Finally, structural differences involving noun phrases may also concern their position within the syntactic hierarchy of the sentence to which they belong.

An impressive variety of structural differences involving noun phrases is illustrated by the translational paraphrases of Russell's statement about Bacon. But why should we go on paraphrasing and change ever more features of the original structure after we have reached the first grammatically acceptable

paraphrase? Why not stop paraphrasing after we have reached (R4)? The answer is simply that we can improve the translation further. Paraphrases which go beyond the mere grammatical acceptability can improve a translation by increasing its acceptability in terms of discourse appropriateness. (R5) is better than (R4), and (R6) is better than (R5) because their structural changes help us to integrate Russell's statement more easily into the discursive context it belongs to.

Provided we can secure sufficient intersubjective agreement regarding our judgement on the equivalence and acceptability/appropriateness of the translational paraphrases, we can start collecting examples with similar properties and look for the language-specific conditions that might explain such structural differences in the use of English and German. Although the border between grammatical acceptability and discourse appropriateness tends to be fuzzy, there are clear cases of language use where an analogous translation will be judged grammatically unacceptable by a majority of native speakers. As such cases are traditionally dealt with by grammatical theories, we can draw upon generalizations and explanations developed there, and concentrate our research on discourse appropriateness justifying structural changes beyond the needs of grammatical acceptability. This does not mean that we can neglect grammatical aspects, but it means that we can choose between grammatical theories and use assumptions that have already been justified by reasoning independent of translational questions.

But why should we restrict the idea of discourse appropriateness to the idea of easy discourse integration? After all, there are many more aspects of language use and their special goal may override that of easy discourse integration. In fact, cases of language use where authors have ignored the easier-to-integrate structure in favour of a more difficult one are by no means rare. Such preferences may even be characteristic of an individual author's style, of a special register or, some people may think, of a special language. In the *Awful German Language* Mark Twain entertains his readers with a literal English translation of an extended prenominal attribute: "But when he upon the street the in satin and silk covered, unconstrainedly after the newest fashion dressed) government counsellor's wife met" (1977: 97). What is grammatically unacceptable in English is grammatically acceptable in German: "wenn er aber auf der Straße der in Samt und Seide gehüllten, jetzt sehr ungeniert nach der neusten Mode gekleideten Regierungsrätin begegnete", but it would clearly have to be considered a marked use of attributes in German. Even if the discourse is not available, we know that the sentence is more difficult to integrate into discourse than one with a postnominal attribute. This is clearly

so when we find similar structures today, as for example in Sebald's *Austerlitz*, which abounds in extremely complex prenominal attributes, normalized in the English translation.

"Austerlitz ... machte mehrere Aufnahmen von den inzwischen ganz verdunkelten Spiegeln, die ich jedoch unter den vielen Hunderten mir von ihm bald nach unserer Wiederbegegnung im Winter 1996 überantworteten und größtenteils unsortierten Bildern bisher noch nicht habe auffinden können." (2001:11)

"Austerlitz ... took several pictures of the mirrors, which were now quite dark, but so far I have been unable to find them among the many hundreds of pictures, most of them unsorted, that he entrusted to me soon after we met again in the winter of 1996." (2002:7)

Obviously, easy discourse integration is no goal of Sebald's, who demands from his readers an extra amount of efforts at the very surface of his narrative structure. But our intuitive judgement of Sebald's stylistic characteristic presupposes also an intuitive understanding of what it is that Sebald 'violates'. If we look at marked cases of language use like Sebald's, it is clear that discourse appropriateness can mean easy discourse integration relative to the respective properties of the original. That is, if the original does not present a neutral case of language use, the translation should be just as marked as the original. But this – as the English version shows – may not be possible at all.

However, even if our intuitive judgement of marked or neutral language use is somehow related to easy discourse integration, we have not yet overcome the subjectivity problem. We can now return to our first constraint, which was to fix the purpose and register of the translation and select our empirical basis from texts that we could consider as predominantly neutral – even if they were to contain the one or the other case of marked language use. Furthermore, we will promote intersubjective agreement on equivalence and discourse appropriateness of paraphrases systematically varied in regard to a restricted set of linguistic properties by a careful analysis of the relevant discursive context.

Still, all these constraints, meant to minimize subjectivity of equivalence and acceptability judgements, cannot disperse our fuzzy feeling concerning the subjectivity problem. Although there will be no final solution to the problem, there is one last constraint we will add. And this is, as Russell (1945:544) says, "the most difficult part of scientific work": "the framing of hypotheses". We have to decide on a theoretical framework with a set of hypotheses that is likely to help us unravel the regularities underlying our intuitive judgements. As these decisions concern all linguistic properties involved in the comparison of

paraphrases, the plausibility of the initial decisions may become more evident with the detailed discussion of the individual subclasses of the translation data. But before we can focus on the special properties of nominal groups, the theoretical background associated with a number of more general aspects has to be clarified.

The first concept in need of theoretical clarification is that of 'easy discourse integration' and its role in our intuitive judgements on discourse appropriateness.

1.2   Language processing

Easy discourse integration can be seen in a much wider context than the one accessed in the paraphrase judgement of Russell's statement about Bacon. Hewson and Martin (1991:183) suggest paraphrasing as a means of bridging different language cultures, where the translation is chosen from a set of interlinguistic paraphrases relative to certain social-cultural/economic parameters. Within their Variational model they include such widely divergent variables as the translator's competence, existing translations, the nature of the translational order etc.

If we were to understand all these variables as part of the discourse into which the paraphrases compared are to be integrated, it would probably not be possible to unify all this into a common basis, where easy discourse integration could be a meaningful concept. However, there can be no doubt that all these aspects play a role in translation and that the decision to neglect most of them in favour of a much narrower concept of discourse means to restrict the theoretical insights won this way to a subset of translation problems. Even so, the narrower concept of discourse can play a basic role in all forms of language use, notwithstanding the numerous constraints that may be superimposed upon it. Possible extensions of the theoretical results onto other cases of language use will be discussed in the concluding parts of the book.

Aiming at a better understanding of our intuition on appropriateness through easy discourse integration, we need a type of discourse where as many discourse relevant features as possible can be read off from the linguistic forms of the discourse. Written texts are, in this respect, better than spoken texts, and among them those texts which are primarily informative and sufficiently explicit for the interested laymen. Russell's History of Western Philosophy would be such a text. Articles from New Scientist, from which most of

the following examples have been taken, are also typical examples of such informative, non-special, written use of language.

There is no denying, though, that texts of this register, too, contain quite a number of underspecified parts which cannot be accommodated by general world knowledge. The importance of a precise understanding for judging discourse appropriateness will be demonstrated extensively in the following sections and chapters discussing translations from English into German. Despite their mainly informative character and considerable explicitness popular-scientific texts on astronomical, chemical, medical, genetic or climatic topics deal with complex affairs which often presuppose an expert's knowledge.

Discourse analysis of narrative texts are normally less burdened with such extralinguistic difficulties. Although simpler issues could also be encoded in highly complex linguistic structures (a phenomenon not unfamiliar in abstract theories), the result would not be considered a neutral case of language use. But if the informative function of language concerns less complex matters, ease of integration is also less at stake. A certain degree of complexity will be considered normal for linguistic structures carrying information about complex matters. And such texts may be expected to reveal more of the language-specific conditions on easy discourse integration.

With translation purpose and register fixed to neutral values of a normally complex type of written text, we can now begin to look into the theoretical framework which helps to place our intuitive judgement on discourse appropriateness on a more serious scientific basis. The discipline which is – among other aspects of language use – concerned with the comprehension of linguistic structures is psycholinguistics. In his overview on psycholinguistics Michael Tanenhaus (1988:1) speaks of three basic questions psycholinguistics is concerned with. "First, how languages are acquired; second, how people comprehend language; and third, how people produce language." The first two questions determine "experimental linguistics", which according to Frazier and Clifton (1996) has made remarkable progress since the 1970s, especially regarding language comprehension. After its initial behaviourist period during the 1950s, a psycholinguistic which assigns a central role to the grammar developed various "specific and testable theories of how people use their knowledge of language to understand sentences".

Although there are contrasting views understanding language processing as a more general and basic cognitive process, in which "linguistic grammars are merely epiphenomena" (Tanenhaus 1988:2), the idea of language-specific conditions of easy discourse integration requires a linguistically based approach to language processing. Yet there is a wide variety of rival theories propagating di-

vergent linguistic-based models of language processing. Although most of the theories share a generative view of the linguistic structures involved in language processing, basic questions about the processing mechanism itself may even be answered alternatively.

As Flores d'Arcais (1988) shows, alternative positions were to some extent caused by shifts in psycholinguistic interests. All the early "models on language perception tended to be serial and generally autonomous. There was a shift to predominantly interactive models, followed by a revival of autonomous models of a less 'radical' type" (p. 98). These alternative views of autonomy and interaction in language perception processes have not yet been reconciled today. The question is whether language processing "is the output of a series of processes performed by single components or of a process taking place through the simultaneous cooperation of different sources of knowledge.

According to a radical autonomous position, processing at each level is independent of influences from processing at other levels. Lexical access would be unaided by other levels and syntactic processing would be performed without assistance from, or relation to, any semantic processing." Alternatively, the extreme interactionist position says "processing at one level is affected by, and affects, processing at all other levels ... Perceiving sentences is the result of interactive processes between syntax, semantics and pragmatics" (p. 113). Less radical positions allow for interaction at some level of output. But "the problem is to decide *what* interacts with what, and *where*" (p. 114).

There is ample evidence for interaction and autonomy in language processing. Interaction can be read off from various types of contextual effects. "Such effects consist in the action of a given source of knowledge, linguistic or extralinguistic, on the processing of a given unit or level of linguistic material." There are "contextual effects at all levels, such as on the identification of phonemes and of words at the level of sentence processing" (p. 115). A striking example of context effect in word perception is the phenomenon of phoneme restoration. In context a word can be perceived as normal even if part of it is acoustically deviant or missing. Yet more impressive is the automatic correction of speech errors which comprise longer stretches of linguistic structures. Thus, ungrammatical utterances like

(4) *She was waiting her husband for.*

or

(5) *Dann sollte nicht der Eine mit dem Anderen auf den Finger zeigen.*

may pass unnoticed, as was the case in a discussion where this monstrous German sentence did not receive any attention.

Speech errors are mostly investigated as evidence of "grammatical rules 'at work' in performance" (Fromkin 1988: 123), allowing us to distinguish abstract units at the phonological, lexical, morphological or syntactic levels composing the hierarchical structures of sentences in perception. And any automatic repair can count as evidence of an interaction between the linguistic levels involved in the type of error and its correction.

Major evidence for the various components contributing to the comprehension of linguistic structures comes from a phenomenon which is a much more subtle type of linguistic error and, unlike slips of the tongue, rarely noticed in everyday life. In psycholinguistics, however, the phenomenon has not only been worth a special name but has given rise to a widely accepted theoretical approach to language processing. The phenomenon is associated with the processing errors arising in the resolution of syntactic ambiguities. The erroneous solution has been called 'garden path' and the theory focusing on it 'garden path theory'.

Garden path effects occur when "readers are temporarily 'garden pathed', that is, pursue an incorrect analysis in syntactically ambiguous structures even when preceding sentences provide a disambiguating information which in principle could guide the processor's choice of an appropriate syntactic analysis". Garden path effects are thus "an impressive demonstration of the independence of syntactic analysis" (Frazier 1988: 22). The independence of processing can be viewed as a strictly autonomous form of language processing where linguistic and extralinguistic knowledge is separated from each other, or as a less isolating relation between various components which have to some extent a "common vocabulary". It is this so-called 'modular approach' to language processing which is now the more widely accepted version of the autonomy position also used in garden path theory.

Although there is general agreement that there must be a lexical and a syntactic module, assumptions about the theoretical architecture of these modules differ. Experiments using self-paced reading or eye-movement-recording have produced evidence which was regularly challenged by theoretical opponents. Thus, even among 'modular' theories there is "disagreement concerning the number and nature of the modules involved." (p. 28). Nevertheless, as Frazier (1999: 1) says "the study of syntactic processing is thriving among almost as many investigators trained in linguistics as well as in psychology."

Choosing a model appropriate to translation studies against this background of more than thirty years of lively interdisciplinary discussion in psy-

cholinguistics is no easy task. Processing models which involve more than one language are of particular interest to the question of appropriate translations. As this book focuses on translations between English and German, psycholinguistic assumptions on processing of English and German sentences are most relevant. Fortunately, the special syntactic properties of German make it an interesting object of psycholinguistic studies and the grammatical differences between English and German provide a testing ground for the question whether sentence processing follows universal or language-specific strategies.

Discourse-appropriate translations won by the method of control paraphrases suggest that language-specific conditions on sentence processing can best be studied within the garden path model. This allows us to consult psycholinguistic literature directly relevant to the topic (including experimentally-based neurophysiological insight concerning garden path effects in German sentence processing). In her preface to Hemforth and Konieczny's reader on sentence processing, Frazier (2000) emphasizes that now nearly as much is known about processing German sentences as about processing English sentences thanks to several flourishing research centres in Germany.

Syntactic ambiguities that may lead to temporary (weak) or permanent (strong) garden path effects occur during the processing of English or German sentences. They reveal similar mechanisms under different structural conditions. A garden path sentence like

(6) *The input system makes explicit information that is only implicit in the grey level pattern (just as the language system makes explicit information that is only implicit in the acoustic properties of an utterance.)* (Carston 1988: 44)

seems to be incomplete because the adjective 'explicit' is processed as attributive instead of predicative. The weighty object with its restrictive relative clause has been postponed within the original (in line with the principle of end weight, see 1.3). As the corresponding German adjective would not occur in a position preceding the noun, it would not give rise to a syntactic ambiguity.

(7) *Das Eingabesystem macht die Information, die . . . nur implizit ist, explizit.*

On the other hand, the syntactic ambiguity of a sentence like

(8) *Das ist die Studentin, die die Lehrerin gefragt hat.*

has to be disambiguated in line with the English conditions on word order as either

(9) *This is the student who asked the teacher*

or as

(10)   *. . . who the teacher asked*

There are much subtler differences between syntactically based processing conditions in German and English, which can be shown to underlie the intersubjective agreement on restructuring elicited by the method of control paraphrases. The last German example shows that syntactic ambiguity need not result in a garden path effect. Whether we become aware of it or not, syntactic ambiguity leads us astray only if it interrupts sentence processing. In a strong garden path processing breaks down altogether, in a weak garden path it will be resumed by reanalysis, that is by back-tracking the syntactic structure to the ambiguous point and choosing an alternative option. One of the major assumptions of this book is that judgements on easy discourse integration honour syntactic structures which improve discourse integration by reducing the need of reanalysis.

Garden path sentences are syntactically well-formed sentences, which can be comprehended easily if they are analysed correctly. If the readers were to solve the structural ambiguity in the correct way right away they would not have to reanalyse the result. But even highly improbable readings may not prevent us from getting into garden paths. Thus, a sentence like

(11)   *He broke the window with his sister.*

will at first lead into a garden path. Such cases are strong evidence of processing modules having to work – at least for some time – without access to information from other modules. Later on, when reanalysis sets in, the other information has become available. Psycholinguists speak of first pass and second pass reading and propose certain processing strategies which could explain the erroneous decision of the first pass analysis.

As most garden path effects are less obvious than the preceding ones but can to some extent be read off from eye movement and reading times, a wide variety of highly sophisticated experiments has been developed to test theoretical hypotheses on processing strategies in detail. The hypotheses have to answer questions like:

> *What leads to preferred readings in ambiguous sentences?*
> *Why are some sentences more difficult to process than others?*
> *How do humans recover from errors made during parsing?*
> *What causes processor break down or garden path phenomena?*
> Etc. (Crocker 1996: 34)

Most important for the application of psycholinguistic hypotheses to the issue of discourse appropriate translation is the question of language-specific variation. Are the strategies that could account for garden path effects of structurally adjacent elements universal or do we have to assume language-specific strategies? If we take processing ease of a sentence in discourse as an essential property of discourse appropriateness, restructuring preferences which we can observe despite similar structural options suggest language-specific differences in the form or use of processing strategies. But the discussion of such language-specific differences concerning discourse appropriateness in terms of processing ease presupposes detailed assumptions about the properties of the languages involved. The next section will therefore be devoted to the major grammatical properties of German and English.

1.3   Basic linguistic assumptions

Except for one-word sentences all sentences involve some syntactic structure visibly. But all sentences – including one-word sentences – are syntactically structured. The graphic means which help us to distinguish individual words or – by punctuation – some segments within the chain formed by the words reveal very little of the syntactic structure we have to recognize when we process a sentence. So what is it that we have to recognize at the syntactic level before we have access to the semantic/pragmatic levels? There are many different theories of grammar, but a great number of concepts used to describe syntactic structures is shared by most of them. Thus, it is a long-standing tradition to assume that words form word groups with certain syntactic functions like predicate or object, and that subjects together with predicates form sentences or clauses, and so on. Words are classified by their word class as nouns, verbs, adjectives etc. according to the grammatical categories expressed by their morphological variations, number, gender and so on.

However, taxonomies may vary to some extent – because of the chameleon nature of linguistic elements, but also because of major differences between the theoretical frameworks against which the individual grammatical concepts are to be interpreted. Such differences may cut off communication between competing schools altogether. Especially more detailed generalizations about cross-linguistic commonalities and differences may be difficult or even impossible to understand and compare.

Thus, a sentence like "The tendency towards a semantics-grammar isomorphism in German is implicated primarily in the ideational metafunctions

in terms of transitivity organisation" which summarises a contrastive linguistic account of major grammatical properties of English and German (Teich 2003:139), will hardly be understood by someone who is not familiar with the theoretical framework of functional systemic grammar. Traditional terms, like 'transitive verbs' may point the way to the type of grammatical properties investigated. But the interpretation of the sentence does presuppose the major categories of Halliday and Mathiessen's grammatical theory (as it is surveyed in two of the six chapters of Teich's book on cross-linguistic variation in system and text).

Similarly, a sentence like "verbs not only carry information about the number of arguments they subcategorize for but also about their thematic structure and their ordering of arguments with respect to their thematic prominence." (Hemforth & Konieczny 2000:7) will leave us in the dark if we are not familiar with the terminology of generative grammar, in particular with its version of government and binding and subsequent models, including the so-called theta-theory. It is only when we read the examples illustrating the theoretical statements that a common topic seems to emerge. If the different processing conditions of sentences like

(12)   *Die Frau bemerkte den Mann mit dem Fernglas.*

(13)   *The woman noticed the man with the binoculars.*

and

(14)   *Die Frau beobachtete den Mann mit dem Fernglas*

(15)   *The woman watched the man with the binoculars.*

are explained by the different properties of the verbs, we can expect theoretical concepts like 'subcategorization', 'arguments' and 'thematic structure' to be related to the transitivity system characterizing structural options in various types of mental processes.

Describing the German transitivity system, Teich (2003) says about mental processes that they "typically involve a Senser and a Phenomenon, where the Senser is a conscious entity and is realized by a nominal group in one of nominative, accusative or dative case" (p. 78) and "*Mental processes* are subdivided into affective, perceptive and cognitive processes ... These subtypes differ lexico-grammatically with regard to number and realization of participants involved." (p. 81) Though Teich does not contrast cases like 'notice' and 'watch' explicitly, it is clear that the difference concerns the way in which a role participant is linked to the syntactic structure associated with the verbs.

Despite the terminological differences the generative model pursues the same ideas. Discussing the relation between lexical information and word order, Bader (2000:209) says "We can assume that the arguments in the lexical entry of a verb are ordered." The pair of verbs he uses as an illustration of the lexical information 'zuhören/listen', 'etwas einfallen/occur to' are distinguished from each other by the role of the first participant

> Zuhören: <Agent Theme>
> Einfallen: <Experiencer Theme>
> (209: 40a/b)

Except for the syntactic realization of one participant as dative, the correspondence between the generative and the functional views about the lexical-syntactic relations is obvious. But while all ingredients seem to be present also in the approach of systemic functional grammar, its major concern with ever finer grained grammatical functions makes it difficult to tease the various levels of linguistic information apart. In particular, it is the role of syntax and the fact that special properties of phrase structures are presented in a more detailed way which has led psycholinguists studying language processing to opt for the generative model. We will follow their choice, but keep the technical terms to a minimum, which should also be understandable from a systemic functional perspective.

The crucial aspect of language-specific processing conditions is the availability of the information necessary for the resolution of ambiguities. In the examples with 'notice/watch' it is the information associated with the verb as the head of the syntactic structures. The way in which a lexical head controls its syntactic 'partners' by its specific meaning (its 'Semantic Form') is referred to as 'lexical projection' (see for example, Bierwisch 1996). Together with typological (parametrized) differences in word order it plays a crucial role in language-specific conditions on sentence processing.

Studying biases in sentence processing, Konieczny, Hemforth, Scheepers (2000) proposed a 'Parameterized Head Attachment Principle', with three subprinciples to account for processing preferences or garden path effects associated with the different positions of the German verb in main or subclauses. Thus, the lexical information of the English and German verbs have already been encountered in the main clause versions when the prepositional phrase is processed:

(16)   *The woman noticed/watched the man with the binoculars*

(17)   *Die Frau bemerkte/beobachtete den Mann mit dem Fernglas.*

It is still missing at this point in a German subclause:

(18)   *Ich sah, dass die Frau den Mann mit dem Fernglas bemerkte/beobachtete.*

(Hemforth & Konieczny 2000: 7).

The information of the verb decides upon the instrument role of the prepositional phrase, and the principle of parameterized head attachment predicts that the prepositional phrase will be grouped with (attached to) the phrase headed by the verb *beobachten/observe* but to the preceding noun phrase after the verb *bemerken/notice*. In German subclauses with the verb at the end of the clause the difference is predicted to disappear (Konieczny & Völker 2000: 139). The parameterized head attachment principle was not only confirmed by experiments but could be shown to be effective even when contextual influences would suggest different interpretations (p. 157).

Such findings suggest that the most important question for a linguistic theory of discourse-appropriateness is the question: Which information is available at which time of sentence processing? As the examples show, the answer presupposes detailed theoretical models of all linguistic modules and submodules contributing information needed for sentence processing. Structural concepts of syntactic heads and their relations to all other parts of the sentence is no less relevant than semantic information on the combination of words – where language-specific differences will certainly pose the greatest challenge to translators.

Although it is still far from clear how much of our lexical knowledge is stored in form of idiosyncratic information associated with one specific linguistic expression – simple or complex – and how much is computed by rules from more basic elements (a question to which Nooteboom et al. 2002 devoted their volume on *Storage and Computation in the Language Faculty*, with contributions from a great number of renowned linguists and psycholinguists), there is some agreement on various major aspects of "grammaticalized" information. There is the categorial information about the word class which can function as head of a structural phrase or word group carrying a syntactic function in the sentence. Major categories like nouns and verbs (but also adjectives/adverbs and prepositions) constrain the ways in which they can be extended into word groups by their structural properties, predetermining the number and type of phrases by which they can be extended (sub-categorisation or valency of a lexical head – an idea that has a long-standing tradition with verbs subclassified into intransitive, transitive and ditransitive classes). Finer-grained models relate the structural properties of individual lexical heads to their meanings, in particular to the parts controlling 'lexical projections'.

To a certain extent, the ways in which words are extended into phrases is cross-categorial and many of the properties observed in verb phrases may recur in noun phrases, especially if they are headed by a noun which might be considered deverbal. But the derivational potential of languages differs widely and the language-specific properties of verb phrases seem to be multiplied in noun phrases. As paraphrases may involve changes between verbal and nominal structures, similarities and differences between verb phrases and noun phrases are highly relevant to structurally-based translation studies.

Again, the method of control paraphrases can show us which linguistic theories have to be accessed to explain such language-specific uses of NPs and VPs as those illustrated in the translation of Russell's criticism of Bacon's inductive method. If a majority of German native speakers prefers the clausal version to the nominal version, we can systematically vary the features of the noun phrase to identify the theoretical domain of the German bias. A paraphrase replacing the derivational form of the nominal head by a clearly deverbal noun does not improve processing conditions:

(19) *Bacons Induktionsmethode ist wegen der ungenügenden Einbeziehung/ Berücksichtigung von Hypothesen fehlerhaft.*

Incorporating the prenominal negative adjective into the deverbal noun may not be much better either:

(20) *... wegen der Unterbewertung von Hypothesen fehlerhaft*

But the paraphrase does get better if we use a basic noun instead of the deverbal noun:

(21) *... ist wegen des geringen Stellenwerts von Hypothesen fehlerhaft*

And the improvement is even more noticeable if we replace the nominal phrase by a clausal version like

(22) *Bacons Induktionsmethode ist fehlerhaft, weil sie nicht genügend Nachdruck auf Hypothesen legt.*

If we want to explain the improvement gained by using a basic noun instead of a deverbal noun we have to search for the linguistic feature distinguishing the contextually equivalent phrases

(23) *aufgrund der Unterbewertung von Hypothesen / aufgrund des geringen Stellenwerts von Hypothesen*

It is relatively obvious that the difference resides in a semantic feature distinguishing statal from processual aspects. Thus, as the English original uses a noun that can be associated with a process, linguistic theories about semantic structures of different classes of nouns will be relevant in our search for language-specific conditions and sentence processing.

If we want to explain the improvement reached by the clausal extension of the nominal phrase, we have to enter another domain of linguistics. It seems that the justification of Russell's criticism needs more structural weight in German than it is attributed in the phrasal version. Heavy structures at the end of a sentence are related to the phenomenon of 'end weight' which combines two aspects of linguistic structure: position and structural explicitness (including differences in rank, viz. phrases vs. clauses).

The topic of end weight is traditionally dealt with in theories about information structure. Information structure is a major factor in discourse appropriateness, and it is only natural that it should play an essential role in the interpretation of the observational data won by the method of control paraphrases. But there is not much hope for any simple conclusions like: German is rather explicit and fond of end weight. All the more so as any generalisation about the language-specific conditions on discourse-appropriateness in the target language raises questions about comparable structures in the source language.

The structural alternative between the clausal or phrasal version is also available in English, that is, Russell's original sentence could be extended into a paraphrase like:

(24)   *Bacon's inductive method is faulty because it does not place sufficient emphasis on hypotheses.*

But Russell did not use this version. The intriguing question is whether there is anything systematic behind the translator's and the author's different choices, in the sense of language-specific conditions on discourse appropriateness. We will return to this example in Chapter 4, when we are concentrating on NP-external restructuring.

The shift from the phrasal to the clausal version of Russell's statement is accompanied by other structural changes such as the adaptation of the modifier (attribute vs. adverbial) and the different specification of smaller grammatical features like number, definiteness and the like.

Dealing with all these linguistic issues in depth is not possible, but it is important to be aware of the different theoretical areas involved in the question of language-specific sentence processing. However, information structure is a (if

not the) key to the language-specific aspects of easy discourse integration and to the extent that linguistic properties of structural paraphrases are determined by their information structure, they will be taken up in the next two sections, which present the basic concepts of information structure as they will be used in the following chapters.

1.4 Information structures

Let us begin with another, 'simpler' example. Elaborating his criticism of Bacon's inductive method, Russell says about Bacon that:

(25)   "*He hoped that mere orderly arrangement of data would make the right hypothesis obvious.* "

The sentence could be translated by a close paraphrase as

(26)   *Er hoffte, dass die bloße systematische Anordnung der Daten die richtige Hypothese erkennbar machen würde.*

but also as

(27)   *..., dass sich aus der bloßen systematischen Anordnung der Daten die richtige Hypothese ergeben würde.*

or

(28)   *..., dass sich die richtige Hypothese bereits aus der systematischen Anordnung der Daten ergeben würde.*

With each change, processing ease in German increases. The difference between the first and the second paraphrase is produced by the lexical replacement of the verbal group *erkennbar machen/make obvious* by the reflexive verb *sich ergeben/result*. The replacement is associated with a different case frame. While *erkennbar machen/make obvious* requires an accusative direct object, which coincides – morphologically – with the nominative case of the subject, the reflexive *sich ergeben/result* is subcategorised for a prepositional object: *sich ergeben aus/result from*, which can be easily distinguished from the nominative case of the subject.

The different case frame is associated with an inversion in the distribution of the semantic/thematic roles of the participants onto the syntactic functions of subject and object. If we assume a hierarchy between thematic roles corresponding to their prototypical syntactic realisations (which is a widely spread

assumption in semantic works like Grimshaw 1990; Dowty 1991; Bierwisch 1996, and others), we could characterize this structural change as a shift in perspective where lower semantic roles are projected into higher syntactic positions. (For a more systematic discussion of the grammatically-based differences between German and English underlying such shifts in translations, compare Section 2.2).

The second paraphrase retains the word order of the original, irrespective of the shifted perspective. The third paraphrase reorders the two arguments so that the subject precedes the prepositional object. This change, too, improves processing conditions, but the theoretical domain of the improvement concerns information structure, this time the linguistic properties of word order related to discourse organisation. In a first approximation we could say that the third paraphrase is easier to process because it presents the arguments in line with their role in discourse, in particular, their contribution to progress in discourse. As the preceding sentence on Bacon's inductive method has already introduced *hypotheses* as a discourse topic, the contribution of the second and third paraphrase to progress in discourse has to be identified with the information of the prepositional object. If we accept a widely held assumption that processing is easier if it begins with familiar information, that is, if information contributing to progress in discourse follows information that has already been introduced, then the third paraphrase should be more discourse-appropriate than the second.

Obviously, the distribution of the information is different in the English original. Although reordering of the arguments by a shift in perspective is possible:

(29)   *that the right hypothesis would be made obvious by mere orderly arrangement of data*

the sentence – judged by native speakers – is more difficult to understand, which suggests that also this sentence from Russell's passage exemplifies different conditions for discourse-appropriate distribution of information in German and English. As it were, there are a great number of translations displaying similar cases of restructuring and to describe and explain all those structural 'propensities' revealed by the method of control paraphrases, we will now look for an appropriate model of information structure.

Information structure is traditionally related to certain prosodic aspects, as well as certain grammatical configurations including marked word order. The Comprehensive Grammar of English (Quirk et al. 1985) takes up fronting, inversion, extraposition, existential *there*, various types of cleft sentences, among

other means. The inclusion of prosodic aspects even in the case of written messages is essential as "the writer must still ensure that the reader will identify the highpoint by being able to give it an internal or 'imagined' prosodic prominence" (p. 1355). But although we can assume a certain correspondence between syntactic structures and prosodic prominence, the details of this correspondence are not only highly intricate but also language-specific. Observational data won by the method of control paraphrases provide strong evidence for typologically based differences between the syntactic/prosodic correspondences, securing an easy identification of prominence in English and German sentence structures.

The theoretical framework allowing us to describe, generalize and explain the language-specific differences in the area of information structure has been developed around two basic pairs of concepts which are mostly referred to as theme and rheme or topic and focus. (The concepts of topic or theme are often used as synonyms, for example in Lambrecht 1994:117). There are many overlapping interpretations of these concepts in alternative theories about information structure, and the most obvious difference seems to lie in the theoretical weight given to the one or the other of these concepts. Thus, theme is a highly prominent topic in functional systemic grammar, while a majority of generative grammatical approaches concentrates on focus. But there is widespread agreement that theme/rheme or topic/comment is one level of information structure to be distinguished from another level of information structure related to focus. Semantic models conceive the latter as formed by focus and presupposition, other theories, giving more prominence to discourse features, juxtapose focus and background.

As we are highly interested in the language-specific aspects of information structure, we have to concentrate on the formal properties of these concepts no less than on their discursive functions. In one important aspect we will therefore follow Jacobs (1991/92), who says that information structure is realized on three linguistic levels which can be varied independently from each other. That is, there is a semantic-pragmatic, a syntactic and a prosodic level of information structure, and they need not coincide. Although this view is implicit in most of the other approaches, it has often been neglected. Collapsing prosodic features like those described as 'final strengthening' and 'nuclear stress rule' (for example, Selkirk 1984) with the semantic-pragmatic concept of focus makes English a language with end focus, which contradicts all cases with past-tonic elements (with the consequence that they have to be seen as marked information structures, cf. Halliday 1985:277). Sentences with the informationally more prominent element in the subject, such as

Russell's sentence from above, would also have to be assigned a marked information structure. But if we allow prosodic and semantic aspects to vary independently from each other, such sentences can present quite neutral cases of information structure in English, as opposed to marked information structures of analogous translations in German.

While prosodic features of information structure are described in form of stress rules, including pitch contours of falling, rising or mixed "tones" (Halliday 1985:275), a great number of semantic-pragmatic representations of information structure revolve around the concepts of new or given information. Although there are highly sophisticated models of theoretical semantics describing the difference between new and given information in form of structured propositions or sets of alternative propositions, they have inherited the theoretical problems we encounter when we try to distinguish given and new information.

A major difficulty is due to the binary segmentation of information structure, which is simply inappropriate in many cases. There are several theoretical approaches trying to overcome the shortcomings of binary segmentation. A border case is the assumption of a discontinuous focus for cases of new information interspersed with given information (Quirk et al. 1985 speak of a "divided focus", p. 1372ff.).

While this concept leaves the greater diversity to the interface between semantic and syntactic information structure, there are other approaches which admit a greater diversification at the semantic-pragmatic level itself. The best-known model is that of the Prague school of linguistics with its concept of communicative dynamism, distinguishing between various "communicative values" attributed to parts of speech which form a hierarchy of values that increases from the beginning of the sentence towards its end. Sgall (2001:13) speaks of a "scale of degrees of salience, which develops during a discourse". But as cases like Russell's sentence above with less informative elements after more informative ones show, the assumption of an increasing dynamism does not hold for all sentences.

Several theoretical approaches use three concepts in their representations of information structure. Vallduví and Engdahl (1996) distinguish focus, link and tail, where tail could account for some of Halliday's post-tonic elements, while link shows some similarities to the concepts of theme or topic. Although the idea of tripartite structures may not be sufficiently fine-grained to cover all aspects of linguistic variation, it can cover a major part of the differences between those German and English information structures that cannot be reduced to the binary concepts of theme, rheme, background and focus. We

will therefore distinguish a binary and a terniary (tripartite) information structure.

Unlike other models of tripartite information structure, the approach used in the following will proceed from the more abstract concept of 'informational values', which are assigned to certain segments of sentence structure according to their relevance in discourse. Relevance is understood in the sense of Sperber and Wilson (1986), who introduced it as a relation between cognitive effort and effect, which can be optimised or maximised by an adequate balance. By linking cognitive effects to the cognitive background available for the integration of new information, they allow us to interpret relevance as a relation between retrospective and prospective aspects of discourse.

Binary structures will be assigned two values, a higher and a lower one – often coinciding with focus and background, or new and given information. As a rule, the lower value will precede the higher one. The order follows the generally assumed universal principle of discourse organisation, "given before new information", which can be seen as a strategy of economizing on processing effort in binary information structures. But with more complex information structures, the given-before-new strategy may lead into processing difficulties. If we were to expect the focus of a sentence towards the end, a binary segmentation might leave us in the dark as to where we should draw the border between given and new information (or, as Halliday has it, where the focus begins, p. 275).

Thus, if there is no additional indicator, as in the following example, we might identify the focus with the element carrying the final stress of the sentence and consider any of the preceding phrases as focus or background. In a sentence like

(30)   *These results demonstrate that foreign genes can work when they are inserted into a living animal.* (g81)

we could identify the background with the anaphoric subject *These results* and the focus with the final noun phrase *a living animal*, but we would not know where to draw the line between background and focus.

If we consult the context we find that (31) is an answer to the question

(31)   *But do such foreign genes work in their new environment?* (g76)

which suggests that every information in (31) is given except for the emphatic confirmation carried by the verbal group of the sentence: *can work*. This means that the conditional or temporal clause at the end of (31) is given information and not to be included in the focus of the sentence. Whereas a binary concept

of information structure would predict processing difficulties in cases like (31), a tripartite concept would admit the information structure of (31) as one of the possible distributions of information values.

But the major evidence for information structures with more than two values comes from language-specific differences in the distribution of information. Analogous translations of English sentences with given information in end position will ever so often lead the German readers astray, as German is an end-focus language in a much stricter sense than English. Thus the more literal translation

(32) *Die Ergebnisse beweisen, dass fremde Gene funktionsfähig sind, wenn sie auf einen lebenden Organismus übertragen werden.*

has the focus assigned to the conditional clause. This could even amount to a restrictive interpretation contrary to the sense of the original. The problem can be avoided by a paraphrase like

(33) *Die Ergebnisse beweisen, dass fremde Gene in einem lebenden Organismus funktionsfähig sind.*

where the background information is used before the focus. Why this should be so will be taken up in the following section on language-specific information structure in German and English sentences.

The language-specific distribution of information concerns the way in which two or more discourse-evaluated structural segments are distributed within the syntactic phrase structure of a sentence. While the different grammatical conditions in two languages may promote a different lexico-syntactic realisation of the information structure, the informational values of the corresponding segments will be the same in most cases of discourse-appropriate translations between German and English, except for a small subset of sentences where informational equivalence has to be sacrificed in favour of more important properties of processing ease. The hierarchy of the informational values of the original is determined by the discourse and will thus be retained in a translation controlled by discourse-appropriateness.

One of our basic assumptions is that the hierarchy of the informational values is determined by their higher or lower discourse relevance relative to one or two other segments in the sentence. A simple binary segmentation in lower and higher values may also characterise a longer structure, but even very short sentences may require a tripartite information structure in the interest of easy discourse integration. The segmentation is due to the language-specific conditions on discourse appropriate, easy-to-process sentence structures (and

may therefore also differ between original and translation). In any case, the informational values of the segments relative to each other have to correspond to their discursive relevance. But what determines discursive relevance?

The criterion of discourse relevance can be said to have two sides determined by the retrospective and prospective functions of the use of a sentence in discourse. The discursive relevance of both sides can be graded into lower and higher informational values. The retrospective view is associated with the accessibility of information, which can be seen as various degrees of activation (Chafe 1975 distinguishes between active, semi-active and inactive information), or as various degrees of saliency (a favourite term in much of the literature on cleft sentences). A third term concerning the retrospective aspects of information is that of recoverability, introduced by Rochemont (1986), and used in several generative-based accounts of focus structure (among whom Drubig 1991 and 1997 provides the most detailed presentation of information structures in noun phrases).

There are a lot of theoretical approaches relating the information of a sentence to its background, but there are not too many ideas spent on the prospective aspect of informativity. It seems to be restricted to the concept of novelty, which is merely considered to be the other side of the coin as determined by the retrospective property of givenness. The degree of novelty varies according to the degree of givenness (there are some theories like Schwarzschild 1998, and Abraham & Molnárfi 2001, which consider the concept of givenness as basic and that of focus as derived).

Observational data gained by the method of control paraphrases suggest that we have to distinguish different degrees of discourse relevance between segments with new information in a wider sense. As a rule, information encoded as adverbials is less relevant for the following discourse than information encoded in the predicate and its obligatory arguments. As their syntactic status signals, free adverbials carry additional information which could often be dropped from the discourse without disrupting its progress. In this sense, new information could be distinguished into deletable and non-deletable parts, just as given information may contain more accessible and less accessible pieces. The differences are always relative, that is, they characterize the structural segments of a sentence only relative to each other and to the discursive function of the sentence in its local and global context.

Theoretically, the concept of graded information values opens a great variety of combinatorial options, but the principle of relevance constrains their number to around two or three – if we look at the sentence as a whole. (Phrase-internal differences will be included in the picture from Chapter 4 on.) Order of

the structural segments carrying these information values is determined by the grammatical rules of SL or TL and their options for easy processing in discourse (to be sketched out below, in 1.5).

In line with the directionality of discursive progress we can expect the order of 'higher relevance after lower relevance' for binary information structures. But in more complex information structures processing ease is improved by a more balanced distribution of information, alternating between higher and lower informational values. With three values this could mean the lowest or the highest value in-between the other two values. Discourse-appropriate structures in German and English suggest that one pattern is preferred to the other pattern, in accordance with basic typological differences between the two languages. To arrive at a more precise understanding of the different conditions, we have to look at the linguistic properties of information structure, that is, at the interface between sentence structure and discourse integration in more detail.

1.5   Language-specific aspects of balanced information distribution

Of the three linguistic levels involved in information structure we have so far only given some relatively loose, superficial thoughts to the pragmatic level of discursive values and its projection onto the syntactic level of sentence structure, in particular, of word order. But there is also the prosodic level of information structure, which can interfere with the pragmatic syntactic correspondence in various ways. To compare the language-specific conditions of information structure, we have to sort out the basic ways in which syntactic and prosodic aspects of a sentence interact in determining our interpretation of information structure.

We will start with some basic assumptions about focus interpretation. There is a long-standing tradition in linguistics distinguishing between two types of focus assignment: lexically bound focus and free focus. In both cases, focus is thought to be indicated by stress, that is, it is realized by prosodic prominence. While free focus occurs wherever we encounter the corresponding stress pattern – which could be anywhere in a sentence – lexically bound focus is associated with certain lexical elements, marking some element of the sentence as focused due to their special meaning.

A particle of degree like 'even' is a typical example of such a lexical focus marker. Thus, if we have the sentence

(34)   *The boy was there even this evening.*

we interpret the temporal specification as focused, while

(35)   *Even the boy was there this evening.*

focuses the subject. Lexically bound focus is interpreted as a contrastive focus which relates the focused element to a set of alternatives (a favourite topic of theoretical semanticists like Roth 1985; Büring 1997; Sæbø 2004).

Certain syntactic structures can also 'bind' focus – as is the case in cleft sentences or cleft-like sentences (taken up in Chapter 4), but their mechanisms of focus interpretation are much less clear. A relatively transparent example are existential sentences with 'there' (where 'there' is a grammatical dummy, an 'expletive' pronoun, used as a 'placeholder' of the subject, and not as a local adverb with a definite referent, as in the sentences above). In

(36)   *There were two Americans staying at the hotel.*

focus is associated with the postcopular NP, the main stress being assigned to its most relevant element, here the nominal head. But - unlike the lexically bound focus – the focus associated with existential sentences with 'there' is not contrastive (at least not by itself). The special syntactic structure only helps to identify a focused subject – which does not even need to be the main focus of the sentence. Both classes of syntactic focus indicators, clefts and existential sentences with 'there' are more frequent in English than in German – a phenomenon to which we will return in a systematic way in Chapter 4.

Lexically or syntactically marked focus structures are associated with certain stress patterns. What is of particular interest to our topic of linguistic focus indicators is the fact that these patterns are also there in written texts. Markus Bader 1996, 2000, working within the psycholinguistic framework of garden path theory, could present convincing evidence for this by showing strong garden path effects in sentences with case ambiguities and lexically bound focus. Thus, sentences like

(37)   *... dass er ihr Geld geliehen hat.*

(38)   *... dass er ihr Geld verbraucht hat.*

differ in the interpretation of the possessive pronoun as dative or genitive. With the verbal head preceding, the English sentences can be processed directly in accordance with the argument structure of their verbs:

(39)   *... that he lent her money*

(40)   *. . . that he spent her money*

the ditransitive 'lend' with two objects and the transitive verb 'spend' with one.

In German, with the verbs following their objects in the subclause, the ambiguity of the pronoun can only be resolved at the end of the sentence – an undecidedness which is hardly noticeable at the short distance. But if we add a focusing particle the ambiguity becomes 'visible'. The sentence

(41)   *. . . dass er sogar ihr Geld verbraucht hat.*

does not present any processing difficulties, whereas

(42)   *. . . dass er sogar ihr Geld geliehen hat.*

produces a garden path effect. It could be shown in on-line and off-line experiments that sentences with a (focused) dative take significantly longer than those with a possessive pronoun. This, as Bader says, is a result of the need to correct the interpretation of the prosodically manifest contrastive focus associated with the focusing particle 'sogar/even'. As pronouns are typically unstressed words, focus assignment in both cases will automatically go to the noun following the pronoun, which is correct in the possessive case but requires reanalysis in the dative case. The reanalysis is noticeable in the case of the lexically bound focus because it involves the prosodic level; it is not noticeable in the same sentence without 'even' as there reanalysis involves only the syntactic level and does not affect prosody.

As these differences have been demonstrated in experiments with silent reading, they show that prosody is also involved in written language. (Bader 1996, 2000, following Rayner and Pollatsek 1989 speaks of 'phonological (re)coding'). But the sentences without 'even' cannot be conceived without a focus, either, and although they exemplify the case of free focus – that is, they are sentences which permit a stress on any element that may be stressed – they are subject to a grammatically based focus assignment. Although we can theoretically assign a focus to any constituent, the effect will be different depending upon the element stressed and the structure in which it participates. Of the numerous options we have to assign focus freely, there is only one configuration where stress assignment is associated with a non-contrastive interpretation of focus.

The principle of focus assignment is the same in German and English. It depends upon basic word order, which means that it depends upon lexical projection as it is determined by the semantic form of a phrasal head. Generative linguists like Cinque 1993; Abraham 1992; Drubig 2003, among others, assume

that it is a cross-categorial property to assign focus to the most deeply embedded (stressable) element of a phrase. As this is a rather abstract concept presupposing an elaborate theory of phrase structure in syntax, the following presentation will simplify the idea of grammatical focus assignment for our purposes, and – for now – concentrate on focus assignment in verb phrases.

Let us first look at the lexico-syntactic conditions of basic word order. The semantic form of a verb determines number, case and category of the phrases it can be used with (recall examples in Section 1.3) as well as the basic order of these phrases. Adverbial phrases which can be added freely find their basic position relative to the head they modify, which is normally further away from the head than the complements. (A systematic but rather technical presentation of English and German adverbials in the sense needed here is to be found in Frey & Pittner 1998.)

In English, an SVO language, basic word order can be read off from the VP rather directly: adverbials would come after complements. Thus, if we add a temporal adverbial like 'on Friday' to the sentence with 'lend', the basic order will be:

(43)   *that he lent her the money on Friday.*

We can deviate from the basic word order and move the adverbial somewhere else:

(44)   *'On Friday, he lent her the money.'*

But this, as the sentence demonstrates, is no longer basic word order and requires special discourse conditions. These conditions relate word order to discourse appropriate information structure, to which we will return in more detail later on.

In German, the relation between lexical heads, complements and modifiers is less transparent as it is subjected to many more grammatical and discursive constraints. But it has been assumed for many years now that we can assume the German basic word order to be that of subclauses. (Bierwisch 1963, was one of the first linguists to demonstrate this.) German is an SOV language and its word order is highly discourse sensitive. Basically, complements, which are closer to the verb, have their canonical position at the end of the German verb phrase while free modifiers are used earlier – as for example in:

(45)   *... weil er am Freitag ihr Geld verspielt hat.*

But although this order is retained in the main clause:

(46)   *Er hat am Freitag ihr Geld verspielt.*

the local relation between the finite verb and its extensions is reversed: In a German main clause the grammatically fixed place of the finite verb is always the second position of the sentence.

The difference is even more striking with a simple verb form, as in:

(47)   *dass er ihr Geld am Freitag verspielte*

(48)   *Er verspielte ihr Geld am Freitag.*

But if we take the closer distance between verb and complement and thus the order of the subclause as basic, we can formulate a generalization about focus assignment in German main and subclauses. It is the last extension of the verb in the main clause and in the subclause which will be normally identified as focused. In a simplified way we can refer to the close distance between the verb and its complement as verb-adjacency and say that verb-adjacency yields end focus in an SOV language.

Alternatively, verb-adjacency yields something like mid-focus in an SVO language. This, admittedly, contradicts traditional assumptions about English as an end focus language. But substantial evidence for the 'mid-focus' hypothesis comes from our translational data. As the intricacies of the topic require a close analysis of all factors involved in the interpretation, the demonstration can only be presented step by step in each section of the following chapters.

Nevertheless, the assumption of an alternative focus assignment in German and English can help to explain our last example. Coming back to the idea of balanced information distribution, we can say that the idea of alternating information values predicts three positional options for the highest value in a ternary structure: at the beginning, in the middle or at the end of the sentence. A SOV language expects the highest value at the end of the sentence, an SVO language in the 'middle'; in both cases it will be the verb-adjacent position. If the verb doesn't extend, that is, if there is no structural segment filling the conceptual position opened up by the meaning of the verb, the highest informational value will be assigned to the verb itself.

The sentence from genetics was an example of the latter type: As the discourse analyses in 1.4 showed, it is the verbal group *can work* which carries the highest informational value in the sentence. It follows a report describing the results of experiments which provide strong evidence for an affirmative answer to the question asked earlier:

(49)   *But do such foreign genes work in their new environment?* (g76)

(51) presents the positive conclusion explicitly:

> (50)   *These results demonstrate that foreign genes can work when they are inserted into a living animal.* (g81)

Information structures where everything is given except for the affirmative assertion of a proposition assign their highest value to an abstract element of sentence meaning, which various theoretical models describe as the positive attitude asserted by a declarative sentence mood (Höhle 1982 has given the name 'verum focus' to this kind of invisible focus). Although the stress falls on the verbal group, the meaning of *can work* was already implied by the question *Do they work?* And it is only the confirmation associated with the declarative form of the sentence which can be considered a new piece of information added to the discourse. Except for the assertion, every element in (51) is given.

But the degree of givenness of the pre-verbal segment is higher than that of the post-verbal segment, as the referent of *these results* summarizes many of the preceding sentences, while the event referred to in the post-verbal structure resumes an abstract referent, *insertion of foreign genes into living animals*, which is a major part of the discourse topic of the entire text. It is constituted by the partial topics of various preceding passages, including the report about the experiments described in the passage before the immediately preceding sentence. If we measure givenness by the local distance of a referent to its antecedent, a closer antecedent of the pre-verbal part contributes to this segment a higher degree of givenness. A greater local distance between the post-verbal segment and its antecedent lowers the degree of givenness of this segment. We can also express the difference in terms of relevance, assigning the highest degree of relevance to the element with the lowest degree of givenness.

If we represent the highest informational value by 1, the tripartite structure of the English original amounts to something like a convex pattern, presenting the highest value before the medial value and after the lowest value: 3 1 2.

> (51)   *that [₃foreign genes] [₁can work] [₂when they are inserted into a living animal].*

Regarding the highest value in the "middle", this is just what we would expect if we take the verb as the structural anchor of the highest informational value (though it does not allow us to predict the order of the lower informational values).

Now we are in a position to explain the different place of the highest informational value in the third paraphrase of the German translation. Verb-adjacency of the highest informational value in the German clause can only

be achieved by preposing the information of the post-verbal segment of the original. The final position of the German verb attracts the focus, the highest informational value, to the end of the sentence. (The difference in the order is associated with a difference in the structural explicitness of the preposed element – we will return to this aspect in a systematic way in 2.3).

Assigning the highest informational value to a verb-adjacent position (or to the verb itself) allows us to explain a great variety of differences in the discourse-appropriate distribution of information in English and German sentences. But the idea of end/mid-focus is not yet the whole story. Adding structural phenomena associated with voice, copula sentences, existential sentences with 'there' and various classes of complex sentences, including cleft sentences and the like, we are confronted with a vast number of sentence-internal variations which may affect the language-specific conditions of information structure. Nevertheless, there are some recurring patterns to be observed by the method of control paraphrases, concerning sentence structures as a whole, and we will now review such cases of restructuring in a chapter of their own, setting the stage for our major topic of German and English noun phrases to be taken up from Chapter 3 onwards.

Summarizing the first chapter we can list the following major hypotheses:

– The subjectivity problem can be significantly restricted by the method of 'controlled paraphrases'.
– Discourse appropriate translations reveal language-specific conditions on sentence processing, which can be explained within the psycholinguistic framework of Garden Path Theory.
– The importance of syntactic structures for the processing of sentence meaning requires detailed linguistic models about the composition of sentence meaning from words to phrases and clauses.
– A major part of sentence processing concerns the way in which individual sentences contribute to progress in discourse, that is it concerns the information structure of sentences.
– Information structures of sentences can be described in terms of focus and topic etc. but also in terms of the information values characterizing its major parts relative to each other and to the discourse.
– There are grammatically based expectations about a discourse appropriate distribution of information related to basic word order (the linearization of words determined by their Semantic Forms and syntactic functions).

–   They follow general principles (like verb-adjacency of the most relevant information), but vary across languages in line with alternatively set grammatical parameters.

–   Sentence processing in discourse follows universal strategies (like Given-before-New, GIN, or Balanced Information Distribution, BID) which promote certain patterns of restructuring in translations between an SVO-language (English) and an SOV-language (German).

Discourse-appropriate distribution of information in different classes of English and German sentences

Of the three basic sentence types concerning mood: declarative, interrogative and imperative, it is the declarative type which dominates written texts of the popular scientific register used as an empirical basis in our investigations. As the linguistic properties of the three types differ in aspects relevant to the question of information structure, the occasional interrogative or imperative sentences in our texts were excluded from the comparison. The great variety of declarative sentences can be sub-classified in various ways, structural and functional ones, which may all have an impact on language-specific conditions of information structure. As the theoretical complexity increases with the number of factors involved in the structural changes between original and translation, the following discussion will successively concentrate on translational patterns concerning ever more linguistic features of the original.

While the first section will concentrate on word order differences only, differences in perspective will be added in the second section, differences in structural explicitness in the third and fourth and differences in the distribution of information on sequences of sentences in the fifth and sixth sections. As translational patterns concerning NP-internal structures will be taken up in detail in the third and fourth chapter of the book, they will be neglected in the sections of the second chapter.

2.1 Discourse-appropriate word order in German and English

Among the great number of sentences which undergo restructuring in discourse-appropriate translations from English into German, there are only few of tripartite information structures and even fewer binary cases where reordering is not associated with additional structural changes. But, however rare examples like the following may be, it demonstrates an important difference between

German and English structural options in a rather concise way. The difference concerns the variability of word order, which is generally known to be more constrained in English than in German. We will begin with binary information structures and turn to ternary structures shortly.

In either case, the reason for the English 'rigidity' is linked to a grammatical feature of the core of sentence structure, in particular the relations between the verb and its arguments. While declarative sentences in English usually require the subject before the verb, the German subject may also be placed somewhere else in the sentence, which will often turn out to be the position after the verb. A sentence like

(1)   . . . *Stirling Colgate of Los Alamos National Scientific Laboratory is working on the details of neutrino transport.* (n90)

can be rendered either as

(2)   *Stirling Colgate ... arbeitet an den Einzelheiten der Neutrinothese.*

but also as

(3)   *An den Einzelheiten der Neutrinothese arbeitet Stirling Colgate von ...*

while it would be very unusual to have

(4)   *On the details of neutrino transport Stirling Colgate of ... is working.*

The class of verbs *work on / arbeiten an* is the same in English and in German, that is, the lexical projection determined by the argument structure of the verbs yields the same case frame, subject and prepositional object, and the same basic order, subject before prepositional object. Although the order can be reversed in both languages, the positions of the arguments relative to the verb will no longer be similar. While subject and object merely swap places in German, topicalizing of objects in English requires preposing of the object before the subject, which produces a cluster of nominal phrases before the verb.

The structural difference amounts to a greater processing disadvantage in English than in German. In both languages the processor has to be able to distinguish the object NP from the subject NP, but it is only in German with its morphological case system that an object NP before the verb could be identified at once. Psycholinguistic experiments (for example Gorrell 2000) have shown that there is a preference of subject before object if the preposed object does not show its syntactic function morphologically, for example: *dass die Frau der Mann sah* vs. *dass die Frau den Mann sah* (p. 40), where there is no morphological difference between the feminine NP used as subject or

as object. In such cases, the processor will rely on word order and follow a subject-before-object preference, producing garden path effects in sentences with preposed objects.

Except for pronouns and the possessive's, English noun phrases do not indicate case morphologically. The subject-before-verb constraint could thus be seen as a grammatical form of the subject-before-object preference, securing processing ease in a language without morphological case. It is clear that the processing cost of preposing an object before the subject under these conditions is particularly high.

However, there is another processing disadvantage associated with the preposing of verb-phrase-internal phrases to the beginning of English sentences. This difficulty concerns information structure and applies to arguments and adjuncts alike. It arises whenever the post-verbal structure left by the topicalization contains no focusable element. Concentrating on obligatory adjuncts, Goldberg and Ackerman (2001) introduced the concept of "focus failure" for sentence structures where the position of the focus exponent remains empty. We can extend this idea onto cases like the above sentence where topicalizing the object leaves the post-verbal focus position empty (or filled with less relevant information, see below).

"Focus failure" can be seen as a garden path at the level of information structure. For example, if the structure of the verb is not extended, focus will be assigned to the verb itself, which will be the correct interpretation in some cases but not in sentences like the above. The phenomenon of "focus failure" in these cases is only a consequence of the rigid subject-verb condition of English. In German the post-verbal structure is filled by the subject, which may be the discourse-appropriate focus exponent.

Focus failure in terms of informational values means that the grammatical focus position is not filled with the element carrying the highest value. The application of this concept may require rather subtle analyses, as demonstrated by the following example. Avoiding sentence structures with focus failure should improve processing ease in both languages. But there are several sentences where English tolerates focus failure since topicalization of the weaker element out of its VP-internal base position would only make things worse.

German, however, with its variable word order, can easily avoid the focus failure of analogous translation by topicalizing the less relevant information.

In the English sentence

(5)   *Indirect arguments point in the same direction.* (d118)

the subject is related to preceding arguments for or against certain astrophysical models and the adverbial is related to the model favoured by the preceding argument. The pre- and postverbal phrases are thus both partly given and partly new and their informational values difficult to distinguish. In cases like these, it is the prospective aspect of discourse that becomes more important. As it were, the passage following the sentence under discussion spells out a rather complex argument supporting the same model as the preceding passage. Thus, the discourse topic elaborated in the sentences following (5) is the referent introduced by the subject of this sentence. We can therefore conclude that the relevance of its referent for progress in discourse is higher than that of the postverbal referent.

In a language with end-focus and variable word order the sequence of the two referents will be inversed. The translation

(6) *Für dieselbe Schlussfolgerung sprechen auch indirekte Argumente*

is a discourse-appropriate paraphrase meeting the language-specific conditions of information structure in German. (Reordering is accompanied by other changes, improving processing ease further – they will be returned to in the last section of Chapter 2.)

Translating the sentence back shows that focus failure would even be strengthened by the grammatical conditions of English, resulting in an almost unacceptable version:

(7) *In the same direction indirect arguments point.*

Most cases of restructuring concern sentences with more than two information values where topicalizing would not need to result in focus failure in English, either. But, again, grammar determines different conditions on processing ease in German and English, involving focus interpretation and balanced information distribution. Seen from the German translations we can distinguish between cases with basic word order and cases with 'derived' word order. The first case is a type of restructuring which can be analysed as a discourse based change in a tripartite information structure although it only secures processing ease in line with basic word order conditions. In accordance with VP-conditions, object and adverbial follow the verb to the right in English

(8) *However, meteoritic silicates also produce a broad feature at 3 μm due to their water of crystallisation.* (d114)

and are reordered in line with basic VP conditions in the German translation:

(9)   *Jedoch weisen Meteoritensilikate wegen ihres Kristallwassers auch eine breite*
      Absorptionsbande bei 3 μm auf.

Discourse analysis of (8) and (9) shows that basic word order distributes
the information discourse appropriate in English and German: both phrases
contain new information as opposed to the subject which refers to given
information. We can view the original of (8) as a binary information structure,
which can be rendered discourse appropriately by basic word order in German.
(The replacement of the verb 'aufweisen/show' instead of 'produce/erzeugen' is
due to different selection restrictions – a topic taken up in Section 2.2)

   Things are more complicated, though, as the adversative connector 'je-
doch/however' is 'freely' added in the English original, but syntactically inte-
grated in the German version. If we include the connector in the comparison
it changes the German information structure into a ternary structure. For the
time being we will not pursue this effect any further, but turn to ternary in-
formation structures of German translations with non-basic word order. These
are cases where processing ease calls for VP-external cases of reordering.

   If we accept that the basic position of arguments is predetermined by their
lexical head and the basic position of modifiers by the phrase they modify,
we can predict that topicalization of VP-internal adjuncts will also increase
processing ease more often in German than in English. Thus, the topicalization
of the adverbial in the translation of

(10)   *The conductivity is strongly affected by the presence of sulphate particles or*
       sulphuric acid from volcanic acid rain. (v45)

is of advantage only for the processing conditions of German.

   The example has been taken from a text on the impact of volcanoes
on the climate. The referent of conductivity is given explicitly at the end
of the preceding sentence, which participates in a passage subtitled 'the role
of sulphur'. But the last reference to sulphur, 'the all-important sulphate
contribution' is separated from its resumption by the adverbial of (10), by seven
sentences, thus the discourse value of the causal adverbial is higher than that
of the subject. The verb and its adverb 'strongly affected' are altogether new
information and can therefore be assigned the highest value.

   The English original presents its information in a basic order, albeit in a
passive sentence – a topic to which we will return in 2.2. The information
structure of (10) is well balanced, with the highest value between the two
lower ones, meeting focus expectations in an SVO language. An analogous
translation would fail focus expectations in an SOV language

(11)   *Die Leitfähigkeit wird stark verändert durch Schwefelpartikel oder -säure aus vulkanischem Säureregen.*

The analogous version is characterized by derived word order, namely by postponement of the adverbial after the verbal frame in German. This assigns focus to the cause instead of the effect and indicates a contrastive interpretation, deviating from the original.

   Reordering in line with basic word order

(12)   *Die Leitfähigkeit wird durch Schwefelpartikel oder -säure aus vulkanischem Säureregen stark verändert.*

correctly identifies the final part as focus exponent. But processing ease can be improved further by indicating the lower informational value of the (semi-given) causal adjunct formally and topicalizing the PP:

(13)   *Durch Schwefelpartikel oder -säure aus vulkanischem Säureregen wird die Leitfähigkeit stark verändert.*

As the lowest value is presented between the two higher ones, the distribution of information follows the concave pattern, which we have assumed to be the natural form of a balanced information structure in an SOV language.

   Although topicalizing the adverbial would not result in a sentence with focus failure in English the advantage of splitting up a longer segment under focus and topicalizing the lower value cannot make up for the disadvantage of the preverbal cluster formed by the PP and the (immobile) subject:

(14)   *By the presence of sulphate particles or sulphuric acid from volcanic acid rain conductivity is strongly affected.*

Thus, topicalizing will often be a means of balancing information structure in German but not in English.

   With the threshold for topicalization being higher in English than in German, more information will be presented postverbally, but topicalization may be a last resort to avoid garden paths. Thus, a sentence like

(15)   *Between the Pioneer 10/11 flybys of 1973–74 and the Voyager flybys of 1979, it shifted hemispheres.* (j39)

has a long and heavy temporal adverbial topicalized in the English original for no other reason than the syntactic garden path arising in a version with basic word order.

The pronominal subject has its antecedent in the immediately preceding sentence

(16)   … *the maximum contrast does not appear always at the same place.* (j38)

The shift of hemispheres is elaborated in the following two passages, which place the largest contrast first in the Southern then in the Northern hemisphere of Jupiter. Thus, the grammatical focus exponent 'hemisphere' is in its appropriate verb adjacent position, projecting focus onto the entire VP. But if the temporal adverbial were used in its basic position (complying with the principle of end weight at the same time, see below):

(17)   *It shifted hemispheres during the Pioneer 10/11 flybys of 1973–74 and the*
        Voyager flybys of 1979.

we could be led down the garden path and mistake the temporal aspect for a directional one. Topicalizing the temporal adjunct helps to avoid the syntactic reanalysis which would then be necessary.

    More often, however, syntactic garden paths can be avoided by placing heavier phrases after lighter ones, that is, by the principle of end weight – a favourite means of improving sentence processing in English. In

(18)   *NASA has been involved in recent years with a special study of aerosol*
        particles in the atmosphere, … (v7)

the English original presents the prepositional object after the temporal adjunct, thus reversing the basic order which would be very difficult to parse.

(19)   *NASA has been involved with a special study of aerosol particles in the*
        atmosphere in recent years

But as the syntactic garden path could also be avoided by topicalizing the adjunct instead of extraposing the object, the question is when do we use preposing, when postposing as a deviation from basic word order? Why does (18) not begin with a temporal adjunct?

(20)   *In recent years NASA has been involved with a special study of aerosol*
        particles in the atmosphere

The difference between this and the original sentence seems to be quite arbitrary. But reordering of VP-internal elements is clearly less demanding than reordering across verb and subject.

    End weight may also play a role in German. Thus, the English sentence:

(21)   *A mass of material equivalent to the total mass of dissolved solids in the oceans, nearly 5000 million million tonnes, is deposited in the sediments every four seconds of the Earth-day.* (s41)

is translated as

(22)   *Alle vier Sekunden des Erd-Tages wird eine Materialmenge in den Sedimenten abgelagert, die der Gesamtmenge der in den Meeren gelösten Feststoffe (fast 5000 Billionen Tonnen) entspricht.*

The temporal adverbial has been topicalized and the relative clause extraposed from the subject to a position after the verbal frame. Discourse analysis reveals that matter and sediment are background information, while the temporal specification and the quantity of the material deposited are new, which means that they deserve the more prominent positions surrounding the background. The extraposition of the relative clause into a position beyond the verbal frame prevents the focus from being falsely assigned to the local adverbial 'in den Sedimenten'. Topicalization of the temporal adjunct helps the German reader to identify the medial value of the temporal specification. In English, the adjunct is used in its basic position. As the local adverbial 'in the sediments' refers to given information, the temporal information is needed at the end of the VP to prevent focus failure.

But there are cases of topicalizing elements from English VPs where there would be no syntactic garden path effect associated with the basic word order. Thus, the original sentence

(23)   *Every 18 "Earth-seconds", sufficient dissolved material is supplied by the world's rivers to double the amount of salt in the oceans.* (s44)

would not produce any garden path if the frequency adverbial were presented in a VP-internal position:

(24)   *Sufficient dissolved material is supplied every 18 "Earth-seconds" by the world's rivers to double the amount of salt in the oceans.*

It looks as if in cases like this, where the VP contains three rather complex phrases, topicalizing may also improve processing conditions in English.

But there are, no doubt, also cases of topicalized adverbials in English where no parsing problems whatsoever are involved. And we can even come across cases with topicalized arguments like

(25)   *To the botanist, the differences between the strategies are of course interesting; to the agriculturalist, they could be of great economic significance.* (f9)

Here, topicalization is clearly used in the interest of contrast.

Although such topicalization of arguments may be considered rare cases, there are a great number of English sentences which do begin with adverbials. Discourse analysis of such cases shows that topicalization of English adjuncts – if it is not limited by the constraints of focus failure – is possible if there is a contrastive, or at least partitive relation between the topicalized element and the preceding discourse. With the temporal web forming a more or less visible part of any discourse, especially temporal adverbs will often qualify for partitive or contrastive discourse relations. But as German topicalizes more freely, there are numerous cases where even temporal adverbials occur in a topicalized position in German but not in English. We will come back to the difference shortly.

Most cases of restructuring in the interest of discourse appropriateness involve more properties than word order. But even word order differences may be realized in a covert way affecting the projection of semantic roles into the case frame of sentences due to reordering and reframing, to which we will turn now.

2.2 Reframing

Tiina Puurtinen (2003), in her contribution to critical discourse analysis, discusses the potential ideological effects translations have, especially those produced implicitly by linguistic forms like nominalization, passivization, premodification, etc. "In translation, ideologically motivated linguistic structures of a source text may be manipulated either unintentionally because of inadequate language and/or translation skills or insufficient knowledge of the relationship between language and ideology, or intentionally owing to translation norms, requirements of the translation commission or the translator's own attitudes towards the source text subject' (p. 55). She concedes that such an "incongruent, marked form of encoding" (Halliday 1975, calls them grammatical metaphors) may be "typical and even necessary for certain text types", but a "powerful ideological tool in argumentative texts" (p. 55).

However, the more implicit ways of linguistic encoding may not be due to intentional or unintentional ideology or to stylistic conventions of certain registers. They may simply be preferred as a welcome means to overcome specific processing disadvantages of a language. For example, if we want to distribute given or new elements in the following sentence in an appropriate, neutral way, the German translation of

(26)   *Two of the pioneers of nuclear astrophysics are looking at these ideas:*
       Stirling Colgate of Los Alamos National Scientific Laboratory is working on
       the details of neutrino transport, and Hans Bethe of Cornell University is
       investigating the idea of core bounce. (n90)

will not only reorder the two arguments, but also shift the perspective:

(27)   *Diese Hypothesen werden zur Zeit von zwei Pionieren der Nuklearastro-*
       physik überprüft: . . .

It is clear from the definite form of 'these ideas' and the indefinite form of
'two of the pioneers' that the latter refers to new information, while the former
must be given.

    Merely reordering of these arguments would yield a syntactic ambiguity,
leading into a garden path:

(28)   *Diese Hypothesen überprüfen zur Zeit zwei Pioniere der Nuklearastrophy-*
       sik. . .

It can be avoided by choosing the passive form instead of the active.

    While the German case seems to be straightforward, the English original
raises questions which are difficult to answer. After all, the English original does
not follow the strategy given before new, although the sentence could also easily
be passivized in English. The comparison of discourse appropriate German
translations shows that there are a great number of English sentences violating
the given-before-new strategy, presenting the new information preverbally as
subject, and the background postverbally.

    The shift of perspective characterizing the German translation need not be
produced by proper passivization, but can be realized by statal passives or active
verbs of a passive-like nature; choices range from reflexives to unergative verbs,
lexical pairs that differ only in their perspective. In these cases, processing
ease is secured by reordering and 'reframing', that is by using a predicate with
another case frame. The following example from a passage about the origin of
a certain type of supernovae is preceded by the description of a condition for
such an explosion:

(29)   *Two classes of progenitors seem to fulfil these conditions.* (n66)

The translation into German

(30)   *Diese Bedingungen sind offensichtlich bei zwei Klassen von Ausgangssternen*
       gegeben.

shifts the perspective in line with the given-before-new strategy by using a statal passive: 'sind gegeben/are given' instead of the active 'erfüllen/fulfil'. (The modalizing part of the verbal complex 'seem' is replaced by the attitudinal adverb 'offensichtlich/obviously'.)

But the shift in perspective occurs also in translations which do not reverse the order of the referents as in the next example:

(31) *Supernova explosions then distribute these elements through galactic gas so they are available for inclusion in subsequent generations of stars and their planets.* (n41)

(32) *Durch die Supernovaexplosion werden diese Elemente dann im galaktischen Gas verteilt, und können so von späteren Generationen von Sternen und Planeten wieder aufgenommen werden.*

Translations like these present the referents in precisely the same order, which could also be achieved without the shift in perspective:

(33) *Die Supernovae Explosionen verteilen diese Elemente dann im galaktischen Gas, sodass sie von späteren Generationen von Sternen und Planeten wieder aufgenommen werden können.*

Although agreement on the improvement of German paraphrases which have only been reframed is less unanimous than in cases including reframing and reordering, the passive version is preferred to the active version by a majority of native speakers. In one of our previous projects concentrating on the active or passive (and passive-like) perspectives preferred in English and German, we found a preference of the active perspective in English in a great number of original sentences where a passive (-like) perspective was used in the German translations. We assumed that the different preferences were a stylistic reflection of grammatical differences concerning the possibility of lexical projection in the two languages (Doherty 1996).

While the prototypical role of subjects is the agent, that is, an intentional subject (compare Dowty 1991, among others), lexical transfer permits also lower roles like patient, cause, place and time as subjects. Languages differ in whether and where such transfer is lexicalized. Constraints on lexical transfer are traditionally referred to as selection restrictions which – if violated – yield ungrammatical sentences. As languages differ in their selection restrictions, analogous translations may produce ungrammatical sentences. Lexical transfer is more common in English than in German. Thus, a sentence like

(34) *The past ten years have seen a rapid convergence of ideas . . .*

violates selection restrictions of the German verb 'sehen' if translated analogously:

(35)   *Die letzten Jahre haben eine rasche Annäherung der Vorstellungen gesehen.*

The effect can be avoided by projecting the lower role of time into the syntactic function that is prototypically associated with this role: the temporal adverbial

(36)   *In den letzten Jahren haben sich die Vorstellungen rasch einander angenähert.*

(Hawkins 1986, considers cases like these as evidence of a higher degree of isomorphic relations between semantics and syntax in German and we think that the greater potential for lexical transfer in English compensates for the greater rigidity of the English word order – which may well be the diachronic reason for the frequency of lexical transfer in English.)

Reframing subjects as adverbials requires a number of additional changes adapting the sentence structure to the different case frame. There are various means available depending upon the verbs which match the shift in perspective.

Thus in

(37)   *The burning reactions produce mostly nickel-56, an unstable isotope that decays to cobalt-56 and then to iron-56 with a half-life of about two months.* (n95)

(38)   *Diese Prozesse erzeugen vorwiegend Nickel 56, . . .*

we find

(39)   *Durch diese Prozesse entsteht vorwiegend Nickel 56, ein instabiles Isotop, das zunächst zu Kobalt 56 und dann zu Eisen 56 mit einer Halbwertszeit von etwa 2 Monaten zerfällt.*

where the verb 'entstehen/form' maps the causal role into an adverbial and the object in the syntactic subject of the sentence.

Another possibility are reflexive verbs as in (40). The transitive verb of the English original 'adopt' has been replaced by the reflexive 'sich herausbilden/evolve'

(40)   *In California more than 4 per cent of the dicots and 80 per cent of the grasses have adopted the C4 strategy.* (f69)

(41)   *In Kalifornien dagegen hat sich der C4-Mechanismus bei 4 Prozent der zweikeimblättrigen Pflanzen und bei 80 Prozent der Gräser herausgebildet.*

The reframing part is combined with reordering. The C4 strategy is the topic of the passage and is less informative than the region, which is a contrastive topic (California versus the British Isles referred to in the preceding sentence) and the species of plants which is the presentational focus of the sentence. The English original topicalizes the contrasted adverbial but uses an active perspective with a prominent subject (information structure 2 1 3), while the translation secures the discourse appropriate 2 3 1 pattern of a tripartite information structure in German by reframing the original object as subject and the original subject as a local adverbial and presenting them in basic order.

Discourse appropriate perspective and information structure may require reframing also in the translation of a subclause. The German version of (42) uses reframing in both clauses combined with open reordering in the subclause (in contrast to the covert form of reordering in the main clause)

(42) *Photorespiration apparently takes place because oxygen interferes with the initial combination of CO2 with ribulose bisphosphate. (f26)*

(43) *Zur Photorespiration kommt es offensichtlich, weil die erste Verbindung von Kohlendioxyd mit Ribulose-Biphosphat durch Sauerstoff behindert wird.*

An analogous translation

(44) *Photorespiration findet offensichtlich statt weil Sauerstoff die erste Bindung von CO2 mit Ribulose-Biphosphat behindert.*

makes the reader mistake the discourse-given object as focus instead of the discourse-new subject (reframing in the matrix clause places the more informative sentence adverbial in the focus position of this clause).

The various forms of reframing can thus serve discourse appropriateness by improving processing ease at the levels of semantic role and information structure. It may be associated with a covert reordering deviating from basic word order by an open form of reordering changing the original order of informational elements. Both cases of reordering can be justified by the language-specific processing difficulties originating in the different grammatical systems of SL and TL. The greater variability of German word order allows a greater degree of isomorphism, whereas the rigidity of the English subject-verb order promotes a greater amount of lexical transfer.

Grammaticalized cases, especially the great number of reflexive verbs in German, where the reflexive pronoun indicates the shift in perspective, will be used in the translations more or less automatically. But in other cases reasons for choosing the one or the other perspective may be difficult to

formulate and require a subtle understanding of various linguistic submodules contributing to progress in discourse. In fact, the complexity of the theoretical issues involved opens the door to a variety of alternative views. Thus, the difference between Russell's original sentence

(45) *He hoped that mere orderly arrangement of data would make the right hypothesis obvious . . .* (Russell 1945: 545)

(46) *Er hoffte, dass sich die richtige Hypothese bereits aus der systematischen Anordnung der Daten ergeben würde.*

can be seen as evidence of the author's or the translator's individual preferences, register conventions or translational norms, with or without intentional or unintentional ideology, or as evidence of the complex interplay of the specific conditions on sentence processing in discourse as it is determined by the language systems of German and English.

   It is clear that an individual example cannot decide between these alternatives, but if the difference is confirmed by the method of control paraphrases, the author's and translator's preferences can no longer be considered mere individual ideosyncracies, and if such differences can be shown to recur often enough and their formal variation can be explained by the linguistic properties of the elements involved in the sentences under discussion, examples like these will strengthen the linguistic view.

   If we know more about the language-specific conditions of appropriate word order and perspective, we are also in a better position to make out ideological or other cultural factors determining the author's or translator's choice of linguistic means. The difference between Russell's sentence and the German translation quoted above is clearly a result of the specific conditions on information structure and perspective in German and English. While an analogous translation

(47) *Er hoffte, daß die bloße systematische Anordnung der Daten die richtige Hypothese erkennbar machen würde.*

would fail focus expectations in German, mere reordering would lead into the classical garden path of a subject-object ambiguity:

(48) *daß die richtige Hypothese die bloße systematische Anordnung der Daten erkennbar machen würde.*

Similarly, a mere shift of perspective

(49)   *daß durch die bloße systematische Anordnung der Daten die richtige Hypothese erkennbar werden würde.*

or morphologically less repetitive:

(50)   *daß sich aus der bloßen systematischen Anordnung der Daten die richtige Hypothese ergeben würde.*

would still fail to meet the condition of end focus in German. A combination of reordering and reframing presents Russell's statement in an easy-to-process discourse-appropriate form in German:

(51)   *daß sich die richtige Hypothese bereits aus der systematischen Anordnung der Daten ergeben würde.*

(The additional replacement of an NP-internal modifier 'bloß/mere' by an adverbial modifier 'bereits/already' increases processing ease even further – we will return to this aspect in the second section of Chapter 6).

Although the different conditions on the use of order and perspective in German and English cover a wide variety of restructuring translations, there is a third property of linguistic forms interacting with word order and perspective in almost each sentence of an original text and its translation. That is the property which determines the informational density of a text, that is, the way in which the information of a text is expressed explicitly by its linguistic forms or implicitly by the implications or implicatures associated with the explicit information. The following section will take a closer look at the language-specific conditions on explicitness.

2.3 Structural explicitness

In her paper on shifts of cohesion and coherence in translation, Shoshana Blum-Kulka (1986: 298f.) distinguishes between a "covered potential meaning relationship among parts of a text made overt by the reader or listener through processes of interpretation" and an "overt relationship between parts of the text, expressed by language-specific markers". Part of the coherence relations is determined explicitly by patterns of cohesion and differences between the original and the translations reflect cohesive patterns of the source language norms or of the target language norms. But they can also "form a system of their own, possibly indicating a process of explicitation" (p. 313), which Blum-Kulka views as evidence of her "explicitation hypothesis": "a cohesive

explicitness inherent in translation" "regardless ... of the differences between the two linguistic or textual systems involved." (p. 300).

One of the examples Blum-Kulka uses to illustrate explicitation is an English version of a passage from Saint-Exupéry's *Little Prince*. It is the famous dialogue setting the stage for the children's superior world of fantasy, for whom a drawing that looks like a hat can mean an elephant inside of a boa.

(52)   *J'ai montré mon chef d'oeuvre aux grandes personnes et je leur ai demandé si mon dessin leur faisait peur.*
Elles m'ont repondu "Pourquoi un chapeau ferait-il peur?"

(53)   *I showed my masterpiece to the grown-ups and asked them whether the drawings frightened them.*
But they answered, "Frightened? Why should anyone be frightened by a hat?"
(Blum-Kulka 1986:302)

Blum-Kulka uses the example after a lengthier discussion of non-professional learners translations to show that the hypothesis of explicitation is also valid for professional translation. She does not distinguish between grammatically motivated and free shifts of cohesion but signals apparent liberties of the translation by using italics for the adversative connector 'but' and the additional one-word question 'Frightened?' The more explicit use of referential and modalizing forms (associated with a shift in perspective) are not marked and thus probably suspected of being "connected to syntactic or lexical differences" (p. 301).

The assumptions on information structure and perspective presented in 2.1 and 2.2 confirm and explain the intuitive differentiation Blum-Kulka signalled by her use of italics. The grammatical reason for the reframing and reordering of the English questions lies in the different case frames of 'faire peur' and 'frighten'. While the French predicate can be used without an object (as demonstrated by Saint-Exupéry's question) the English 'frighten' requires an object. The French original uses an object in the indirect question: *si mon dessin leur faisait peur.* Here, case frames are equally explicit: *whether the drawings frightened them.* But while the object is dropped in the later French structure: *Pourquoi un chapeau ferait-il peur?*, it has to be retained in the English translation. That is, even an analogous translation has to make the object explicit.

This could be done by resuming the preceding reference and adapting it to the direct speech:

(54)   *They answered, "why should a hat frighten us?"*

Although this version is a perfect English sentence it does not present the new information in a sufficiently emphatic way. The indefinite article can only signal the novelty of the referent, its contrastiveness (implicating surprise about the presupposition that a hat could frighten anyone) remains unexpressed. Integration into discourse can be improved by a shift in perspective which will mark the new referent additionally:

(55)   *Why should we be frightened by a hat?*

So far, the restructuring presents grammatically based cases of explicitation, which are due to syntactic and lexical differences between SL and TL; but the translator's choice of additional linguistic means is only partly predetermined by the grammatical differences. The English translation quoted by Blum-Kulka shows that the explicitating element can be more specific than a close analysis of implied meaning would suggest. Spelling out the lexically required referent by 'anyone' instead of 'we', the translator has given the rhetorical question a more general aspect. Although such an interpretation may be associated with the original as an implicature (see above), we do not know of any specific property of the English language that could justify this additional change. While the explicitation of the original subjunctive by the lexical choice of 'should' is grammatically determined in a question involved in a reported modality, the use of 'anyone' instead of 'we' has to be considered one of the translator's liberties (unless someone could point out a registerial norm justifying the additional explicitation).

Language-specific registerial differences can only be identified after the specific properties of a language in discourse have been determined. But even the highly complex issue of structural explicitness can be pursued a great deal further along linguistic lines than is generally assumed. In the following, we will successively take a first look at examples of explicitation related to the topics of anaphora resolution, phrase structure hierarchy, verbal groups, cleft sentences and the like and analyse the language-specific impact of such linguistic means on sentence processing in discourse. As most cases of explicitation/implicitation involve NPs, the topic of explicitness will be resumed extensively in Chapters 3–5. We will now begin with a case of structural option that is traditionally connected to the idea of explicitness: the use of pronouns.

The first example is taken from a text about the effect of volcanoes on climate. We will first consider the aspects related to the language-specific conditions dealt with in Sections 2.1 and 2.2. The example is part of the introductory passage in a text about the eruption of Mount St. Helens.

(56) *Mount St Helens, which erupted in May 1980, will go down in history not just as a volcano, but as the first to have its emissions properly monitored on a world-wide scale.* (v3)

(57) *In the aftermath of the eruption, aircraft and satellites from the US National Aeronautical and Space Administration (NASA) collected a wealth of data, as the volcano's emissions spread around the globe.* (v4)

The second sentence consists of a main clause and a subclause and the main clause has undergone a shift of perspective in the translation, presenting the aircraft and satellites in a more isomorphic form:

(58) *Als diese sich in der Zeit nach dem Ausbruch über den ganzen Erdball ausbreiteten, konnte durch die Flugzeuge und Satelliten der NASA (National Aeronautical and Space Administration) eine Fülle von Daten zusammengetragen werden.*

As the temporal specifications of (57) are linked to those of (56), the adverbial clause has been topicalized in German, leaving the end position to the more relevant information. The adverbial phrase used at the beginning of the original sentence has been integrated into the temporal clause. That is, both modifiers have been collapsed into one, setting the stage of the German version. (The distribution of the temporal setting around the propositional core of the original improves processing in English, where the temporal phrase in its basic position at the end of the sentence would be more difficult to integrate discursively.)

In regard to structural explicitness the translation differs from the original in two points. The first point concerns the use of a demonstrative pronoun instead of the fully lexicalized subject of the subclause, the second point concerns the insertion of the modal verb 'könnte/could' in the main clause of the translation. (Although the explicitation of the modality produces a slightly different sentence meaning, it helps to overcome an aspectual mismatch resulting from the reordering and reframing shifts of the translation.) We will ignore the first point and concentrate on the second point, the pronominalization.

The structural reduction is clearly due to the different positions in which the referents occur in the original and the translation. 'Emissions' have been introduced in the immediately preceding sentence (albeit in form of a definite NP anchored by a possessive relation to Mount St Helens), that is, there is an anaphoric relation between the referent of the clausal subject and its antecedent in the preceding sentence. While the referent is resumed in the English original only after the main clause, it is repeated directly at the beginning of the German

translation. Even if we assume that pronominalization follows the same rules in English and German, it is obvious that structural changes resulting in word order differences will also lead to different conditions for pronominalization.

Pronominalization as a form of structural reduction can thus be expected as a side effect of more general cases of restructuring concerning order and perspective in an SVO language with a more rigid word order and an SOV language with a more variable word order.

The pronominalization itself may be subject to a shift in perspective as illustrated by the translation of the following main clause

(59) *This material must, in the past, have supplied volatile acids, which now provide the major anionic components – chloride, sulphate, bicarbonate and borate.* (s27)

(60) *Hierzu müssen früher auch flüchtige Säuren gehört haben, aus denen heute die wichtigsten anionischen Bestandteile wie Chlorid, Sulfat, Bikarbonat und Borsäure stammen.*

The translation has replaced the active perspective of the original 'supply' by the passive-like perspective of 'gehören zu/belong to' and presents the information in a covered case of reordering, where the subject is reframed as a (pronominalized) prepositional object and presented in a preverbal position. That the fully lexicalized subject of the original has also been pronominalized in the translation is due to a restructuring of the preceding sentence in the translation, which has shortened the distance between the coreferential elements ('additional material/zusätzliches Material'; 'this material/hierzu') considerably.

(61) *But additional material is injected volcanically from the mantle, beneath the Earth's crust, along the active mid-oceanic ridges.* (s26)

(62) *This material must, in the past, have supplied volatile acids, which now provide the major anionic components – chloride, sulphate, bicarbonate and borate.*

(63) *Entlang der aktiven mittelozeanischen Rücken kommt jedoch zusätzliches vulkanisches Material aus dem Erdmantel unterhalb der Erdkruste ins Meer.*

(64) *Hierzu müssen früher auch flüchtige Säuren gehört haben, aus denen heute die wichtigsten anionischen Bestandteile wie Chlorid, Sulfat, Bikarbonat und Borsäure stammen.*

As the translation of (61) secures a discourse appropriate distribution of information, preposing the scene-setting local adjunct before the contrasted

parts of the sentence, the pronominalization in (64) can again be seen as a side effect of the more general typological differences between German and English – although the beginning of the restructuring 'chain' is situated outside the sentence containing the reduction.

Pronouns are well known means of structural reduction – even if the language-specific conditions of their discourse appropriate use may still require more research. In contrast to pronominalization, most of the other differences in structural explicitness seem to be highly idiosyncratic instances of more or less explicit linguistic structures. Moreover, there are no theoretical guidelines if we want to 'measure' the explicitness of linguistic phrases. For example, we would intuitively want to place the explicitness of a clause higher than that of a phrase. But as phrases can be extended by clauses, the difference in rank itself is not sufficient.

In his influential work on syntactic weight and word order, Hawkins (1991/92: 197) sets the scene for parsing strategies with his concept of "recognition domain" in which hearers will attempt to "recognize syntactic groupings and their immediate constituents (ICs) as rapidly and efficiently as possible". He defines it as a principle of Early Immediate Constituents by which the "human parser prefers to maximize the left-to-right IC-to-word ratios of the phrasal nodes that it constructs" (p. 198). IC recognition depends on the number of words to be processed before the IC can be identified, and variation of word order can improve the "left-to-right IC to word-order ratio". In a simplified way we could say that the weight of a constituent depends on the number of words it contains.

To a certain extent, the Principle of Immediate Constituents can serve as an explanation of the traditional principle of end weight. But there are many more aspects of the interaction between structural explicitness and word order associated with the syntactic hierarchy, discursive relevance and language-specific processing conditions. Thus, weight may not only be a reason for word order variation, but difference in word order may be the reason for a difference in weight.

In the English original:

(65)   *In the aridity of Death Valley, California, almost all of the species active in summer are C4 plants, though there are some interesting C3 exceptions.* (f75)

the concessive adverbial clause at the end adds some information to the main line of argument on the biogeography of C4 plants (most of which live in hot, dry conditions). In the German translation, the concessive adverbial is

used in its basic position, its structural weight reduced from a clause to a prepositional phrase.

(66)   *Im wasserarmen Death Valley in Kalifornien sind, abgesehen von einigen interessanten C3-Ausnahmen, fast alle Pflanzen, die dort im Sommer aktiv werden, C4-Pflanzen.*

It is obvious that the use of a clause inside of the German verbal frame would require an extra processing effort inappropriate to the relevance of the informational element. It is clear that the IC-ratio itself could play a role only after all the other conditions of language-specific discourse appropriateness have been satisfied – which reduces the explanatory power of the mere ratio of words considerably. We will thus simply proceed from something like a universal principle of economy in the use of linguistic structures. There are obvious limits to the advantage of structural reductions as none of the features relevant for the interpretation of a message in discourse should get lost, including those that can improve sentence processing – which may mean different things under the conditions of SL and TL.

2.4 Redundancy and dummy phrases

Identifying the feature which requires a higher degree of explicitness is no easy task for the non-native speaker. Certain classes of explicit structures are often suspected of being redundant – especially if looked at from 'outside', that is, from the non-native speaker's point of view. Yet, semantically weak structures may be used to enhance processing ease at the level of information structure.

A clear case is the following example where the simple verb in the English original

(67)   *And thirdly, energy from supernovae directly or indirectly accelerates cosmic rays.* (n44)

has been extended in the translation:

(68)   *Drittens bewirkt die Energie der Supernova direkt oder indirekt eine Beschleunigung der kosmischen Strahlung.*

The German version replaces 'beschleunigen/accelerate' by the verbal group 'Beschleunigung bewirken/produce an acceleration'. That is, the information of the original verb is distributed onto a semantically weak finite verb 'bewirken/produce' and a nominal object 'Beschleunigung/acceleration', render-

ing the meaning of the English verb 'accelerate'. The structural extension supports focus identification as it allows the translation to present the most important element of the sentence in the appropriate position, at the end of the German verb phrase. In the analogous version, as a finite verb, this piece of information would have to occur in the second position of the German sentence, where its informative relevance may even escape attention altogether.

The alternative directionality of the German and English verb phrases may also work the other way round, promoting an extension of the English verb by a noun which is redundant in the analogous German version. This is the case for example in the following sentence where the predicate of the adversative clause uses a verbal group 'have influence' instead of the single verb 'influence':

(69)   *Thus the message is that a single volcano, especially one erupting at high latitudes, is not going to change the climate noticeably, whereas a series of eruptions could have important influences on climate on a timescale from years to centuries, depending on how long the burst of volcanic activity persists.* (v31)

The sentence summarizes a passage in which the alternative influences of volcanic eruptions on climate have been illustrated by examples from the 19th and 20th centuries. The adversative relation between the two major clauses of the sentence establishes a contrast between the topics: 'single volcano' and 'series of eruptions' and the predicates 'not ... change noticeably' and 'have important influences'. While the first clause ends on the contrastively focused element 'noticeably', the second clause adds a long chain of less relevant modifiers after the highest value. The nominalized form of the verb allows a prenominal position of the major focus in form of the contrasted adjective 'important' as the verbal alternative would require a repetition of the adverbial intensifier 'noticeably' or the like at too close a distance.

The German translation of the adversative clause uses the structurally reduced modifiers in their basic positions within the verb phrase (and the definite object with its given information before the temporal modifiers with their new information):

(70)   *Wir können daraus entnehmen, daß sich ein einzelner Vulkanausbruch, besonders in den höheren Breitengraden, klimatisch kaum bemerkbar machen wird, während eine Folge von Vulkanausbrüchen das Klima, je nach Dauer der Vulkantätigkeit, auf Jahre oder Jahrhunderte nachhaltig beeinflussen kann.*

The contrastively focused predicate 'nachhaltig beeinflussen' occurs at the end of the sentence in line with German end focus. Here, a nominal form of the predicate 'einen nachhaltigen Einfluß haben kann' would be clearly redundant. A systematic comparison of pronominal adjectives and other forms of discourse appropriate structures with or without a nominal head will be our topic in Chapters 3 and 4.

The structural explicitness of verbal groups may come in handy under different conditions in both languages, other cases seem to be typical only for one language. A particularly striking case occurring frequently in English is the use of the semantically weak indefinite plural noun as subject. Thus

(71)   *Theorists have tried two schemes.* (n87)

uses a fully lexicalized subject which is no more informative than any indefinite pronoun referring to an unspecified agent in this context. An analogous translation into German

(72)   *Theoretiker haben zwei Hypothesen versucht.*

is odd if the subject is not emphatic, but the weak meaning of the original subject could be pronominalized:

(73)   *Man hat zwei Hypothesen versucht.*

Yet the following version, explicitating the temporal implications of the present perfect, is clearly felt to be easier to integrate in the discourse.

(74)   *Bisher ist mit zwei Hypothesen gearbeitet worden.*

The redundant subject has been eliminated by passivization, and the expletive subject, which would otherwise be necessary for this version:

(75)   *Es ist mit zwei Hypothesen gearbeitet worden.*

has been avoided by the explicitation of the temporal aspect:

(76)   *Bisher ist mit zwei Hypothesen gearbeitet worden.*

If we translate the sentence back,

(77)   *Two theories have been tried so far.*

the comparison with the original seems to suggest that in English the active perspective with a dummy subject is preferred to a passive perspective with a dummy adverbial.

The indefinite reference to professional people is particularly frequent in popular scientific texts, but there are many more classes of semantically weak nouns referring to people, things, events or abstract ideas used in English sentences, which look redundant from a German perspective. As all these cases concern the translation of NPs from English into German, their discussion will be postponed to the following chapters.

But 'depersonifying' cases of structural reductions like the examples above could give an extra boost to the question of ideology. Seen from English, the translation of the 'dummy professionals' could be considered yet another instance of the notorious German preference of impersonal constructions as opposed to the 'personal' constructions in English. Even if we were to assume a preference of active sentences in English, there is no denying that the active perspective in (71) could also be realized by a less personal subject, like the indefinite pronoun 'one':

(78)   *One has tried two schemes.*

A closer look at the preceding context tells us that 'one' is indeed the only pronoun matching the context (the more frequently used 'we, you, they' are excluded for semantic reasons).

But if the dummy professional is preferred to the mere pronouns, what – if not the 'personal' feature – could be the reason? A crucial difference between the pronominal and the lexicalized NP is that only the former is normally deaccented. Thus, the impersonal version of the subject would have to be considered mere background information. This is different in the original where the subject is fully lexicalized and carries its normal word accent, that is, it is prosodically more 'visible' than the pronoun. Now, reference to scientists has occurred explicitly in various passages of the text and is given implicitly by inference from world knowledge associated with the immediately preceding sentence

(79)   *The most uncertain part of this story is how the star transfers a bit of the energy to its envelope.* (n86)

But the topic of (79) is another referent (anchored in the discursive background by its demonstrative NP), and the subject of (71) shifts the topic from the 'story' to the 'experts', which may also add a higher degree of discourse relevance to the comment. We could assume that choosing a more explicit version of an indefinite, vague subject in English is a means of indicating a shift in discourse and thus another instance of explicitation used in the interest of easy discourse integration.

German, on the other hand, is likely to use the adverbial dummy: 'bisher/so far' for the same reason, signalling the shift in discourse by a form of explicitation better tuned to the specific processing conditions of German. As the English subject is grammatically more important, it carries also more informational functions, while the German subject can be suppressed more easily, and leaves some of the discourse organizing roles to other 'players'. At the surface, these differences appear as more 'personal' or more 'impersonal' constructions.

The stylistic repercussions of the grammatical differences between a more rigid SVO language and a less rigid SOV language can even reach beyond sentence boundaries, and yield restructuring patterns which involve a shift of sentence boundaries. Still, linking or separating of sentences in translations from English into German can be shown to originate in the same differences for processing sentences in discourse as those determining patterns of simple sentences.

2.5 Incremental parsimony: Linking sentences

In her paper on information packaging and translation, Fabricius-Hansen (1999b) describes various forms of sentence splitting in translations between German, English and Norwegian. She speaks of the incrementality of a text, viewing sentences as the individual increments in which the information of a text is 'portioned' out. Identifying progress in discourse with new discourse referents and their conditions, Fabricius-Hansen formulates three principles of informational discourse organization, PIDO 1–3, which limit the number of new referents and conditions/accommodations per increment. Comparing translations from German into English/Norwegian, she describes forward and backward information extraction from complex sentences as specific ways of incremental discourse organization which lower the informational density of sentences.

Fabricius-Hansen does not look in detail at the opposite option of increasing the informational density of sentences/lowering the incrementality of a text by linking independent sentences into fewer more complex ones. But if we choose German as the target language, it is the opposite direction that seems to dominate discourse organization. Let us therefore add a strategy of discourse organization alternative to PIDO (1–3) and call it the Strategy of Incremental Parsimony, SIP. SIP can be formulated somewhere along the lines of Frazier's Principle of Minimal Attachment (which guides the perceptive side of process-

ing and says "assign minimal grammatically permissible syntactic structure to an input sentence as the words are encountered", Frazier 1988).

SIP: Attach incoming information to an appropriate point of attachment in the current partial phrase marker (CPPM).

In securing appropriate translations (or appropriate 'primary' language production) in discourse, SIP competes with PIDO, and it is obvious that the trade-off between the two strategies is, again, regulated by Sperber and Wilson's Principle of Relevance, which secures an optimal balance between processing effort and cognitive effect. SIP wins out only if there is an easy-to-process point of attachment available in the sentence under construction; otherwise it will be PIDO which complies with the Principle of Relevance. The fascinating question is, of course, what determines the availability of attachment points? Empirical data gained by the method of control paraphrases show that the answer to this question is language-specific.

Most of the linking cases in our data are relatively short sentences in the English original. They can be distinguished by their discourse relation with the preceding or following sentence. Short sentences following their potential 'mates' are attached more often in the German translation, short sentences preceding their potential 'mates' less often. This is a reflection of the natural direction of discourse. The discourse relations of analogous short sentences do as a rule not only involve the adjacent sentence but a discourse segment consisting of more sentences. That is, they function in a discourse organizing way which is to a certain extent comparable to (sub)titles, setting the stage (the discourse topic) of a subsequent passage. German and English are quite similar in regard to this textual option.

For example, (80), which is elaborated by (81) and (82):

(80)   *The images are not simply pictures.*

(81)   *Each image is made up of 800 by 800 picture elements (pixels), and in computers back on Earth each pixel is held in a "word" of eight binary digits ("0" or "1").*

(82)   *Each word represents up to 2^8, or 256 levels of intensity "grey" levels – in a particular wavelength band.* (j50–52)

has remained an independent sentence in the German translation:

(83)   *Die Aufzeichnungen selbst sind keine gewöhnlichen Fotos.*

(84)   *Sie setzen sich aus jeweils 800 mal 800 Einzelelementen (Bildpunkten) zusammen, von denen jeder in den Bodencomputern als ein "Wort" aus acht binären Ziffern ("0" oder "1") gespeichert wird.*

(85)   *Jedes Wort entspricht bis zu 2^8 bzw. 256 Intensitätswerten, "Grau"-Abstufungen, in einem bestimmten Wellenlängenbereich.*

As the first sentence is related to the second sentence by the same discourse relation, it deserves encoding by a sentence of its own.

If, for example, we were to use a causal link between (83) and (84), it would block the elaborating discourse relation between (83) and (85):

(86)   *Die Aufzeichnungen selbst sind keine gewöhnlichen Fotos, da sie sich aus jeweils 800 mal 800 Einzelelementen (Bildpunkten) zusammensetzen, von denen jeder in den Bodencomputern als ein "Wort" aus acht binären Ziffern ("0" oder "1") gespeichert wird.*

(87)   *Jedes Wort entspricht bis zu 28 bzw. 256 Intensitätswerten, "Grau"-Abstufungen, in einem bestimmten Wellenlängenbereich.*

Analogous incrementality would not raise any questions, were it not for the alternative cases of translations with a shift in sentence borders.

The translations where sentences are linked to an immediately adjacent sentence can be distinguished into coordinating and subordinating cases of linking. They may be subjected to a variety of additional changes concerning word order, perspective and structural explicitness.

The additional changes are partly due to the language-specific sentence-internal conditions on processing ease dealt with in 2.1–2.4, partly caused by the coordinating or subordinating link itself. Coordinating linking in particular will undergo coordination reduction involving various structural adaptations.

The second sentence of the following passage

(88)   *This energy does not vary with latitude, so that it cannot produce changes in temperature between equator and pole.* (j81)

(89)   *The absence of such a temperature gradient prevents the banded flow patterns from developing.* (j82)

is linked to the first sentence after the consecutive relation of the first sentence was restructured in the translation as a causal relation with a shifted perspective (*produce/sich herausbilden, entstehen):*

(90)   *Da diese Energie für alle Breitengrade gleich ist, entstehen keine Temperatur-*
unterschiede zwischen dem Äquator und den Polen und ohne ein solches
Temperaturgefälle auch keine Bänderstruktur.

The passive-like perspective of the main predicate allows us to add the follow-
ing sentence as a second conjunct, which shares the verb of the first conjunct.
A sequence of sentences would be unnecessarily repetitive:

(91)   *Da diese Energie für alle Breitengrade gleich ist, entstehen keine Tempe-*
raturunterschiede zwischen dem Äquator und den Polen. Ohne ein solches
Temperaturgefälle entsteht auch keine Bänderstruktur.

Although a theoretical treatment of coordination reduction is a highly sophis-
ticated affair (Lang 1991, 2000), its economical potential will not be disputed.
Still, economy per se cannot justify the structural reduction. The transla-
tion would deviate from the original more than necessary if there were no
language-specific reasons for the difference in structural explicitness. But the
active perspective of the two predicates following each other in the original
('produce' and 'prevent') does not allow coordination reduction. If we were to
attach the second sentence as in the German translation, reframing its subject
as adverbial, the 'agent' of the event would be collapsed with the agent of the
consecutive clause.

(92)   *As this energy is the same for all latitudes, it cannot produce changes in the*
temperature between equator and pole and – without such a temperature
gradient – prevents the banded flow patterns from developing.

The result is clearly no improvement in terms of processing but – worse – it
carries another meaning. The causal chain expressed by the original, namely
that the result of the first event provides the cause of the second event, (the
absence of temperature gradient), does not allow coordination reduction in
English. It is the shifted perspective of the passive-like predicate in German
'entstehen/evolve' which yields parallel case frames and justifies coordination
of the two sentences and implicitation by coordination reduction. The example
can be seen as yet another instance of the typologically based differences
between German and English causing reframing (as described in 2.2).

Conditions for attachment with coordination reduction may also be pro-
vided by reordering translations securing a discourse appropriate information
structure. The next example follows a passage telling us that other large scale
features of Jupiter have gradually contracted:

(93)   *It is very likely that the Great Red Spot behaves in a similar way, as this feature is now only 24000 km long compared with 46000 km a century ago.*

(94)   *Perhaps the Great Red Spot may disappear one day too.* (j100–101)

The two sentences elaborate the similarity of the fate of the Great Red Spot, culminating in its possible disappearance.

The original, (93), places the subclause with its more detailed but less relevant information after the main clause with its more relevant information, disrupting the progress towards the climax in (94). Consequently, the clauses of the first sentence have been reordered securing end focus in the translation: the main clause follows the causal clause. This allows attachment of the short sentence, (94), as a second conjunct, sharing its subject with the first:

(95)   *Da der Große Rote Fleck im Vergleich zu 46000 km Länge vor 100 Jahren heute nur noch 24000 km mißt, verhält er sich wohl ähnlich und wird vielleicht auch eines Tages nicht mehr da sein.*

The analogous version:

(96)   *Der Große Rote Fleck verhält sich wohl ähnlich, da er im Vergleich zu 46000 km Länge vor 100 Jahren heute nur noch 24000 km mißt. Vielleicht wird auch der Große Rote Fleck eines Tages nicht mehr da sein.*

is not only more redundant with its repeated referent, but also more difficult to process in German, as it assigns more relevance to the figures in the causal clause than is discourse-justified.

Most cases of sentence linking by subordination make use of relative clauses and their discussion will be postponed to the chapters concentrating on the translation of NPs. But there are also cases of linking by adverbial subordination. Reasons for their specific forms of restructuring can, again, lie in the different conditions for perspective and information structure.

While the following English original displays the elaborating relation in a sequence of two sentences, the German translation includes the second sentence as an adverbial phrase into the first sentence, which itself has undergone a shift of perspective, reordering and structural reduction.

(97)   *Engineers could separate lunar soils into oxygen, metals and oxides using what is called the hydrofluoric-acid leach process.* (m45)

(98)   *In this, the acid is added to Moon dust.* (m46)

(99)   *So ließe sich z.B. Mondstaub im "Flußsäure-Auslaugverfahren" durch Zusetzen von Flußsäure in Sauerstoff, Metalle und Oxyde aufspalten.*

The shift of perspective is realized by the reflexive form of the modal verb 'ließe sich' (due to deletion of the dummy subject 'engineers': the translation uses an impersonal structure with a text connector instead). The adverbial VP of the original with its object clause 'using what is called . . .' is reduced to a PP 'im Flußsäure-Auslaugverfahren' 'localizing' the technique described by the second sentence of the original. The second sentence is reduced by a nominalization ('durch Zusetzen . . .') and a deletion of the anaphoric elements ('in this', 'the acid'), which have become redundant by the 'unification'.

But why should English be so much more explicit? The answer is that the higher incrementality of the English original helps to avoid processing difficulties, especially attachment ambiguities that would arise in a version with one sentence only. Translating the reduced German version back into English shows that attachment problems arise even before the point of linking by subordination. If we were to retain the active perspective, basic word order would promote a syntactic garden path:

(100)   *We could separate lunar soils into oxygen, metals and oxides in the hydrofluoric-acid leach process by adding . . .*

The last local phrase could be parsed as an attribute of the prepositional object. (Other paraphrases reordering the PPs would cause similar problems.) The parsing ambiguity is avoided by the structural extension of the local PP into a VP – with the weak verb 'using' explicitating the semantic relation between the adverbial and the matrix sentence.

(101)   *We could separate lunar soils into oxygen, metals and oxides using the hydrofluoric-acid leach process . . .*

A further subordinating extension, for example by a relative clause or a VP adverbial 'by adding the acid to the Moon dust' would clearly be too much subordinated postverbal information, impeding easy focus identification if nothing else:

(102)   *We could separate lunar soils into oxygen, metals and ocides using the hydrofluoric-acid leach process by adding the acid to Moon dust.*

The elaboration of the technique is thus presented as a sentence of its own.

It may be interesting to note that the anaphoric prepositional phrase spelling out the local relation in (98) has to be topicalized as its basic position produces a strong garden path:

(103)   *The acid is added to Moon dust in this.*

Although an adequate theory on the information structure of complex sentences is still missing, we can assume that it will resemble that of simple sentences in most cases, and depend upon the syntactic functions clauses have within the complex sentence. Object clauses, for example, can be expected to carry more relevant information than adverbial clauses. And focus identification will, again, vary with language-specific conditions on word order. As there are paraphrase relations between various types of complex sentences, discourse appropriate translations may involve a wide range of relinking of complex sentences. Reordering and relinking changes in complex sentences can be considered a shift of perspective and order at clause rank. If translations shift sentence borders within passages of a text, the newly formed simple or complex sentence will be judged as discourse appropriate like any originally simple or complex sentence.

Subordinating cases of sentence linking may even involve a shift of perspective concerning the discourse relation between the sentences involved. Thus, it is the first sentence which is syntactically subordinated to the second in the next case. An analogous translation of the second sentence in

(104)   *At Jupiter's distance from the Sun a perfect absorber would have a temperature of 105 degrees Kelvin (105 K or −168°C).* (j28)

(105)   *But measurements indicate that Jupiter has a temperature of 125 K.* (j29)

has a weakly personifying effect associated with the needlessly explicit structure:

(106)   *Aber Messungen weisen darauf hin/sprechen dafür, daß . . .*

The deviancy can be avoided by the more economical phrasal version

(107)   *Meßdaten weisen für den Jupiter 125K aus.*

The contrastive discourse relation between the foci of (104) and (105) promote adversative attachment of the first sentence to the second sentence subordinating the clause which contains the figure to be corrected:

(108)   *Während in der Entfernung des Jupiter von der Sonne sogar ein "schwarzer Körper" nur eine Temperatur von 105 K (−168°C) hätte, weisen die Meßdaten für den Planeten 125 K aus.*

Insertion of the focussing particles 'sogar/even' and 'nur/only' secures easy identification of contrastive referents. (The second occurrence of the proper noun Jupiter at the structurally short distance is avoided by a contextually synonymous common noun 'Planet').

An analogous version in English fails to express the adversative relation correctly:

(109) *Whereas at Jupiter's distance from the Sun even a perfect absorber would have a temperature of only 105 degrees K, measurements indicate a temperature of 125 K for Jupiter.*

The effect is partly due to the indefinite subject of the matrix clause (versus the definite subject in the German version), which may attract a contrastive focus. Whatever the details of the processing difficulties may be, it is obvious that English does not offer an appropriate point of attachment and promotes information extraction instead.

Individual examples of translations with a shift of sentence borders present unique cases of discourse appropriate translations for the very number of the aspects involved. But the complex patterns of restructuring can be broken down into individual instantiations of reordering and/or reframing types of restructuring, which are systematically related to the language specific conditions of sentence processing in discourse. The main reason for a shift of sentence borders is thus a consequence of the language-specific differences between other parts of the sentences united in the translation.

2.6 Separation of clauses into independent sentences

Restructuring of more complex sentences in the German translation may also promote separation of clauses into independent sentences. Shifting the perspective or reducing the explicitness of original sentences may effect the conditions for coordination or subordination of clauses. We will now look at two cases with coordination separated in the German translation due to other structural changes associated with the language-specific conditions on processing ease. The first example illustrates the impact of gender on anaphoric relations between coordinated clauses and sequences of sentences.

Translating

(110) *One such is hydrogen chloride, HCl, and textbooks often write this process as HCl $H^+ + Cl^-$. (h17)*

into German by an analogous version is clearly inappropriate:

(111) *Eine solche Verbindung ist Salzsäure, HCl, und Lehrbücher stellen diesen Prozess oft durch die Gleichung . . . dar.*

Although the version can be improved by reframing of the second conjunct, the translation

(112)   *Eine solche Verbindung ist Salzsäure, HCl, und in Lehrbüchern wird dieser Prozess oft durch die Gleichung . . . dargestellt.*

is still inappropriate as it impedes anaphora resolution concerning the antecedent of 'dieser Prozess/this process'.

Anaphora resolution is determined by a variety of different factors (dealing with the problems of anaphora resolution in machine translation Hauenschild, 1996, among others, lists half a dozen of them interacting with each other in complex ways). To identify the antecedent of 'this process', we have to turn to the sentence-external context. As it were, (110) follows

(113)   *In some compounds, namely acids, the molecules are so averse to the hydrogen they contain that they will readily donate the hydrogen to other molecules.* (h16)

and 'this process' resumes the referent of the mechanism described in (113). But in the German version, (112), the first clause blocks the anaphoric relation between the object of the second clause and its antecedent in (113). Together, two changes yield appropriate conditions for the anaphoric interpretation: first separation into independent sentences and second reordering/reframing of the copular sentence.

(114)   *Salzsäure, HCl, ist eine solche Verbindung.*

(115)   *In Lehrbüchern wird dieser Prozeß oft durch die Gleichung HCl H$^+$ + Cl$^-$ dargestellt.*

If we separate the conjuncts and use the original order, the anaphoric relation between 'dieser Prozeß/this process' and its antecedent in (113) will still be cut off entirely by the intervening referent, 'Salzsäure':

(116)   *Eine solche Verbindung ist Salzsäure HCL. In Lehrbüchern wird dieser Prozeß oft durch die Gleichung HCl → H$^+$ + Cl$^-$ dargestellt.*

Using the copular sentence in its basic order provides at least a sloppy basis for the anaphora resolution of 'dieser Prozeß' as it presents the predicative 'solche Verbindung' as a semantic bridge between 'dieser Prozess' and its description in (113). Reordering by itself would not rescue the coordination, either:

(117)   *Salzsäure, HCl, ist eine solche Verbindung und in Lehrbüchern wird dieser Prozeß oft durch die Gleichung HCl → H$^+$ + Cl$^-$ dargestellt.*

Obviously, coordinating requirements are stricter – which could be expected – as processing has to include all parts of a sentence in composing its meaning. But why should English allow such a coordinated structure? The answer is related to the role of grammatical gender and the common basis of the referents involved in the coordination, in particular, 'one such' and 'this process'.

The discourse relation of exemplification between (113) and (110) clearly identifies 'some compounds, namely acids' as antecedent of 'such'. German has to spell out the nominal head of the anaphor including its grammatical gender, which is feminine: 'eine solche Verbindung/one such compound'. But the object of the second clause; 'Prozeß/process' is masculine, which prevents referential identification (even in fuzzy terms) with 'Prozeß/process' by grammatical gender: 'Verbindung/compound' (or the feminine 'Salzsäure'). If we were to use a feminine object, coordination would also be possible in German. Thus, for example:

(118)   *Salzsäure ist eine solche Verbindung, und in Lehrbüchern wird diese ‚Abwehr'*
oft durch die Gleichung HCl → H⁺ + Cl⁻ dargestellt.

is better than the analogous version – albeit poorly motivated in more than one aspect.

As the English 'one such' is neutral in terms of grammatical gender, there is no such difference between the referent of 'one such' and 'this process' and the anaphors are referentially close enough to be used in a coordinating structure.

It is clear that different linguistic properties yield different conditions for SIP. But the second example will show that shifting sentence borders by separating may even be a consequence of structural reduction. Structural reductions are quite frequent in translations involving clefts and cleft-like sentence in German and English. They will be taken up in more detail in the final sections about the translation of NPs. As their reductions are likely to change the conditions for SIP, they form a whole class of candidates for shifts of sentence borders.

The following example contains even two 'clefted' structures in the original. Each coordinated clause in

(119)   *The main problem is that the interstellar absorption lines occur almost*
exclusively in the ultraviolet part of the spectrum, and it is only in the
past decade that satellites such as America's Copernicus and, more recently,
the International Ultraviolet Explorer, have been available to carry out the
necessary observations. (d71)

presents one major aspect of the problem astrophysicists faced in studying heavier elements in cosmic dust. The complex sentence coordinates two main clauses, which present their information in a marked way, using a canonical it-cleft in the second conjunct and a cleft-like structure with a semantically weak noun and copula in the first conjunct. The translation reduces the structural explicitness and separates the two conjuncts into two independent sentences.

(120) *Dies ist jedoch vor allem deshalb schwierig, weil die interstellaren Absorptionslinien fast ausschließlich im Ultraviolettbereich des Spektrums liegen.*

(121) *Erst seit 10 Jahren stehen für entsprechende Messungen Satelliten wie der amerikanische "Copernicus" oder in jüngster Zeit der internationale "Ultraviolet Explorer" zur Verfügung.*

As the first sentence of the English original presents only half of the problem referred to in the matrix subject, we can assume that the it-cleft secures identification of the referent of the other half – namely the short time interval – directly. In German, the separation into two sentences leaves the interpretation of the discourse relation between the two halves to accommodation. However, an analogous translation of the first conjunct

(122) *Das Hauptproblem besteht darin, daß die interstellaren Absorptionslinien fast ausschließlich im Ultraviolettbereich des Spektrums liegen.*

is less appropriate in German – for reasons associated with the information structure of NPs. Sacrificing the cleft-like structure for a reordered, reframed and somewhat extended paraphrase with a causal clause instead of the original complement clause improves processing conditions for the first conjunct in German. And adding the second clause by coordination increases processing difficulties again even if we were to drop the cleft.

(123) *Dies ist jedoch vor allem deshalb schwierig, weil die interstellaren Absorptionslinien fast ausschließlich im Ultraviolettbereich des Spektrums liegen und erst seit 10 Jahren Satelliten wie der amerikanische "Copernicus" oder in jüngster Zeit der internationale "Ultraviolet Explorer" für entsprechende Messungen zur Verfügung stehen.*

The main processing problem seems to be the prepositional adjunct 'für entsprechende Messungen' which presents background information in the focus position of a German sentence and after a highly informative complex subject. But other positions would not improve processing conditions, and dropping the adjunct would deprive the second conjunct of its discourse an-

chor necessary for the correct interpretation of the exemplifying, less relevant, attributes.

Interestingly, there seem to be no such constraints on the analogous German translation coordinating two complement clauses

(124)   *... besteht darin, daß ... ausschließlich ... liegen und daß erst seit 10 Jahren Satelliten wie ... für entsprechende Messungen zur Verfügung stehen.*

But the preceding context does not imply any problems and the referent of the definite subject NP, 'das Problem', has to be considered new information despite its definite form (and initial position) – a processing condition which is quite common in English with its grammatically fixed subject position but not in German, where word order can vary according to discourse (recall 2.1). The solution chosen restructures the matrix clause, recategorizing the subject NP as a predicative AP focussed by an adverbial 'vor allem' and filling the position of the subject with a grammatical dummy (dies/this). The change is associated with a different syntactic frame, realizing the clausal complement of the original 'problem' as a clausal adverbial, inserted into the sentence with a pronominal place-holder 'deshalb ... weil'. The entire change promotes separation of the coordination, yielding a sequence where the discourse relation of continuity ought to be read off from the restrictive temporal meaning of 'erst seit/only since'.

Although there is no linguistic theory in sight which could explain such interplay between the syntactic function of clauses and their language-specific word order conditions for discourse appropriate information structures, the examples discussed show clearly that the structural propensities of German and English also involve sentence borders. And, even the sentence-external cases of restructuring involve the information structure of NPs, to which we will now turn.

Summarizing the second chapter we can extend our set of major hypotheses by the following assumptions:

– A major pattern of restructuring translations is that of Reordering (like topicalizing or extraposing), which optimizes sentence processing in binary and tripartite information structures under the language-specific conditions of basic and derived word order.

– With more lexical options for the use of subjects in non-agentive semantic roles, English sentences also promote Reframing patterns (like passivizing or reflexivizing) associated with overt or covert forms of reordering in German translations.

– Restructuring to improve sentence processing (and discourse integration) may involve structural explicitness requiring Reductions (like pronominalizations) or Extensions (like focussing means or grammatical 'fillers' such as 'dummy' subjects needed for discourse appropriate case frames or word order).
– There are also cross-sentential patterns of restructuring (like Linking of sentences or Separating of clauses) originating from differences in the availability of structural attachment points.

The translation of nominal word groups

DP-internal restructuring

Clearly, the most important category of the sentence is the verb. Its semantic form determines the associated case frame: number and order of arguments the verb requires and permits, the syntactic functions of these arguments and their basic order (modifiers included according to the head they modify). But all phrases surrounding the verbal head have their own structure, which will in most cases be of a complex nature. To a certain extent phrase-internal structures show cross-categorial similarities (which has led to the development of a generative theory of phrase structure concentrating on the common and the specific properties of phrases with different categorial heads).

Similarities between verbal and nominal phrases are of particular interest for the mere frequency of VPs or NPs in sentences. And, if nouns are derived from verbs (derived in regular ways as described by derivational morphology), nominal phrases will reflect the structural properties of the verbal basis in a systematic way. But partial similarities between the structures of NPs and VPs may also occur elsewhere, that is with nominal heads derived from other categories or basic. The interesting question in translation studies concerning language specific conditions on sentence processing in discourse is thus: Can we expect restructuring in the translation of NPs to be determined by the same basic differences between English and German which we have assumed to underlie reordering, reframing, reducing or extending of sentences (or even sequences of sentences), that is structures organized around verbs?

The following will concentrate on various subclasses of complex NPs with arguments or modifiers (distinguished into CPs, VPs, PPs, APs, or NPs) extending the nominal head to the right or to the left. Cases of restructuring involving NP-external positions will be dealt with separately in Chapter 4 and all cases of appositions restructured in the translation as well as cross-sentential restructuring in Chapter 5. The theoretical concepts necessary for the analyses will be introduced in Section 3.1.

3.1   The internal structure of NPs

Capturing the properties of English and German NPs in functional-systemic terms, Teich (2003:125) suggests that "the major systems of the nominal group are shared between English and German". Differences arise in regard to inflection (where the nominal group exhibits agreement in German but not in English) and in 'logical' or 'textual' organization where prenominal modification is restricted in English, and postnominal modification in German. Referring to the different weight and position of modifiers, Teich says that "the qualification potentials are different across English and German" and "information distribution in the German NG [nominal group] works differently from information distribution in the English NG" (p. 128). She suggests that "one of the reasons for placing heavy constituents in post- or premodifying position may be exactly that of such constituents as New . . . or Given" (p. 129).

The difference in structural weight does not only refer to modifiers with verbs, that is clauses or finite verb phrases, but also to prepositional phrases, nominal phrases and adjectival phrases and – if we ignore the difference between syntax and morphology – to compounds. Observational data won by the method of control paraphrases show that NP-internal restructuring makes use of all categorial options, and differences between English and German are again due to language specific conditions determining processing ease in discourse.

Structurally seen, nominal heads can be extended by different categorial phrases carrying different syntactic functions within the entire nominal word group. The structural extensions of a nominal head may be free or predetermined by the argument structure of a noun in the same way as the structural extensions of a verbal head may be free or predetermined by the verb. That is the extensions of nominal heads may be complements or adjuncts depending upon the semantic form of the noun. Both types of extensions underlie restructuring in discourse appropriate translations in the same way. To simplify terminology, we have used the term attribute for both forms of NP-internal extensions (that is, also for complements).

The syntactic structure of NPs forms a functional hierarchy, which can be presented as a phrase structure tree where complements, adjuncts and determiners have lower or higher positions in the structural hierarchy of the NP. Basically, complements belong to the core, which is then modified by adjuncts.

The resulting phrase in its entirety is specified by a determiner. That is, nominal heads are not only extended by all sorts of attributes, they will in most

cases also be specified by an explicit or implicit determiner, which may be of a simple or complex structure itself (hence the more precise term: DP). As determiners may consist of more than articles and contain phrases of relatively complex structures, they may also have their share in restructuring translations aiming at discourse appropriate processing ease.

Processing difficulties may be due to the mere quantity of structural extensions. But this is itself a result of the structural ambiguities characterizing NP-internal syntactic relations. Analyzing the structure of an NP from left to right, the processor has to determine the syntactic function of an element before it is clear where it belongs. Garden path effects resulting from these NPs have been a favourite issue in psycholinguistic studies.

There exists an impressive range of experimental literature dealing with attachment problems of relative clauses or prepositional phrases in noun phrases with two or three nominal heads. In their cross-linguistic study of modifier attachment, Traxler et al. (2000: 167) provided evidence for assumptions on processing of ambiguous noun phrase structures within the framework of garden path theory (and its extension by a theory of 'construal' in Frazier & Clifton 1996). Traxler et al formulate some of the criteria a theory on sentence processing needs if it is to include "an explanation of how modifier attachment is processed." It must, for example, explain "what causes readers to change their behaviour when presented with prepositional phrase modifiers and relative clause modifiers. It must explain why changing the type of preposition in noun phrase complexes changes the processing of a subsequent relative clause modifier" etc.

In contrast to an earlier model of garden path theory, Construal distinguishes between primary and non-primary grammatical relations (roughly, between arguments and modifiers) so as to explain for the different impact of relative clause modifiers and of several types of prepositions on the processing of noun phrases with multiple nominal heads. (p. 168) Experiments using on-line methods, like eye scanning, show the preference of attachment to the first nominal head (for English, Spanish, French and Dutch, p. 157). The results confirmed earlier experiments where reading times were longer for modifiers attached to the second head, even if the latter would have made perfect sense. Thus, in a sentence like

(1)   *The daughter of the colonel who shot himself on the balcony had been very depressed.* (Traxler 2000: 163)

the first noun is the preferred head for the relative clause although the reflexive pronoun disambiguates modifier attachment.

Other experiments manipulated "the semantic relation between the first and second noun, the referentiality of the noun phrase, and the type of preposition in the noun phrase complex" (p. 158). There can be no doubt that any property which could become manifest in the nominal word group of an English original and its analogous translation version in German might produce a difference in the language-specific processing conditions and promote restructuring preferences within or beyond the domain of the noun phrase.

The short excursion into psycholinguistic testing of hypotheses has shown that consequences of an assumption are difficult to estimate on the basis of mere quantitative aspects alone. The concept of economy as a dominant criterion of processing ease can only provide us with a highly simplified feature for a coarse-grained sub-classification of noun phrase internal patterns of restructuring. Having said that, we might, nevertheless, ignore the recursive potential of all linguistic phrases and agree on an intuitive ranking of the categorial status of attributes on a scale of diminishing weight:

Scale of Attributive Parsimony (SAP): CP <VP <PP <DP <AP

(CP for clause, VP for verb phrase etc.; with XP < YP if XP is less economical than YP)

The classes can be subdivided further according to various properties, e.g. complement clauses vs. relative clauses, relative clauses with or without a relative pronoun/connector; verb phrases into participial phrases or infinitival phrases, used as complements or as modifiers; prepositional phrases as complements or adjuncts, the latter with or without a theta domain of their own; adjective phrases of an attributive or predicative nature (where the latter is of much greater structural weight and will be classified along with VP attributes).

Attributes containing verbs (or predicatively used adjectives) are explicit enough to have their own focus, which is assigned by the verb as in any other non-attributive verb phrase. The internal focus may be an additional focus or coincide with the focus of the sentence, depending upon its relation to the matrix structure surrounding the noun phrase. Verbless attributes may occur with a focus or without a focus and translational evidence suggests that there are different tendencies in English and in German noun phrases. The following sections will first concentrate on translations which involve attributes containing verbs, especially clauses with non-finite verb phrases, and then on attributes with verbs and attributes without verbs, in particular prepositional phrases; in the end, translations involving prepositional phrases will be compared with options of adjectival or nominal phrases, which normally permit the least weighty forms of attributes.

Although SAP is an extremely simplified scale, it offers something like a foothold for language-specific conditions on Sperber and Wilson's principle of relevance (1986). If language use is to some extent controlled by least effort (part of the trade-off between processing effort and cognitive gains), the scale of attributive parsimony could be a hierarchy of structural preferences where lower placed categories are preferred to higher placed ones for economical reasons. It is obvious that categorial choice depends upon the lexical and syntactic means available in the language involved and that there is a natural limit to parsimony, namely the amount of information contained in the attribute.

However, there are also language-specific stylistic limits to parsimony in the NP and reasons for the attributive 'generosity' may be difficult to name. The following example demonstrates a case where four of the English attributes have been reduced in the German translation. The sentence

(2) *Another idea is to alter the genes that code for various storage proteins in plants so that they would produce proteins containing a greater proportion of the amino acids that are essential for human nutrition.* (g109)

has been taken from a text on genetic engineering. It belongs to the class of cleft-like structures that will be dealt with in 4.5. We will ignore the 'fate' of the (dummy) subject and concentrate on the postcopular VP.

The four instances of attribute reduction in the matrix VP of the translation:

(3) *Man denkt auch daran, die Gene für verschiedene pflanzliche Speichereiweiße so zu verändern, daß sie Proteine mit einem höheren Gehalt an den für unsere Ernährung nötigen Aminosäuren erzeugen.*

are (a) CP to PP, (b) PP to AP, (c) VP to PP and (d) CP to AP.

(4) *Man denkt auch daran, die Gene [$_a$ für verschiedene[$_b$ pflanzliche] Speichereiweiße [$_c$ so zu verändern, dass sie Proteine [$_c$ mit einem höheren Gehalt an den [$_d$ für unsere Ernährung nötigen] Aminosäuren] erzeugen.*

Except for the (participial) VP all the English attributes could have been translated analogously into German:

(5) *Man denkt auch daran, die Gene, [$_a$ die verschiedene Speichereiweiße [$_b$ in Pflanzen] kodieren], so zu verändern, dass sie Proteine erzeugen, [$_c$ die einen höheren Anteil der/jener Aminosäuren] aufweisen, [$_d$ die für die menschliche Ernährung nötig sind]].*

It is obvious that the sentence in the analogous form is more difficult to process because of its 'nested' structure. It will become more transparent if we use a prepositional attribute in (c):

(6) *Man denkt auch daran, die Gene, die verschiedene Speichereiweiße in Pflanzen kodieren, so zu verändern, dass sie Proteine mit einem höheren Anteil der/jener Aminosäuren erzeugen, die für die menschliche Ernährung notwendig sind.*

If we accept processing ease as a control factor explaining why we prefer (6) to (5), we can also say that (6) is more difficult to process than (7) with its PP in (a):

(7) *Man denkt auch daran, die Gene für verschiedene Speichereiweiße in Pflanzen so zu verändern, dass sie Proteine mit einem höheren Anteil der/jener Aminosäuren erzeugen, die für die menschliche Ernährung notwendig sind.*

and (7) is more difficult to process than (8) with its AP:

(8) *Man denkt auch daran, die Gene für verschiedene Speichereiweiße in Pflanzen so zu verändern, dass sie Proteine mit einem höheren Gehalt an den für unsere Ernährung nötigen Aminosäuren erzeugen.*

etc. If the target version (3) is translated back into English, the brevity of

(9) *Another idea is to alter the genes for various storage proteins in plants so that they would produce proteins with a greater proportion of the amino acids essential for human nutrition.*

could suggest that it is easier to process than the original (2). But two of the differences between (2) and (9) concern adjuncts in the form of PPs: (a) and (c). As was already mentioned, PP adjuncts figure prominently in psycholinguistic research on language processing because they may be processed as attributes or as adverbials, that is, as part of the NP or as part of the matrix VP (recall Section 1.3). The constraint on the use of a verbless attribute which applies in English and not in German can be considered an instance of Konieczny's Parametrized Head Attachment Principle.

Comparing the surroundings of the PP attributes in the English original and (9), we can see that the original avoided a structural ambiguity associated with the position of the main verbs, which precede their nominal complements in English. In German the main verbs follow their objects. The availability of verbal information in English strengthens the modifier attachment to the

verb, while the absence of the verbal information in German strengthens the modifier attachment to the nominal head. The garden path potential of the PP-attachment is particularly obvious in the second instance (c) "produce something with something" can strengthen die instrumental reading of the adverbial additionally through the preposition itself. As the noun phrase after the preposition is rather long, it might take some time before the ambiguity in the modifier attachment can be dissolved.

The first instance (a) 'alter something for something' admits modifier attachment to the verb by which the syntactic function of the modifier will even be raised from an adjunct to an argument: a prepositional object with a beneficial role. Although a semantic reanalysis of these structures must be easy, more explicit modifiers will be analysed correctly right away. The attachment ambiguities do not arise in German where the verbal head is yet to follow the modifier.

But parsing ambiguities are not the only reason for language-specific constraints on attributive parsimony. The following sections will look into the different conditions on the choice of attributes with or without verbs (3.2), attributes with finite or non-finite verbs (3.3), attributes as prepositional phrases or adjective phrases/nominal phrases (3.4).

3.2 'Weak' verbs

Most verbless attributes in German translations take the form of PPs where the meaning of the preposition carries some of the features of the original verb: *contain* was replaced by *mit*, *code for* reduced to *für* in the example above; in a sentence like (10)

(10)   *The injected cells were then put into a culture medium in which cells lacking thymidine kinase would be unable to grow.* (g35)

lacking was replaced by *ohne*

(11)   *Die geimpften Zellen wurden dann in ein Nährmedium gebracht, in dem sich Zellen ohne Thymidin-Kinase nicht entwickeln können.*

In some cases the original verb is reduced to the prepositional phrase following it. Compare e.g.

(12)   *Ask any of the scientists working in the field about future applications of their work ...* (g118)

(13)   *Jeder Fachmann auf diesem Gebiet wird auf die Frage nach zukünftigen Anwendungsmöglichkeiten seiner Arbeit . . .*

Occasionally, the verb is incorporated into another word of the attribute or its head:

(14)   *Animals grazing in fields surrounding such plants ...* (h114)

(15)   *Die Krankheit befiel auch Tiere auf Weideflächen in der Umgebung solcher Betriebe*

The verb from the attribute could also become the matrix verb of the sentence; that is, participate in an NP-external form of restructuring (which will be taken up in Chapter 4).

Although there are various ways in which an English attribute may have 'lost' its verb in the German translation, the verbs that are likely to disappear belong to a class of very general 'weak', semantic relations. Under certain conditions these relations may also be expressed more implicitly by a preposition or by case. In their discussion of grammatical/semantic isomorphism in German and English, Kortmann and Meyer (1991) – drawing upon Hawkins' (1986) and Rohdenburg's (1990) opposing presentations – propose a 'lexicality-grammaticity scale' ranging from participles like 'facing' to prepositions like 'of'. They suggest that some of the verbs fill a functional (lexical) gap – especially of prepositions expressing certain textual relations – while others are merely structural options open to performance in an SVO language, in contrast to a verb final language (like German) which is more constrained by processing problems. It should be obvious from what preceded (and will follow) that the perspective of this idea is directly opposite to the major hypotheses of this book.

We have called the verbs which disappear in the German translation 'weak' verbs and have generalized their different uses in German/English attributes as a first language-specific constraint (C) on SAP:

C1 English attributes with weak verbs are reduced to verbless attributes in German.

CP or VP attributes in English which are turned into verbless attributes in German (PPs, NPs or APs) are controlled by verbs like *contain, consist, possess, use, produce, form* and the like. Depending upon the context in which they are used, these verbs were only weakly informative.

The passage ending on f46, for example

(16)   *Many, perhaps most, of the succulents that practise CAM are also able to fix carbon by day by the normal route, when conditions are moist.* (f46)

is presented under the subtitle: *CAM – the succulent solution*. The preceding six sentences spell out the mechanism of CAM, the last sentence mentions the two main groups of plants which possess this mechanism. Clearly, the verb of the postnominal attribute 'practice' is only weakly informative. It is reduced in the German translation to the PP attribute 'mit CAM':

(17)   *Viele, vielleicht sogar die meisten, Sukkulenten mit CAM können bei ausreichender Feuchtigkeit Kohlenstoff auch tagsüber nach dem üblichen Verfahren binden.*

The following passage is subtitled 'The C4 alternative' and describes the C4 mechanism distinguishing plants like sugar cane from CAM plants. (18) is the eighth sentence of this passage:

(18)   *In plants that possess this so-called C4 mechanism, the specialised vascular bundle sheath cells in the leaves have ...* (f55)

the weakly informative verb 'possess' disappears in the reduced attribute of the German translation:

(19)   *Bei Pflanzen mit dem sog. C4-Mechanismus haben die speziellen Bündelzellen an der Blattscheide*

Shortly before the end of this passage, the rapid growth of C4 plants is compared with the slower C3 plants:

(20)   *... rye grass (Lolium perenne), the commonest forage grass of the UK which uses the C3 mechanism.* (f63)

The C3 plants were introduced by name about thirty sentences ago; their mechanism and its physiological disadvantage described in detail (by 14 sentences) form the background to the CAM solution. The informativity of 'use' is very low, the verb is dropped in the German translation:

(21)   *... Roggengras (Lolium perenne), [das] gebräuchlichste Futtergras in Großbritannien mit einem C3-Mechanismus.*

The frequency of 'mit/with' in the German attributes is certainly no coincidence but due to the semantic range of this preposition. There are also other prepositions and preposition-less forms of structural reductions (recall 2, 10, 12). The following example belongs to a text about 'interferon'. The preced-

ing sentences refer to the discovery that there was not only one interferon, as originally assumed, but three major types, alpha, beta, and gamma, and a great number of subtypes. The discovery was made with cultured cells and (22) extends the findings onto naturally produced interferon:

(22)   *... that the interferon produced by human white blood cells contained a mixture of the same* α *interferons identified by the genetic engineers.* (i34)

The weakly informative 'produced' is dropped in the German translation, changing the agentive 'by'-phrase into a possessive NP:

(23)   *... daß das Interferon der weißen Blutkörperchen des Menschen ebenfalls aus jenen von den Gentechnikern identifizierten Alpha-Interferonen besteht.*

(For the final VP attribute and the additional change: the prenominal adjective *human*/postnominal noun phrase *des Menschen*, see Sections 3 and 4.)

Theoretically most of the weak verbs could also be dropped from the English sentences, so the question is: what is it that retains the 'weak' verb in the English attribute, what ousts it from the German attribute? As was already indicated in 3.1, the answer lies again in the language-specific properties of English and German word order which produce different processing conditions. First, there is the difference related to the PHA Principle. As it were, the role of the preceding matrix verb as an 'attractive' point of attachment can be demonstrated in a great number of examples with 'weak' verb attributes. Consider a sentence like (24)

(24)   *The modified cells were then re-injected into the patients in the hope that they would produce normal red cells containing normal haemoglobin.* (g96)

(which was translated as

(25)   *Anschließend wurden die modifizierten Zellen wieder in die Patienten injiziert, in der Hoffnung, daß sie normale rote Blutkörperchen mit normalem Hämoglobin produzieren würden.)*

The sentence would allow replacing the verbal attribute by a prepositional phrase also in English: *in the hope that they would produce normal red cells with normal haemoglobin.* However, the attributive nature of the prepositional phrase is no longer certain. Following the finite verb *produce*, the prepositional adjunct could also be interpreted as an adverbial with an instrumental reading. The instrumental interpretation is less likely in German where the attribute precedes the finite verb *produzieren*:

(26) *daß sie normale rote Blutkörperchen mit normalem Hämoglobin pro-*
      duzieren würden.

A similar case is (27)

(27) *But if wheat is grown in the laboratory in an atmosphere containing only 2*
      per cent oxygen . . . (f18)

which was translated into German using a PP instead of the original VP:

(28) *Läßt man jedoch Weizen im Labor in einer Atmosphäre mit nur 2% Sauer-*
      stoff wachsen ...

The prepositional attribute precedes the main verb of the clause in German,
but translated back into English, the prepositional attribute follows the verb:
grown in a lab in an atmosphere with only 2% oxygen. The position is likely to
promote an adverbial interpretation adjoining the prepositional phrase to the
verb phrase controlled by the preceding *grown.*

   If the matrix verb were to precede the adjunct in German, a verbless
attribute would lead us into the same sort of syntactic garden path; cf (29)

(29) *When any light source is observed through a medium containing small*
      particles ... (d26)

which has been translated as

(30) *Betrachtet man eine Lichtquelle durch ein Medium, das kleine Teilchen*
      enthält,

and not as

(31) *betrachtet man eine Lichtquelle durch ein Medium mit kleinen Teilchen*

The PP would promote an instrumental reading. Choosing a paraphrase where
the matrix verb follows the adjunct weakens or cancels the effect:

(32) *wird eine Lichtquelle durch ein Medium mit kleinen Teilchen betrachtet ...*

But the different order of matrix verb and PP attribute, which was to provide
the first answer to the weak verb puzzle, can only explain a subset of the
alternative between German and English attributes with or without verbs.
Except for g (2) and (12) none of the examples could be explained by the PHA
Principle. None of the English attributes was used postverbally, that is after its
matrix verb. In fact, the bulk of the alternative preferences is associated with
the difference in the information structure of German and English DPs.

Let us begin with a simple example where a PP reduction does not suggest an adverbial interpretation of the verbless paraphrase in English, either. The sentence

(33)   *hydrogen is cleaner than gases containing carbon.* (h8)

was translated into German as:

(34)   *Wasserstoff ist weniger umweltbelastend als Gase mit Kohlenstoff.*

which could be translated back as

(35)   *Hydrogen is cleaner than gases with carbon.*

without a syntactic ambiguity. But as the original uses the VP attribute and as such 'redundancies' are quite frequent, we have to find yet another explanation for the phenomenon of attributes containing weak verbs.

Determining discourse-relevance of the attribute in (33), we discover that the attribute has a contrastive value: gases with carbon are contrasted with the gas hydrogen. If we assume that the verbal head of an attribute assigns a focus to its structural extension, but the prepositional head does not, it will be easier to identify the contrastive relation in a VP attribute than in a PP attribute. However, this is no common assumption. Unlike semantically weak prepositions like 'of' (in the sense of a genitive), prepositions like 'with' create their own theta-domain, and may be assumed to have their own focus-domain. Still, the frequency of attribute reduction in discourse appropriate German translations where the English original does not fall under the PHA Principle can be considered evidence for a language-specific difference between attributive PPs in English and German.

All of these cases can be explained if we assume a constraint such as

C2 PP attributes are more often used without a focus in English than in German.

This means means that PP attributes are focused in German and defocused in English if nothing suggests the contrary. For example, if the informational ambiguity of a verbless adjunct has already been resolved in the preceding structure, English can also make use of a contrastively focused prepositional attribute in an elliptical list like the following:

(36)   *The group (CH2O) is the basis of all sugars – the so-called pentoses, like ribulose, which contain five such groups; the hexoses, like glucose, with six; and so on.* (f22)

The first attribute, modifying the 'pentoses' (and its apposition 'ribulose' has the form of a full relative clause, the second attribute modifying 'hexoses' (and its apposition glucose) is reduced to a PP although it carries a contrastive focus. The example presents a case of coordinative reduction, which is subject to its own conditions of structural explicitness.

But what does focus in a nominal word group mean and how is it related to the focus in the embedding sentence? In Sections 1.4 and 1.5 we distinguished syntactic, phonological and semantic/pragmatic aspects of focus in the sentence. Regarding the semantic/pragmatic side we distinguished (non-contrastive) focus (new information) and contrastive focus (related to the preceding discourse by an alternative relation). Among the formal means indicating focus we included lexical elements, like focusing particles, associated with contrastive focus and structural means, special structures marking focus, like cleft sentences. We took the unmarked neutral type of focus, the focus exponent, to be the grammatically determined core of a projecting wide focus. We said that in most cases the focus exponent was verb adjacent and that the difference between English sentences and their discourse appropriate German translations reflected the parameterized difference between the SVO structure of English and the SOV structure of German.

If we assume that NP-internal focus plays a role in discourse appropriate translations of English noun phrases into German, can we expect any similarity between language-specific conditions on focus interpretation between verb phrases and nominal phrases? There are several theoretical linguists who propose cross-categorial similarities between the focus structures of verb phrases and noun phrases, or more precisely, determiner phrases. But it is agreed that the similarity is only partial and that there are language-specific differences.

Looking at German and English noun phrases, Jacobs (1991/92) notices asymmetries in the stress patterns of German verb phrases with arguments or adjuncts which do not exist in German noun phrases, and not in either of the two types of phrases in English. Thus,

(37)   weil Pèter einen Bríef schrieb

has what Jacobs calls a trochaic stress pattern, but

(38)   weil Pèter seit Stùnden schl´äft

an iambic stress pattern (p. 222) "What is responsible for this difference is the fact that in (37) the VP consists of a verb and its direct object, whereas in (38) it is an adverbial-plus-verb combination which makes up the VP. Whatever the details may be, these cases therefore seem to show that the choice between

the trochaic pattern we find in the a-examples and the iambic pattern of the b-sentences somehow depends upon grammatical relations inside the VP."

In regard to neutral stress patterns of noun phrases "it seems that neutral stress is totally *insensitive to internal grammatical relations*"; both cases have the iambic pattern:

(39)   die Er'öffnung eines Restauránts

(40)   das Hàus in M´ünchen (p. 222f.)

"In English, "there is no difference between the patterns of neutral stress in complex VPs and NPs, compare

(41)   Pèter wròte a létter

(42)   Pèter slèpt in the gárden

(43)   his gìft of a bóok

(44)   his apàrtment in Lóndon (p. 223)

Nevertheless, there are also certain asymmetries between prepositional phrase attributes in English depending upon the type of preposition used. Parallel questionnaire study in Spanish and English, (Gilboy et al. 1995) showed that a relative clause will be associated with the second nominal head of two potential nominal heads if the preceding preposition does not belong to the lexical projection of the first noun. Thus, relative clauses after prepositional phrases with 'of' (like 'the glass of water that', 'the book of the student that' etc. referring for example to material, quantity, possession, relations) are preferred as modifiers of the first noun phrases, while relative clauses after the preposition 'with' (like 'the steak with the sauce that') are more often attached to the second noun phrase (examples quoted from Frazier/Clifton 1996: 75, who confirmed the grammatical sensitivity of the English modifier attachment by their on-line experiments in a self-paced reading task, p. 87).

If modifier attachment is grammatically sensitive it could also involve asymmetries of stress patterns and focus structures. Detailed analyses of discourse appropriate translations of attributes reduced to prepositional phrases show that this is, indeed, the case. In German, reduced (PP-) modifiers were, as a rule, elements of higher discourse relevance, that is new or contrastive information. But where the English original used PP modifiers (often reduced to noun phrases in German), the modifiers were as a rule unfocused. We concluded from this that attributes with semantically weak verbs were used in the English original instead of the PP attributes to indicate the higher informational value of the modifier, which might be missed in the shorter version. All

the examples quoted above which do not involve the syntactic ambiguity between attribute and adverbial contain discursively focused modifiers, that is, they are similar to the last example, (33), where the English VP attribute was reduced to a PP attribute in German. (There are occasional PP attributes extended by non-finite or clausal complements, which serve as a structural link to the complement carrying the focus. Restructuring in German translations in these cases involves NP-external parts, which will be discussed in Chapter 4).

Attributes containing verbs can take on the form of clauses (with or without an explicit connector) or that of a phrase with a non-finite verb. The difference between VP and CP attributes is particularly striking in German as the VP attribute can only be used before the noun. It is likely that the different positions of VP attributes in English and German present different conditions for discourse appropriate uses of VPs and CPs in German and English. The next two sections will therefore concentrate on the use of VP and CP attributes in English and German. (Section 3.5 will return to PP attributes to compare them with other verbless attributes.)

3.3 CP or VP attributes in English

As both types of attributes are used postnominally in English, they differ only in the degree of structural explicitness, SAP would have us prefer VP attributes wherever reduction is not blocked by the amount of information contained in the attribute. But we do find cases where CP attributes are used although VP reduction would be possible and if we compare the English CP attributes with their German translations, we even encounter cases where the CP is considered entirely redundant in German and dropped from the sentence. What are the conditions for the use of CP/VP attributes in English?

Evidence gained by a detailed discourse analysis of all CP/VP attributes in our corpus undergoing restructuring in the translation suggests that it is again the criterion of focus which can account for the different structural preferences if there are no other cases of syntactic ambiguity constraining the strategy of attributive parsimony.

Temperley (2003) presents a study of syntactic ambiguity avoidance in English relative clauses concerning the optional deletion of relative pronouns or complementizers in object relative clauses, which confirmed the expectation that "ambiguity avoidance is an important factor in the use of RP/comp [relative pronouns/complementizers, MD] with object relative clauses" (p. 483). For example, 'the lawyer I . . .' or 'the lawyer that I . . .', 'the lawyer (that) com-

panies . . .' etc. (p. 471). The explicit connector is used least if followed by a pronoun, and more often if it is followed by a definite noun phrase or a proper noun, but it is normally used if it is followed by a bare or indefinite noun phrase in the plural (p. 475).

But syntactic ambiguity may only play a minor role in the choice between CP and VP attributes in English (in contrast to the frequency of such cases constraining the reduction of attributes to prepositional phrases discussed in Section 3.5) As the following examples demonstrate, reduction of clausal attributes to verb phrases is usually constrained by requirements of focus interpretation.

The greater structural effort of a CP attribute is in most cases licensed by a prenominal specifier/modifier which requires a contrastive stress. (In our corpus, restrictive and non-restrictive relative clauses are similar in this respect.) As the CP modifier is normally also informative, we could speak of a special hat-pattern of informativity, where processing ease seems to promote an extra structural indicator for the second peak.

C3 (hat-pattern of informativity): Prenominal contrast promotes postnominal CP attributes in English.

Compare an example like (45) where the nominal head before the relative clause is preceded by a contrasted specifier ('all other'):

(45)   *... this three-carbon sugar (a triose) is then converted into other sugars (...) and hence into all other compounds (proteins, fats, and the rest) that the plant requires.* (f25)

Theoretically, there would be no problem to use a VP in the end: . . .*required by the plant.* The more explicit form of the modifier may be needed to prevent it from being defocused after focus assignment was already necessary in the prenominal structure. (The informativity of the apposition following the nominal head in brackets will certainly increase the need for an extra focus indicator in the postnominal structure.)

But also simple nominal heads are followed by CP attributes in English if the prenominal structure is contrastive. Compare (46) with its inherently contrastive quantifier

(46)   *Many, perhaps most, of the succulents that practise CAM are also able to fix carbon by day by the normal route ...* (f46)

and (47) with its contrastive adjective before the (complex) nominal head:

(47)   *the commonest forage grass of the UK which uses the C3 mechanism.* (f63)

The alternative may be contained in a coordination as in:

(48)   *Powder metallurgy is a forming and fabrication technique that comprises three stages.* (m60)

If there is no contrastive prenominal constituent, a postnominal VP suffices. Compare a case like (49) which uses a given noun before a VP modifier:

(49)   *In the early stages, engineers will adapt techniques used in the Earth's workshops.* (m33)

The given head may also be modified by a prenominal attribute as long as the attribute is not contrastive; consider a case like (50), which has a specific but normal premodifier ('fine') and a postnominal VP:

(50)   *Another promising separation technique is electrophoresis, which takes advantage of the fine grains found in lunar soil.* (m55)

The sentence also contains a CP modifier (after *electrophoresis)* which can be assumed to 'inherit' its contrastiveness from the contrastive specifier '*another*' through the identifying relation of the copular sentence.

A special case of a contrastive predecessor is contained in the following example, where the CP modifier is preceded by an of-phrase (a complement of the nominal head). Normally, of-attributes are unfocused, but there may also be cases where the of-attribute carries a contrastive stress and is then followed by a CP attribute. In a text on Jupiter, reference to the planet 'Saturn' in

(51)   *A further test of our theories is already available from observations of Saturn, which Voyager made in November 1980.* (j116)

contrasts with the discourse-topic 'Jupiter' and promotes the CP attribute.

If the of-attribute is unstressed, no extra structure is needed for the postnominal attribute. In

(52)   *Suitable sizes of particles, perhaps representing different materials, proceed to an ejector ...* (m85)

the of-attribute (together with its head) was introduced by the immediately preceding sentence:

(53)   *From the sides of the furnace, the powder is directed to a collection port where it is separated into different sizes ...* (m84)

Both modifiers of the subject in m (52) are new, but not contrasted, thus the structurally more reduced form of a VP attribute is sufficient. The difference

between the two of-cases suggests that the greater processing effort for a CP attribute is also here only worthwhile if there is an informational peak preceding it that would otherwise be missed.

There are, however, cases which do not need the extra structural weight of a CP attribute despite a contrastive prenominal attribute. If the prenominal attribute is contrastive and the postnominal attribute is altogether predictable background information, the extra structure of a CP is not needed. Consider

(54)   *Due to the low gravity and lack of atmosphere on the Moon, however, the engineering systems needed to move materials off this body could be a hundredth of the size required on Earth – and consequently much cheaper.* (m27)

The first VP attribute follows a head which has no prenominal structure ('engineering systems'), but the second VP, which together with a simple head ('size') follows a contrasted quantifier: 'a hundredth of', could be considered as contrasted, too. However, the information 'required on Earth' is presented as part of the discursive background without an additional indicator as it refers to the default case of the comparison. (The fact that this modifier is not reduced further to a PP is due to its role in a structure parallel to the primary member of the comparison and helps to secure referential transparency of its head 'size'.)

There are even cases where the postnominal attribute may have no other function than to indicate the prenominal contrast. Compare (55) where 'the kind' has to receive a contrastive stress but the CP attribute 'it is' is totally superfluous except, perhaps, for a focus-indicating function:

(55)   *So which strategy a plant adopts (or whether indeed it adopts one at all) depends not so much upon the kind of plant it is, as upon where it lives.* (f7)

Without the postnominal structure, the contrast may be placed on the second noun 'plant', which would have to be corrected at the end of the sentence. Parallelism in itself could not explain the use of the first CP attribute because the decision in favour of parallel structures is no automatic choice. The apparent redundancy of the relative clause is particularly striking from the German perspective where the postnominal attribute is not nedded at all:

(56)   *Welches Verfahren von der Pflanze genutzt wird (wenn überhaupt eines genutzt wird) wird weniger von der Pflanzenart als vielmehr vom Standort bestimmt.*

The reading of the German compound 'Pflanzenart' is immediately correct – as is the compound 'Standort' (a lexical gap in English) which renders the implicit head 'place' together with the last relative clause of the original.

The syntactic structure of the English NP may be compound-like, but its form is prosodically ambiguous in contrast to the German compound. (As translations of compounds involve morphological aspects, they would have required a research project of their own. They can be expected to play a greater role in translations of PP attributes with 'of' and thus affect generalizations about verbless attributes in German and English. Future projects on NP translations would certainly have to include restructuring cases including (de)compounding.)

There are more focus indicating, semantically poor structures in English like the first relative clause in (55); they will be taken up systematically in Chapter 4. Except for the last example, we can say that English VP modifiers secure focus interpretation under normal conditions, i.e. also after prenominal structures with 'normal' focus, while English CP modifiers secure focus interpretation after prenominal structures with contrastive focus. But what does the choice of VP or CP attributes in the German translation depend on?

In German, the two types of attributes with verbs differ not only in explicitness but also in position. A considerable number of the original English VP attributes are retained in the German translations and are moved before their heads, into the normal position of German participial phrases. To some extent such prenominal attributes also originate in English relative clauses. On the other hand, a great number of English VP attributes are extended into German relative clauses. As the latter must be used postnominally, our first question will be what determines the prenominal or postnominal position of German attributes containing a verb?

3.4 VP or CP attributes in the German translation

The prenominal position can host only a limited amount of structure as the nominal head is still needed for the NP-internal integration of the attribute. Thus, SAP will be blocked by the structural complexity of a VP-modifier more often in German (where the VP has to be prenominal) than in English (where the VP has to be postnominal). Compare e.g. the English (57) with its complex VP modifier in English after the simple nominal head 'reactions':

(57)   *In an ocean in equilibrium the concentration of each element would be established by reactions leading to the formation or dissolution either of a pure solid phase, such as calcium carbonate, or of a layer adsorbed on the surface of solid material already formed.* (s56)

and the German version, where the complexity of the attribute with its two heavy objects requires a relative clause:

(58)   *Im Falle des Gleichgewichts entstünde die Konzentration eines jeden Ele-mentes im Ozean durch Reaktionen, die entweder eine reine Feststoffphase, wie zum Beispiel Kalziumkarbonat, oder eine Auflage auf einem bereits gebildeten Feststoff entstehen ließen und wieder auflösten.*

The grammatically possible prenominal attribute:

(59)   *durch eine reine Feststoffphase, wie zum Beispiel Kalziumkarbonat, oder durch eine Auflage auf einem bereits entstandenen Feststoff bildende oder auflösende Reaktionen...*

leads the reader down a (very strong) garden path until the very end of the VP attribute, the coordinated participles.

But even a short, weak garden path is also likely to promote the choice of a CP instead of a VP attribute. Thus, the English VP attribute in

(60)   *Stars so formed should have chemical traces of the recent nuclear reactions in the supernova.* (n110)

where 'star formation' is the topic of the passage explicitly given in the preceding two sentences. The CP attribute of the German translation

(61)   *Sterne, die auf diese Weise entstehen, dürften chemische Spuren aus den letzten Kernreaktionen der Supernovae aufweisen.*

is preferred to a VP attribute:

(62)   *Auf diese Weise entstehende/ Auf diese Weise entstandene Sterne dürften...*

which could be mistaken for an initial adverbial before the participle is reached.

Unlike (57) and (60) there are many border-line cases where intersubjective assessment may vary a great deal. In fact, complex prenominal attributes are even considered prototypical of German, at least of certain registers. (Recall the example from Sebald's Austerlitz quoted in 1.1.) Fabricius-Hansen (1999b: 185), who analyses the uses of German individual sentences as compared to English and Norwegian sequences of sentences, exemplifies the difference by a sentence from Konrad Lorenz, which contains a. o. an extremely complex prenominal modifier. There is no question that such unambiguous heavy prenominal structures are quite popular in German, but it is also certain that they are stylistically marked. If we want to determine the language-specific conditions for VP/CP attributes in German, we have to distinguish between

the conditions of their neutral use as opposed to their marked use. So what is it that determines the neutral use?

In our research project on the translation of NPs, we have compared all the CP and VP attributes in our – stylistically unmarked – German corpus (discounting all the cases blocking reduction), and found a trend towards CPs where the head of the attribute is less relevant than the modifier, and a trend towards prenominal VPs where the head is at least as relevant as the modifier. The individual cases are rather complex and the concepts of (non-contrastive, contrastive) focus and background are not differentiated enough to cover the wide range of differences in the informational values of NP constituents. We will again use the pragmatic concept of 'informativity' or 'information values', which are determined by the discursive relevance of the structural segments compared. Recall the most important points of 1.4: Information values are discourse-determined and graded, and the head and the modifier may be more relevant or less relevant, relative to each other and to the preceding context. The alternative poles of the scale are totally new or totally given information, but a segment may contain both types with a tendency towards the one or the other pole. In many cases given information has to be resumed, the information value depending upon the distance between the resumptive element and its antecedent: the greater the distance, the higher the value. The value also increases with contrastiveness, which is superimposed upon the scale of givenness/novelty. (The alternative implied by the contrasted element may be contextually given or evoked with the contrast.)

Although the concept of information values is fuzzy and the syntactic segmentation in pre- and postnominal structure not always easy, differentiating head and extension into lower and higher information values allows several generalizations about the use of VP/CP attributes in German. There are altogether four cases to distinguish.

(i)   If the head is given, we tend to find a CP modifier.

Take e.g. the end of

(63)   … – *and this is indeed the amount missing from the interstellar gas.* (*d86*)

which follows a clause beginning with 'the amount of oxygen required'.

The English VP attribute has been extended into a CP in the German translation:

(64)   … *sind genau die Menge, die im interstellaren Gas fehlt.*

which presents the defining part of the postcopular NP in the most prominent position, while a prenominal VP version would end on the informational weak head

(65) *... sind genau die im interstellaren Gas fehlende Menge.*

and thus be less discourse appropriate.

The advantage of the CP attribute after a weak head interacts with other aspects, including NP-internal features and NP-external ones, especially the position of the entire NP within its matrix sentence. Preferences may be less clear or disappear altogether – as will be demonstrated by the next two examples.

In

(66) *To answer such questions we must consider the factors influencing the composition of sea water.* (s23)

'factors' is as little informative as an interrogative 'what' would be. The English VP is extended into a German CP:

(67) *Um solche Fragen zu beantworten müssen wir die Faktoren betrachten, die die Zusammensetzung des Meerwassers beeinflussen.*

Repetition of the same word is normally avoided, but a prenominal VP with its final position of the 'dummy' head

(68) *... müssen wir die die Zusammensetzung des Meerwassers beeinflussenden Faktoren betrachten.*

would be even less good:

The same seems to be true of 'system' in (69), where the nominal head together with its preposition does not mean much more than 'where':

(69) *In a system dominated by the flux of material rather than by equilibrium reactions, ...* (s72)

Thus, the VP attribute has been extended into a CP attribute in the German translation:

(70) *In einem System, das nicht durch Gleichgewichtsreaktionen sondern durch einen ständigen Materialfluß gesteuert wird*

But there is a difference between the first and the second case which resides in the final/initial position of the NPs under discussion. In (67) the attribute participates in the focus of the sentence, in (70) it is part of the background

of the sentence. The weak head of the VP modifier violates overall focus expectations more in (67) than in (70). Thus, a prenominal version of (70)

(71)   *In einem nicht durch Gleichgewichtsreaktionen sondern durch einen ständigen Materialfluß gesteuerten System*

could be considered as equally discourse appropriate.

(ii) If the head is more informative, we find a VP modifier in the German translation. Compare e.g.

(72)   *If we can tap just some of them – the dusts of the Moon or the solar energy radiating uselessly into space –* (m5)

where 'solar energy' is more informative than its postnominal modifier – it could even be contrasted since it is the second member of a disjunctive coordination:

(73)   *… und wenn sich nur einige von ihnen – der Mondstaub oder die nutzlos ins Weltall ausgestrahlte Sonnenenergie – erschließen ließen,*

The parenthetical use of the NP also promotes the structurally shorter VP attribute, because it avoids the verb clustering which would be caused by a CP attribute:

(74)   *… oder die Sonnenenergie, die nutzlos ins Weltall ausstrahlt, erschließen ließen.*

If the head modified by the attribute consists of more than a simple noun (or compound as in m5) it may be sufficiently informative for a VP attribute. In (75)

(75)   *A Danish team headed by C. U. Hammer, of the University of Copenhagen, reported in 1980* (v43)

were 'Danish team' is informative enough for the VP attribute to be used before it – the second (genitive) attribute *(of the University of Copenhagen)* is retained in the postnominal position:

(76)   *1980 berichtete eine von C. U. Hammer geleitete dänische Forschungsgruppe der Universität Kopenhagen,*

In general, the German VP modifiers have to be 'transparent' enough to let us also see the informative head. If this is not the case,

(iii) if both head and modifier are highly informative, we need a CP modifier.

As this condition includes contrastive prenominal structures, there will also be CP attributes in the original English NP. But there are some other cases which are due to more complex forms of restructuring.

In

(77)   *The greatest flaw of all similar analyses is that none provides an estimate of the amount of sulphur injected, in the form of one compound or another, into the stratosphere.* (v26)

the negated matrix predicate has been rephrased as an attributive adjective 'fehlenden', reducing the that-clause to its object – reductions like these are described by Doherty 2001, as typical of copular sentences which have a cleft-like structure in English (see also Chapter 4); the VP attribute of the object has been extended into a relative clause:

(78)   *der schwächste Punkt aller solcher Analysen sind die fehlenden Angaben über die Schwefelmenge, die in Form verschiedener Verbindungen in die Stratosphäre gelangt.*

While the contrastive focus of the compound head 'Schwefelmenge' is already 'inherited' from the superlative in the DP before the copula: *der schwächste Punkt,* its informational value is additionally focused by the negative head 'fehlende Angaben'.

In the English original, the prenominal structure of 'sulphur', 'an estimate of the amount of' does not inherit the contrastive focus (and is thus not subjected to C3) as it is separated from the copular relation by the transitive verb 'provide'. Restructuring of the sentence-internal context of an NP can thus produce different conditions for the choice between VP/CP attributes despite semantically equivalent interpretations.

A similar case of focus-proliferation may control the German CP attribute in the translation of

(79)   *The composition of the material injected into the stratosphere during eruptions, and especially the amount of sulphur in one form or another, is crucially important –* (v58)

(80)   *Von entscheidender Bedeutung ist dabei die Zusammensetzung des Materials, das während solcher Ausbrüche in die Stratosphäre geschleudert wird und insbesondere die Menge des in der einen oder anderen Form darin enthaltenen Schwefels.*

The German phrase 'Zusammensetzung des Materials' inherits a high degree of relevance from the topicalized PP: *von entscheidender Bedeutung,* which in turn

promotes the choice of a CP attribute, while the original VP attribute follows an unfocused head: 'the composition of the material'. The assumption of 'focus inheriting' in copular clauses is, admittedly, ad hoc – there are no focus theories containing it – but it is nicely supported by evidence like the above.

(iv) If the informativity of head and modifier is low, we find a VP modifier.

This is the case where the referent of the entire CP is already given in the discourse, as e.g. in (81) where the referent of the subject is the discourse-topic of the preceding passages:

(81)   *Material dissolved in the oceans is removed through the formation of particles of matter ...* (s29)

(82)   *Die in den Ozeanen gelösten Stoffe werden in Form von Teilchen ausgefällt*

The same is true of the subject in the adverbial clause of (83) as the use of satellites for the study of climatic impact of volcanoes was introduced earlier and can be said to belong to the background scenery of the text.

(83)   *... as a satellite involved in the study just happened to be monitoring Canada at the time of the eruption.* (v77)

(84)   *da ein am Forschungsprogramm beteiligter Satellit zur Zeit des Ausbruchs gerade Kanada überwachte.*

The criterion of low informativity applies even if the head contains a new specifier. Informative quantifiers, as e.g. 'part/bulk of' promote a VP attribute in German:

(85)   *this will eventually form part of the product being manufactured.* (m85)

(86)   *erfolgt allmählich der Aufbau eines bestimmten Teils des herzustellenden Produktes*

(87)   *At the present time the bulk of the particulate material produced in the oceans is of biological origin.* (s30)

(88)   *Heute sind die meisten der im Meer gebildeten Teilchen biologischen Ursprungs.*

We could interpret iv as the default case of German attributes with verbs, which is used if no extra focus indicator is needed.

    With capital letters symbolizing higher values of head (H) and/or extension (E), the directional tendencies of the German distribution can be summarized as:

C4: The choice of VP/CP attributes in German secures end focus within DP.

CP	VP
hE	eH
HE	eh

Because three of four cases have a stronger element at the right side and a weaker element at the left, we can generalize the directional tendency of the distribution and say that higher relevance tends to the right, lower relevance to the left of a German noun phrase. It is usually the right hand side of the DP which is marked as prominent.

This may seem to confirm what was expected anyway for the categorial assumptions of clausal and phrasal focus assignment. But as it generalizes evidence from restructuring translations it involves differences in the language specific conditions on the use of attributes in German and English. Summarizing our findings, we can at this point say that the choice of attributes with verbs is controlled by informational relevance but in different ways. In English, the grammatical head of a nominal word group is automatically located to the left of VP/CP attributes, and it is only the different degree of explicitness which is controlled by discursive relevance. In German, it is the different position of the head to the right or to the left of its extensions which characterizes different degrees of informational relevance sufficiently, whereas the structural form of the extensions follows automatically by grammatical rules.

But as the discursive relevance of the head is determined relative to its extensions, we are not spared the detailed discourse analysis necessary for the relativization. And this is where the theoretical problems lie. The greatest theoretical problem is the fact that formal clues of novelty or relevance can be relativized by other aspects and assigned the lower informational value of the noun phrase.

For example, an indefinite noun as 'a system' in (69) will be considered new information and would thus be informative enough for the choice of a prenominal VP. But a look at the preceding sentence tells us that the entire information, head and modifier, was immediately given and it is only by the fact that (69) opens a new paragraph where the first sentence resumes a discourse topic of macro-structural relevance that the localization at the beginning of (69) carries more discourse relevance than it would have in a normal continuative discourse relation.

Although there are promising theories about the interaction of definiteness/indefiniteness with sentence external context (for example, Heusinger 2002) and stress/focus assignment (for example, Umbach 2001), they are still

far from covering all domains of interaction relevant for the language specific conditions of discourse appropriate CP versus VP attributes. The generalization of C4 formulates a tendency emerging from our observational data which supports the assumption of a partial similarity with the alternative directionality of German and English verb phrases or sentences. However, the choice of attributes containing verbs has to be compared with the options of attributes without verbs: prepositional phrases, nominal phrases and adjective phrases, to which we will turn in the following section.

3.5 Prenominal and postnominal verbless attributes

Reduction of English attributes with verbs to German attributes without verbs yield in most cases prepositional phrases. VP attributes alone have been reduced to prepositional phrases in four fifths of the restructuring cases – only one fifth required extensions to CP attributes, mostly relative clauses. It was already pointed out in Section 3.2 that most of the English verbs were semantically weak, that is, these verbs did not contribute more information than that of the corresponding preposition in the context. (The greater explicitness of the English attributes was usually due to parsing problems, especially ambiguous attachment of modifiers as attributes or adverbials.)

But verb phrases were also reduced to nominal phrases or adjective phrases in the translations. And as many prepositional phrases were reduced to noun phrases, but more original noun phrases extended into prepositional phrases in German, conditions for the different degrees of explicitness were far from clear. Even if one excludes cases of compounding and the possessive and ignores all cases of apposition (which will be taken up in 5.4 and 5.5), the remaining formal options form a maze of different preferences in German and English.

Still, if we take the strategy of attributive parsimony as a guiding line, it suggests a directional difference between pre- and postnominal extensions in German and English which could be summarized as an iambic (rightward) versus trochaic (leftward) trend of informational relevance. If there is no additional indicator of focus, that is if we have a verbless extension, German tends to be iambic and prefers a postnominal focus, while English is trochaic and prefers a prenominal focus.

The distribution is reversed with pre- and postnominal extensions containing verbs – as long as they are of a phrasal rank (as clauses demand a postnominal position in both languages). That is, the verb is needed to secure identification of a focus in a position where it would normally not be expected.

In German the focus is expected postnominally in line with the iambic pattern, thus a prenominal focus is marked by a structural extension with a verb. The German pattern seems to be controlled by grammar as the VP can only be used prenominally. In English, where every attribute except for (attributive) APs has to be used postnominally, the grammatical conditions seem to promote an iambic pattern of informativity even more. But when we looked at the English CP attributes which did not allow reduction to PPs in contrast to German, we found that the verb was necessary to prevent the prenominal extension from being defocused (C2).

The great number of German PP attributes originating in English VP and CP attributes is related to the phenomenon of weak verbs introduced and discussed under constraint 1 in Section 3.2. There were two major reasons assumed to promote the use of attributes with weak verbs: attachment ambiguities concerning the parsing of modifiers as attributes or adverbials and problems of focus identification. Thus, in a sentence like

(89)   *The light from a Type II and the various energies of its remnant disperse in much the same way as those of a Type I.* (n113)

where the subject summarizes background information of its two conjuncts, we find verbless attributes in the coordinated NPs of the English original and their German translations

(90)   *Das Licht einer Supernova vom Typ II und die verschiedenen Energien ihres Überrestes zerstreuen sich ähnlich wie bei Typ I.*

The events in type II were described in the preceding five sentences, those of type I in the passage preceding them. But in the following sentence (91)

(91)   *But more than 90 per cent of the energy released by the collapsing neutron star remains unaccounted for.* (n114)

it is only German which uses a PP attribute (after the quantified head)

(92)   *Aber der weitere Verbleib von mehr als 90 Prozent der Energie aus dem Kollaps des Neutronensterns ist immer noch ungeklärt.*

– the modifier carries a contrastive stress on its referent 'the collapsing neutron star' and the higher value is indicated by a VP attribute in English. (The PP-internal 'dependency shift' between head and modifier 'collapsing neutron star/Kollaps des Neutronensterns' secures discourse appropriateness by an NP-external type of restructuring to be taken up in Chapter 4.)

Several of the German PPs replace English APs rather than VPs. In fact, if we compare AP and PP attributes in English and German, we find that more English APs have been turned into German PPs (or NPs) than vice versa. This suggests that English APs may be more informative than English PPs.

As English APs in postnominal position can be classified together with English VPs in postnominal position – the APs being reduced forms of CPs with predicatively used APs – the prominence potential of postnominal APs is only natural. But the comparison between verbless attributes in English and German suggests that English APs may be more informative also in prenominal position. Although information is in most of these cases less 'weighty', the relative values of verbless attributes in prenominal or postnominal positions may still be different. Where adjectives were translated into German as PPs the prenominal attribute of the English original was more informative, normally, but in German the trend was precisely the reverse. German PPs were more informative than APs.

C5 In English, APs are more informative than PPs
   In German, PPs are more informative than APs

The alternative distribution in DPs with verbless attributes amounts to an iambic pattern of informativity in German and a trochaic pattern in English.

In a sentence like (94), which was taken from a passage about the weather on Jupiter, the head of the subject is given information and the of-attribute serves no other purpose than to provide the descriptive information which is needed to identify the given referent. In English, the form for the low informativity is an of-attribute, in German an adjective:

(93)   *The movement of the atmosphere ...* (j36)

(94)   *die atmosphärischen Bewegungen*

On the other hand, an additional attribute increases informativity and promotes the use of an adjective in English. In (95) the original subject clearly identifies the focus of the sentence.

(95)   *a detailed picture of Jupiter's atmospheric motions* (j20)

The translation rephrases the sentence in the interest of a postverbal focus in German, increasing its weight visibly by a postnominal PP attribute: the prenominal AP 'atmospheric' is replaced by a postnominal PP in German

(96)   *ein genaues Bild von den Bewegungen in seiner Atmosphäre.*

(The possessor 'Jupiter's' has been pronominalized as 'seiner' as the planet was already mentioned in the preceding phrase.)

Similarly, in a contrastive relation, as in (97), the attribute has been restructured as a PP:

(97)   *by an internal heat source* (j33),

(98)   *von einer Energiequelle aus dem Inneren*

In (99) the possessive part of the English AP

(99)   *Jupiter's internal energy* (j80)

is recategorized as part of a nominal compound

(100)   *die Energie aus dem Planeteninneren*

The NP participates in a semantic relation contrasting 'Energiezufuhr der Sonne' (the effects of energy from the Sun), and 'Energie aus dem Planeteninnern'.

In general, the use of prenominal APs is heavily constrained by lexical gaps, that is, by selection restrictions on the combinatorial potential of nouns and adjectives (which, it has to be said, differs a great deal with different registers). It may not be altogether unlikely that the lexical gaps reflect the prevailing structural patterns – but to pursue this idea any further would definitely go beyond the syntactic limits of this study.

Let us finally return once more to our second example of Chapter 3 and apply the constraints to the four instances of different uses of attributes which we noticed in the English original and its German translation:

(101)   *Another idea is to alter the genes that code for various storage proteins in plants so that they would produce proteins containing a greater proportion of the amino acids that are essential for human nutrition.*

In line with C3 ('hat pattern') the English original uses a CP attribute at the end as its head contains a comparative quantifier: 'a greater proportion ... ' It uses a VP after the second instance of 'proteins' as a PP might be attributed to the matrix VP. The PP after the first instance of 'proteins' cannot be reduced any further because there is no adjective (the German 'pflanzlich' is a lexical gap in English), but as this attribute is only weakly informative, the deaccentuated PP is just fine (C5). The English CP attribute after 'genes', however, is the result of two factors blocking SAP in English: 1. the weak verb is retained so as to prevent deaccentuation of the highly informative attribute (C2); 2. the CP attribute

is preferred to a VP attribute as this could be mistaken for an adverbial – in line with PHA:

(102)   *Another idea is to alter the genes coding for various storage proteins in plants*

Except for the PP attribute 'in plants', all English attributes contained a verb, the first and last attribute a finite verb, the one in between a present participle. All three verbs were said to be semantically weak verbs, which disappear under SAP in German (C1), i.e. they are replaced by verbless attributes in the translation. This was the case. The German translation

(103)   *Man denkt auch daran, die Gene [$_a$für verschiedene[$_b$ pflanzliche] Spei- chereiweiße] so zu verändern, daß sie Proteine [$_c$mit einem höheren Gehalt an den [$_d$für unsere Ernährung nötigen] Aminosäuren] erzeugen.*

dropped the weak verbs in (a) and (d) and replaced the verb 'contain' by the preposition 'mit' in (c), yielding two PPs 'für Speichereiweiße ...', 'mit einem Gehalt...' and an AP '...nötigen' in (d). The PPs are in line with the iambic information pattern of German as they contain new information and their heads 'Gene' and 'Proteine' present background information. The AP attribute in (d) has to be used prenominally for grammatical reasons, but its head is new and a CP attribute would make us miss the prominence of the head (C4ii). Finally, the informational relevance of the head in (b) is higher than that of the prenominal attribute, which is merely resumed information (C5).

If we review the five constraints on SAP in the light of the general differences (between +/–finite clauses) in German and English information structures, we can say that the trend summed up in C5 resembles the basic alternative which characterizes word order in English/German VPs. In line with its head-initial VP, English assigns focus early in the sentence, namely to a verb-adjacent element, permitting less informative elements to the right, while German, with its head-final verb, assigns focus close to the end of a sentence, placing less informative elements to the left, earlier in the VP. The alternative of prominence at the left or right periphery of the VP, which results in a trochaic or an iambic pattern, repeats itself in a modified way in the DP.

Although attributes extend to both sides of the nominal head, verbless attributes at the right side are less informative in English and more informative in German. The prenominal attributes are distributed alternatively. Consequently, more informative attributes need an extra indicator, namely a verb, at the right side in English and at the left side in German. As the 'natural' order of processing favours attributes at the right side of their heads, German can use many more verbless attributes than English (C1, C2). The heavy CP

attributes, which are extended to the right in both languages, are not only used if the attributes carry an irreduceable amount of information, but also if there is another element in the DP which is highly informative ('hat-pattern' of informativity, C3). Finally, the additional positional difference between VP and CP in German gives rise to an even more differentiated 'competition' between elements of higher and lower informativity (C4). But here, too, the iambic pattern is the prevailing trend in German suggesting that German DPs have 'end prominence' generally. Thus, the general English/German preferences in distributing DP-internal information (mainly attributes with or without verbs) reflect the specific directionalities of the alternative (SVO/SOV) language types.

Summarizing the third chapter we can extend our set of major hypotheses by the following assumptions:

–   To a certain extent, NP-internal patterns of restructuring (using re-ordering, reframing, reducing and extending translations) display similar propensities as sentential/clausal (CP/VP) patterns.
–   A major difference between the English original NP and its German translation concerns alternative uses of pre- and postnominal extensions ('attributes' in the widest sense).
–   Attributive 'parsimony' (lowering the weight of structural extensions to improve processing conditions) is not only constrained by grammatical differences (like VP-positions) but also by different focus expectations.
–   The prevailing information structure of NPs with verbless attributes corresponds to the information structure prevailing in the VP: 'iambic' in German, 'trochaic' in English. (recall C5)
–   The trochaic trend of English restricts the number of focussed PP attributes and promotes the use of VP attributes – where even semantically weak verbs can serve as independent focus indicators. (recall C2)
–   The iambic trend of German promotes the use of PP attributes, often instead of English VP attributes with weak verbs. (recall C1)
–   In German, the positional difference between attributes containing verbs promotes their pre- and postnominal use in line with the general iambic trend. (recall C4)
–   In English, the common (postnominal) position of attributes containing verbs promotes the use of the structural weightier CP attributes to indicate a postnominal focus after a prenominal one. ('Bridge Contour', recall C3)

Reorganizing dependencies

Restructuring of NPs which involve noun phrase external structures (in the following also referred to as NP-external changes) comprise a great number of different subclasses, one of which will be taken up in the following. Roughly seen, a noun phrase consists of a nominal head and its extensions before or after it. Although changes involving pre- or postnominal information or the head itself will in most cases concern more than one feature, there will often be a major difference triggering the other changes. If e.g. we extract the head of a noun phrase and use it in some other part of the sentence, the syntactic status of the remaining extensions will change automatically.

The coarse-grained distinction between heads, pre- and postnominal extensions results in a subclassification of noun phrase external changes into three types of extractions from and three types of insertions into the noun phrase. The syntactic status of extracted extensions will in most cases be raised by the change, the extracted element being reformulated as an adverbial or argument of the verb phrase. The syntactic status of information inserted into the noun phrase will be lowered from a verb phrase dependent element to a noun phrase dependent element.

From a linguistic point of view, this may sound like an absurd simplification, but from the point of view of pattern recognition at high speed such simplifications may well make sense. Although we can always resolve the elements of a structural pattern into its details and identify its features at deeper levels, perceptional shortcuts must evolve to speed up processing.

Of the four types of changes concerning the lowering or raising of pre- or postnominal attributes, we will in the following two sections concentrate on *postnominal attribute raising*. Obviously, the restructuring patterns to be observed between original and translation which involve noun phrases range again from relatively simple to highly complex structural changes. The discussion of the examples will be ordered according to complexity and position (initial, medial and final) of the original elements and their translations. The first two sections will concentrate on changes which 'extract' attributes from

NPs at the end (4.1) or at the beginning of sentences (4.2). Although the sample of altogether seventy five examples from the Berlin corpus is not even a quarter of that used for the generalizations in Chapter 3, and thus even less representative in statistical terms, the language-specific conditions displayed by its cases suggest a perfect fit with our assumption of parameterized processing conditions for English and German sentences at the level of syntax and information structure. Later sections on NP-external changes will take up cases of different structural explicitness concerning sentences with 'there' (4.3), clefts (4.4) and cleft-like structures (4.5).

4.1 Extraction from clause-final NPs

Restructuring in the interest of balanced information distribution also involves noun phrase internal constituents. Translations into German reshape and re-order not only phrases carrying primary grammatical functions, but also break up their internal structure, extracting structural parts which the translation uses in other parts of the sentence with other functions. The different German and English information structures described in the second chapter make us expect that NP-restructuring will also contribute to the given-before-new and balanced information distribution in an SOV language with a relatively free word order. If the English original ends on an NP containing a postnominal attribute of lower relevance the attribute may be extracted and used in another function earlier in the German sentence – within the verb phrase or even before it. It is clear that the grammatical status of the extracted phrases is raised by this process to a more primary role in the syntactic hierarchy of the sentence. But with final phrases of English sentences it is not always clear whether a post-nominal adjunct is part of the NP preceding it or part of the VP containing the NP. Irrespective of its VP- or NP-dependency, discourse-appropriateness in German may require a different position of the adjunct if its informativity is less relevant than that of the preceding phrase. The adjunct will be moved to an earlier position so as to secure final position for the more relevant element in line with the German versions of BID or GIN.

Consider the second clause of example (1). The preceding context introduces two main types of supernovae; type I is talked about in the immediately preceding sentence, which places such supernovae among both young and old stars. This membership is clearly contrasted by the excluding reference to the youngest stars in (1):

(1)   *Type II, on the other hand, are hydrogen-rich, like most other things in the Universe, but they occur only among the very youngest stars in our own and other galaxies.* (n26)

The final reference to the galaxies is of low relevance, providing information which belongs to our background knowledge about stars anyway – (despite its internal contrast between *own* and *other)*. Thus, the sentence has been translated as

(2)   *Auch Supernovae vom 2. Typ sind reich an Wasserstoff, sie kommen jedoch bei uns und in anderen Galaxien nur unter sehr jungen Sternen vor.*

with the adjuncts in the end being reordered. It is not clear whether the English reference to the galaxies is an adjunct to the verb phrase of the second clause, or an adjunct to the noun phrase, modifying the very youngest stars. The example could therefore be classified as a case of verb phrase internal reordering of adverbials or as a case of postnominal attribute raising. The semantics are equivalent anyway.

Things are clearer with the following case of a postnominal VP attribute which is a VP complement of 'opportunity':

(3)   *The eruption of Mount St Helens in 1980 provided an unprecedented opportunity to study the impact of volcanoes on the atmosphere* (v2)

The attribute has been structurally reduced in the raising by nominalizing the infinitive (and reducing the postnominal PP of its object 'on the atmosphere' as prenominal AP 'atmosphärisch/atmospheric'):

(4)   *Der Ausbruch des St. Helens von 1980 eröffnete für die Erforschung der atmosphärischen Auswirkungen von Vulkanen ungeahnte Möglichkeiten*

Following the title of the text *Do volcanoes affect the climate?* the postnominal attribute of the original object is clearly less informative than the preceding part of the N and its preposing secures end focus in the German translation.

The verb of the postnominal attribute may be deleted in the raising if it is a semantically weak verb. Compare the translation of

(5)   *Hydrogen and helium are the most abundant elements, accounting for 98 per cent of all the material in our Galaxy.* (d63)

as

(6)   *Wasserstoff und Helium sind mit einem Anteil von 98% an der gesamten Materie die häufigsten Elemente unserer Galaxis.*

The contextually weak verb *accounting* is dropped altogether, the more informative part of the attribute is preposed before the inherently focused superlative. As the figure itself is not necessary for the discursive progress, the superlative is the prospectively more relevant information. The residual nominal phrase of the postnominal attribute is retained as a genitive NP after the most informative part of the predicative – to reduce the structural burden of the adjunct raised. (The language-specific conditions for such attribute splitting would require a special research program but we expect them to fit into the overall picture.)

In line with BID, the adjuncts in (2)–(6) were all placed in medial position in the translations. Due to their low discourse relevance, the postnominal attributes of the English NPs were raised to an NP-external position early in the VP, which is typical of background information in more complex information structures in German. But postnominal attribute raising can also result in topicalizing of adjuncts, often in line with GIN, that is, for information structures which are less complex. Among the more frequent cases we have found postnominal attribute raising from subjects introduced by the expletive (focus indicating) *there*. (As structural reduction in translations of sentences with 'there' will often involve clausal attributes, such more complex cases will be taken up in a section of their own, 4.3).

A relatively simple, but quite prototypical case of topicalization has been used in the translation of the following example.

(7)   *There are two main reasons for this complexity.*

(8)   *Dafür gibt es vor allem zwei Gründe.*

The postnominal attribute – a PP complement of a final NP – has been pronominalized in the raising: The anaphoric expression 'this complexity' follows its antecedent – a state-of-affairs described by the immediately preceding subclause. Being used in the initial position of the sentence, the closer distance between the anaphor and its antecedent promotes pronominalization of the PP as a pronominal adverb.

Topicalization of postnominal attributes may also be subject to BID, i.e. occur in more complex information structures. The special condition for such cases seems to be a contrastive relation between the final adjunct and the preceding discourse. The adjunct will then function as a contrastive topic in the translation.

The English sentence

(9)   *However, the fluoride ion shows only normal hydrogen bonding towards water molecules themselves.* (h107)

follows a passage introducing fluoride ions and uracil fluorides as a case of strong hydrogen bonding. 'Water molecules' are clearly contrasted with uracil, just as 'normal' hydrogen bonding is contrasted with 'strong' hydrogen bonding. The following text elaborates on the properties fluoride salts have due to their normal hydrogen bonding. The prospective relevance of the nominal head is therefore still higher than that of the contrastive postnominal attribute. The information structure of the English sentence in (9) is <3 1 2>; it becomes <2 3 1> in the German translation:

(10)   *Mit Wassermolekülen selbst bildet das Fluoridion jedoch nur normale Wasserstoffbrückenbindungen aus.*

(As Doherty 2003 argues, the German adversative connector, here 'jedoch/ however', is pushed out of the initial position by a more relevant informational element.)

The English original does not make use of this type of contrasted topic as the syntactic ties between the nominal head and its complement are tighter in English than in German. But processing of the English information structure is also supported by the lexical focus indicators (*only* and *themselves*) and does not miss the additional marking through topicalization, which secures the discourse appropriate, balanced distribution of the two foci in German.

A particularly vexing example is the case of a postnominal attribute raising from an NP after *there are,* where the order of referents is maintained in the translation. The original sentence

(11)   *Fortunately, there are other planets in the Solar system with interesting atmospheres, …* (j7)

from a text about the weather on Jupiter has been translated as

(12)   *Zum Glück gibt es auch auf anderen Planeten unseres Sonnensystems interessante Atmosphären.*

The attribute raising is covered as the linear order of the planets, solar systems and atmospheres is analogous to that of the original. But there is the particle 'auch/also' inserted before the 'Planeten' and there is a covered case of reframing, changing the syntactic functions of planets and atmospheres.

Both changes help to avoid a processing difficulty that would arise with an analogous version. The analogous version

(13)   *Zum Glück gibt es andere Planeten im Sonnensystem mit interessanten Atmosphären* …

would attract the focus to the final attribute, which would be mistaken for a contrastive focus in the context of 'andere/other', and 'andere' itself would not be identified with the main focus of the sentence. (Recall the different informational expectations of the prenominal/postnominal verbless attributes in German and English: the prenominal 'other' being assigned a higher value than the prenominal 'andere' – and vice versa.)

The additive meaning of the inserted particle 'auch/also' reverses the expectation of a contrastive end focus. It requires the reader to interpret the remaining sentence as parallel to similar background information. The focus in such cases is the focus of a presupposition (Lambrecht 1994; Erteshik-Shir 1997, among others). The English original does not need the additional lexical device to strengthen the prenominal focus on 'other' as less informative PPs can occur at the end of a sentence, anyway.

4.2 Extraction from initial noun phrases

Postnominal attribute raising may also originate in initial noun phrases. Such changes are mainly due to the different conditions on the use of initial and medial positions in German and English. The difference involves NP-internal structures where either the head or the attribute is more relevant than the rest of the NP so that the one or the other could be inappropriate in an analogous position in German.

The English subject – given or new – is normally placed before the verb and topicalizing of elements before the subject is heavily constrained by conditions on the postverbal structure and by discourse relations. The constraints on topicalization promote the use of various other structures in English including those of initial NPs with heavy postnominal attributes. German topicalizes freely in line with GIN and BID and the head and/or the attribute of the initial English NP may violate BID or GIN. Thus, postnominal attributes of initial NPs which are more relevant than their preceding structures may in German require postnominal attribute raising from within an initial noun phrase. In contrast to attribute raising from a final NP, the extracted part seems to remain in its original position, while the head has been reordered into a VP-internal position. In a sentence like

(14)   *The contrasts in temperature between the dark bands (belts) and light belts (zones) are also small, … (j19)*

which follows a sentence referring to contrasts in temperature between the equator and the poles, the local attributes of the subject carry a higher relevance than the head. The postnominal attribute is raised in the German translation, and used as an adverbial in the topic position of the sentence. The remaining part of the subject is placed postverbally, in the weakest position of the German sentence. The resulting pattern <2 3 1> is in line with the German version of BID:

(15)   *Zwischen den dunklen Bändern (Gürtel) und den hellen Bändern (Zonen) ist das Temperaturgefälle ebenfalls sehr klein,*

Again, the attribute raising may be associated with structural reduction. Thus, for example, the following sentence from a text on cosmic dust

(16)   *The grains responsible for the optical extinction must be a few hundred nanometers in diameter, while those producing the far ultraviolet extinction are around ten times smaller. (f53)*

has been translated into German as

(17)   *Für die optische Extinktion müssen die Teilchen einige 100 nm groß sein, für die ultraviolette Extinktion etwa 1/10 so groß.*

The head of the original subject 'the grains' has just been mentioned in the preceding sentence and presents pure background information. But the two components of extinction, 'near infrared' and 'far ultraviolet', have to be reactivated from their introduction ten sentences ago and are more relevant than their nominal head. Their extraction and topicalization pushes the head of the original NP into the position immediately after the verb, i.e. into the weakest position of a more complex information structure in German.

The translational change involves a reduction of the postnominal attribute raised – the semantically weak (predicative) adjective *responsible* is dropped as is the weak predicate of the second conjunct (which is altogether reduced to an asyndetically coordinated phrase with gapping).

In some cases the weak head of an initial NP is informationally subordinated by being recategorized as an adjunct of the VP. The passage preceding the following example speaks about the (chemical) properties of water. Thus, the attribute of the initial NP

(18)   *The chemistry of hydrogen fluoride, HF, shows some similarities to water.*
       (h65)

is more relevant as it moves the topic to another hydrogen compound: hydrogen fluoride; the nominal head itself is background information. The following text spells out the chemical properties of hydrogen fluoride as similar to water, which means that *similarity* is the most relevant information of the sentence.

The German translation turns the attribute into the subject of the sentence and subordinates the head of the original subject as an adverbial modifying the predicate in the focus domain.

(19)   *Fluorwasserstoff, HF, verhält sich chemisch zum Teil ähnlich wie Wasser.*

(The nominal head of the predicative itself is recategorized as an adjective in the translation.)

Altogether the higher degree of nominality in the English original contradicts general prejudices about nominal tendencies in English and German. (We will return to this aspect in the next sections.)

In all of the preceding examples attribute raising concerned initial NPs where the attribute was more relevant than the head, which the German translation pushed down into a less prominent position – securing a balanced distribution of information in the German sentence.

But information structures of initial English NPs may also fail BID by analogous translations in German if the head of the NP is more relevant than the attribute. The inappropriateness of such NPs may be enhanced by the obligatory inversion of subject and verb in German if other elements occupy the topic position. For example, if a sentence begins with a text connector, the German subject may have to be shifted after the finite verb and may thus occur in a discourse-inappropriate position for any more relevant element. The English sentence

(20)   *In addition, the density of water is higher than that of ice, …* (h36)

follows a sentence about the melting and boiling points of water, shifting the topic to another property of water: density. The informational relevance of the head is therefore higher than that of the attribute and requires a more prominent position in German. An analogous translation could not indicate the contrastive nature of *density:* Due to the connector *außerdem,* the initial NP has to undergo inversion and would thus be used in the weakest position. Consequently, the translation has been restructured in line with GIN: the

original attribute has become the subject of the German translation, while the head of the original subject has become the head of the German predicative:

(21)   *Außerdem hat* Wasser *eine größere Dichte als Eis, …*

This type of extraction of the head can, again, be associated with more noticeable forms of reframing as in the following case. The original

(22)   *Furthermore, the latitudes of the maximum velocities in the zonal jet streams are the same as inferred from Earth-based observations extending over the past 80 years.* (j60)

is preceded by a sentence referring to velocities of zonal streams. Thus, the postnominal attribute of the original is given information except for the first part of its compound head *maximum*. The reference to *latitudes* is new and in the translation moved into the focus domain of the sentence:

(23)   *Dabei liegen die Maximalgeschwindigkeiten der zonalen Strahlströme tatsächlich zwischen den Breitengraden, die man aufgrund von Beobachtungen aus den vergangenen 80 Jahren von der Erde aus ermittelt hatte.*

The sentence has been reframed from a copular predication with an identifying predicative ('the same as') into a localizing predication with a PP: 'liegen zwischen/lie between'.

The insertion of a focusing adverb 'tatsächlich' helps to separate the subject NP with its new head and given attribute from the main focus of the local NP with its given head and defining attributive CP (which extends the original VP – its prenominal use being blocked by informational weight in line with C4.) It may be interesting to note that the CP attribute contains a VP-to-PP reduction of the 'weak' verb type ('extending') and an AP-to-PP reordering, which decomposes the prenominal 'Earth-based' into a postnominal PP and places the local attribute after the temporal attribute in line with the basic order of German adverbials.

If the initial NP is very complex, discourse-appropriateness may require even more striking forms of restructuring, esp. if processing problems of the initial NP interact with other aspects of the original structure. Compare a sentence like

(24)   *The choice of the beta-haemoglobin gene for use in these animal studies has in part been dictated by possible medical applications.* (g86)

The preceding passage describes an experiment using betahaemoglobin genes in animal studies, which is designed to answer the question whether foreign

genes work after they have been inserted into a living animal. The local adjunct at the end of the subject NP is the weakest piece of information (*for use* even a structural dummy), the specific gene is resumed information, the head, *choice*, is new. That is, the information structure of the English subject is continuously decreasing and an analogous translation would contradict NP-internal expectations in German. Moreover, seen from a German perspective, the English original does not only contain an extremely heavy subject, but in *dictated* a verb with a personifying ring to its abstract agent: *diktiert von … Anwendungsmöglichkeiten*. Replacing *dictated* by the initial noun recategorized as verb and splitting the remaining attributes in two parts, subject and (structurally reduced) adverbial, the German translation yields an easy-to-process sentence:

(25)   *Das Betahämoglobingen wurde für die Tierversuche unter anderem wegen seiner medizinischen Anwendungsmöglichkeiten gewählt.*

In line with BID, (24) presents the least specific information in the weakest position after the finite verb. The defensive ring of *dictated* has been lost in the translation, but it may itself be a side effect of the English conditions on discourse-appropriate information structure. The original avoids placing the weakest information *for (use in) these animal studies* in the most prominent position of an English sentence, right after the verb – which would be the result if we translated (25) back into English:

(26)   *The beta-haemoglobin gene has in part been chosen for (use in) these animal studies because of its possible medical applications.*

Yet the 'ideological' verb 'dictated' could also have been replaced by a neutral one in English, (for example by 'determined') and the German neutralization can only be upheld if the text conveys the ideology somewhere else. As it were, there is a thin red line running through the text that can be summarized as 'mixed reactions of hope and concern' (g12) and 'the choice is ours' (g121); but since the text as a whole focuses on the technical problems of genetic engineering and presents the state of the art on the hopeful side, the tenor of the original is not changed by the neutralization.

It is likely that all the cases of postnominal attribute raising in the German translations are due to the fact that the English NPs contain heads or attributes which could not be used (equivalently) in any other position of the English sentence without violating discourse-appropriateness. The grammatically based differences in the strategies controlling discourse appropriateness in English and German can then promote widely divergent structures.

4.3 NP-external restructuring of sentences with 'there'

There is a subclass of attribute raising associated with existential sentences where the post-copular noun phrase contains VP or CP attributes. Sentences with an expletive 'there' are dealt with by semantic theories focusing on existential aspects or on discourse theories concentrating on progress of topics. (see Mauranen 1999, who discusses the thematic function of 'there'). It is generally agreed upon that existential sentences with 'there' are used to introduce indefinite NPs, any attributes within these NPs anchor the newly introduced referent – explicitly or implicitly – within the preceding discourse. (Breijvik 1999, presents a corpus-linguistic study on the basis of LOB-data that confirms this assumption for relative clauses.)

But the analysis of discourse appropriate German translations shows that the use of existential sentences with 'there' is in many cases due to the specific English conditions for discourse appropriate structures. Translations into German tend to eliminate the existential structure, which is felt to be no more than a conventionalized redundancy, superfluous in a language with a more variable word order. Restructurings in the translation cover all possibilities of attribute extraction, reordering and reframing we have already gone through in the preceding sections. Target versions differ depending upon the grammatical options of German for a balanced distribution of information.

In most cases the postnominal attribute is placed into the initial position of the sentence. For example

(27)   *There are several crystals that contain this cation.* (h83)

(28)   *Dieses Kation kommt in mehreren Kristallen vor.*

The translation reduces the double clause structure to one clause, in replacing 'there' by the object of the relative clause and the copula by the unergative verb 'vorkommen', which relexicalizes the original verb from the relative clause 'contain', using a different perspective. Basic word order in English

(29)   *Several crystals contain this cation.*

would present the focus before the background. While the referent of the object, 'this cation', has just been introduced in form of a chemical formula at the end of the preceding sentence, the indefinite head 'several crystals' is new. If we want to use the given referent before the new one, we have to shift the perspective, relexicalizing the verb or passivizing it:

(30)   *This cation occurs in several crystals.*

(31)   *This cation is contained in several crystals.*

But we can also use an existential sentence with 'there', which permits a balanced information structure in line with the convex pattern we find to be preferred in an SVO language

(32)   *There are several crystals that contain this cation.*

The interesting question is what are the specific conditions of English promoting the choice of the last option? The existential feature itself is no sufficient condition. Nor can the requirement of a new-topic shift explain the preference: Any indefinite NP in initial position can carry this function. The reason may lie at the right periphery, which attracts the (main) focus of an English sentence either to the designated verb adjacent phrase or to the verb itself – either choice would be discourse inappropriate in the last two versions without 'there'. The German conditions are different as shown by this and the following examples, which secure focus by attribute raising – accompanied by varying aspects of restructuring, which will often involve reduction of the existential sentence as in this example.

But the resulting translation may even retain the existential relation as in the following case, which contains a weak verb ('coding') in the original attribute.

(33)   *We are now fairly sure that there are also four or more genes coding for β interferons, while the number of γ genes is as yet unknown.* (i35)

(34)   *Heute ist man sich ziemlich sicher, dass es auch für Beta Interferone mindestens vier Gene gibt.*

The context has made it clear that there are different genes coding for Alpha interferons – alone human chromosomes contain about ten different genes – and as we can distinguish between alpha, beta and gamma interferons, the highest informational value of (33) is assigned to the quantifying information (which has been rephrased in the translation as a more transparent, shorter form: 'mindestens vier/at least four'). The prepositional object 'für Beta-Interferone/for beta-interferons' has been preposed to an earlier position after the pronominal place holder, the expletive 'es'. The focusing function of the additive particle 'auch' (also) secures the identification of the partitive/contrastive focus on the prepositional object, signalling a topic shift. Constraints on argument topicalization in English (recall Chapter II) promote the greater explicitness of the English original.

Raising and preposing of postnominal attributes in existential sentences may also take place within the matrix VP of independent sentences if the initial position is already occupied by a contrastive topic as in

(35)   *However, in man for instance, there are at least three different groups of interferon produced by different cells in the body and induced by a great variety of stimuli.* (i17)

The English original contrasts the local adverbial after the adversative relator with 'animal species' from the preceding sentence:

(36)   *At first scientists thought that each animal species produced one interferon which acted only on cells of that species.* (i16)

The major focus of the sentence, which is also contrastive, is carried by the prenominal attribute 'at least three different' (groups of interferon). The postnominal attribute is less relevant, despite its complexity, and thus reduced and preposed in the translation:

(37)   *Doch im menschlichen Körper beispielsweise entstehen in unterschiedlichen Körperzellen und auf ganz verschiedene Reize hin schon mindestens drei Interferongruppen.*

The verb of the first attribute has replaced the copula of the original sentence, which permits a German sentence structure without an expletive pronoun. The second verb of the original attribute leaves a trace in the German particle 'hin' at the end of the prepositional phrase, indicating the semantic role of this causative adverbial.

An English original with 'there' could even make use of an entirely redundant postnominal attribute, which may disappear in the German translation altogether. In

(38)   *There are many fundamental questions to answer* (j22)

the VP attribute is clearly superfluous from a semantic point of view, but it may well be considered a conventional redundancy securing a balanced information structure in English, which presents the focus in the central position. The translation

(39)   *Dabei geht es um eine ganze Reihe grundlegender Fragen*

has deleted the postnominal attribute and slightly shifted the perspective by relexicalizing the copula as 'gehen um' (a lexical gap in English – but very close to 'be about'). The German version uses an adverbial dummy 'dabei/in

that', which localizes the focus referent in its discursive background. (Fabricius Hansen 1999a, speaks of the external argument for a temporal relation, which is underspecified and can be enriched by the context, 238ff.). The pronominal adverb 'dabei' is just as redundant as the postnominal VP of the English original but secures a balanced information structure in the German sentence as it pushes the expletive pronoun into the weaker position of a tripartite information structure.

Dummy attributes like the above are relatively rare cases in existential sentences with 'there', but they contribute to the characteristic information structure of such sentences in English: the convex distribution of information in which the focus of the sentence coincides with a new discourse topic. The postnominal attribute provides the background information anchoring the new referent in the preceding discourse.

Attribute raising in the German translation secures the characteristic pattern of German information 2 3 1. The change may be superimposed by other aspects as in the examples above. It may also retain an existential sentence as in the following case, which shifts the discourse topic in a text on cosmic dust:

(40)   *There is, however, an indirect approach to studying heavier elements.* (d68)

(41)   *Für die Erforschung schwerer Elemente gibt es aber auch noch einen indirekten Weg.*

The sentence moves the topic from a direct approach to studying heavier elements in the spectra of stars lying beyond the interstellar gas to an indirect approach based on a hypothesis which is described in the next two sentences and then discussed in all detail. In German the end focus is marked additionally by two particles 'auch noch' (also another).

Restructuring translations of existential clauses with 'there' may illuminate much more complex forms of lexical and syntactic differences determining discourse appropriate information structures in German and English. Thus, the following sentence from the text on supernovae ends on an existential clause:

(42)   *And for the Type Is, we still do not fully understand what kind of single stars or binaries get into the proper state to blow themselves apart in a nuclear explosion, nor whether there are the right number of such stars and binaries to provide the observed rate of Type Is.* (n132)

The sentence contains two coordinated indirect questions. Focus theories identify the main focus of questions with the focus of canonical answers, which means the assertion or negation of the predication presupposed by alternative

questions and the choice of one or more elements of a set of alternative possibilities matching the predication presupposed by wh-questions.

The English version could have used simple interrogative clauses

(43)   *… we still do not fully understand what kind of single stars or binaries blow themselves apart in a nuclear explosion, nor whether the number of such stars and binaries provide the observed rate of Type Is.*

But the original extends the interrogative clauses by semantically weak structural segments, securing extra weight for elements which have to be focused. In the first clause this is achieved by 'doubling' reference to the explosion *blow themselves apart in a nuclear explosion* …; in the second clause it is the existential sentence with 'there' in combination with the structurally more explicit paraphrase of the correspondence relation built around 'right' and 'provide'.

There is a contrast between the questions, shifting the topic from 'kind' to 'number' and moving the focus exponent from 'blow apart' to 'observed rate'. It is obvious that the structural extensions secure processing ease at both ends of the original clauses. In the simple English structures the focused topic at the beginning of the first clause may distract attention from the focused predicate at the end. In the second clause, we are likely to miss the focused topic and content ourselves with the focused predicate.

The extended structure of the infinitival VP in the first clause of the original secures processing ease for the focused predicate; the extended structures of subject and predicate in the second clause secure processing for the focused topic and the focused predicate, indicating the highest informational value on the nominal head 'right number'.

An analogous translation of the English original would yield grammatically unacceptable sentences in German, producing inadvertent personification due to lexical and syntactic constraints:

(44)   *Welche Art Sterne sich selbst zur Explosion bringen/in den richtigen Zustand gelangen, um zu explodieren … ob es die richtige Zahl von Sternen gibt, um die Häufigkeit der beobachteten Supernovae hervorzubringen*

But there is no need for the extra structures used in the English original. In German, the focused elements of the clauses are sufficiently indicated by 'dummy-less' versions (question word in topic position and extraposed relative clause in the first case, reordering of referents in the second (with 'Zahl/number' being verb adjacent):

(45)   *Für Supernovae vom Typ I ist immer noch ungeklärt, welche Art Sterne oder Doppelsterne den kritischen Zustand erreichen, der in einer Explosion endet, und ob die Häufigkeit der beobachteten Supernovae des Typs I mit der Zahl dieser Sterne und Doppelsterne übereinstimmt.*

The analysis leaves many theoretical and practical questions open. Even canonical research topics like existential sentences with 'there' or cleft sentences (our next topic) have yet to be understood properly, but other forms of structural weight which are used to indicate additional foci have, so far, received almost no attention.

4.4 Clefts and pseudo-clefts

Cleft sentences are a favourite topic in linguistic and corpuslinguistic research and there are even quite a few studies on the basis of translational data. There are various types of clefts: it-clefts, pseudo-clefts, inverted pseudo-clefts, *the*-clefts and cleft-like structures, all different in their discursive functions, but most of these English cleft structures are declefted in discourse appropriate German translations. Ahlemeyer and Kohlhof (1999), who summarize earlier findings (from corpuslinguistic studies of the translations of it-clefts into German, Erdmann 1990; Kiese 1993; Königs 1997) found clefts to be often restructured as monoclausal sentences with "topicalization" of focused constituents with or without an "insertion of focusing particles" or "a combination of two or more of these schemes" (p. 16). Analyzing their own data, Ahlemeyer and Kohlhof suggest that the German devices carry the same discourse functions generally attributed to cleft sentences which they consider to be the assignment of an accent to the focused constituent, (p. 22). However, they claim that apart from the Spaltsatz "none of the translation schemes captures the presupposing function of it-clefts" (p. 21).

But what about 'there' in existential sentences, which is also a focus indicating device? What is the difference between 'there' and cleft sentences? In a simplified way we could say that existential sentences with 'there' introduce a referent, while clefts presuppose one. In both cases the postnominal attribute anchors the referent in the discourse. But the crucial difference – which close discourse analyses showed – is that all cleft sentences anchor their focused element by a presupposition of macrostructural relevance.

The postnominal attribute of an it-cleft always referred to something that was of high relevance for the main topic of the discourse. (A first representation

of this assumption appeared in Doherty 1999.) The presupposed aspect was either introduced earlier in the discourse or merely resumed as common knowledge. As the following examples will show, this macrostructural relevance of the presupposition associated with the English cleft can also be read off from the German information structure with its extra focusing device. (Some of the examples quoted in the literature did fail to convey the original view properly, that is, they were not fully equivalent translations.) The following discussion will again proceed from the simpler examples to the more involved ones.

A great number of English clefts are translated into German by inserting focusing particles into declefted versions of the original sentence structure. This was the case in

(46)   *It is these properties that make them attractive as anti-cancer agents.* (i66)

(47)   *Gerade diese Eigenschaften lassen sie als Wirkstoffe gegen Krebs vielversprechend erscheinen.*

Except for the VP-internal parts at the end of the sentence, the original order of the referents is retained in the translation. The focusing function of the cleft is taken over by the focusing function of the particle 'gerade/just' which assigns extra emphasis to the subject 'diese Eigenschaften/these properties'. But the cleft structure of the original marks the postnominal CP as presupposed information; the declefted version of German presents the predication in an unmarked VP where the elements seem to be ordered in line with basic word order (adverbial before predicative before main verb).

The sentence is from a text on interferon and the topic of cancer (interferon as an anticancer agent) is introduced in an emphatic way in the initial paragraph of the text.

(48)   *In the late 1970s interferons were hailed as "wonder drugs" with the potential to cure diseases ranging from cancer to the common cold.* (i4)

(49)   *An emotive television film showed a young cancer patient helped by interferon and the general public clamoured for the drug.* (i5)

(50)   *In some parts of Europe there were rumours of a black market and a few unscrupulous people set up laboratories to make small quantities of impure product to sell at high prices.* (i6)

The sentence under discussion

(51)   *It is these properties that make them attractive as anti-cancer agents.* (i66)

is the first sentence to resume the initial topic marking it as given by the presupposition of the cleft. Thus, the discourse function of the cleft in English is to link the focused element referring to the preceding sentence with the macrostructurally important element referred to in the presupposition. The way in which the properties of interferon could function against cancer is taken up in the subsequent passage.

The focusing particle of the German translation is assigned to the subject, which marks it as a contrastive topic, that is, as a narrow focus added to the main focus of the sentence ('vielversprechend/promising, attractive'). Although the translation does not presuppose the information of the VP (as the original cleft does), the information structuring impact of the focusing particle together with the main focus clearly enhances the discourse relevance of the German version, too.

The presupposition of an English cleft can also be highly relevant without an explicit antecedent as in the following example where the second clause in the coordination focuses on the referent summarizing the information of the first clause.

(52)   *Because of the Earth's movement around the Sun, one solar day corresponds to a rotation of about 361°, and it is this that determines the "day" which we define as 24 hours.* (c12)

The reference to the 24 hours in the presupposition of the cleft is related to common knowledge and will thus indirectly share the contextually high relevance of the earlier sentence:

(53)   *The day, fundamental to the conduct of life on the planet, has variously been related to the month, to the year or to both.* (c7)

The German translation of the English cleft

(54)   *und eben dies bestimmt den 24-Stunden-Tag.*

inserts a focusing particle roughly synonymous with the one discussed above: 'eben, gerade/just'. Its discourse structuring effect is the same as in the first example.

The translation of an English cleft may involve much more complicated aspects of restructuring, but the basic pattern and its discourse effect will be the same. Thus, for example, (55) uses the cleft in English to emphasize the relevance of a topic introduced and described in the last two sentences by anchoring it to a presupposition of primary importance to all of us.

(55)   *Yet it is the tenuous fluid envelope formed by the oceans and the atmosphere that makes this otherwise inhospitable ball of rocks habitable.* (s7)

The German translation

(56)   *Und dennoch – erst durch ihre zarte, von den Ozeanen und der Atmosphäre gebildete Hülle wird diese andernfalls ungastliche Felskugel überhaupt bewohnbar.*

replaces the English cleft by a focusing particle and uses a passive perspective by relexicalizing the causative verb 'make habitable' as 'wird bewohnbar, becomes inhabitable'. The focusing particle 'erst/only' makes a gradual or even temporal relation explicit which the original implicates via common knowledge associated with the 'otherwise inhospitable ball of rocks'.

The main focus on the predicative adjective at the end of the sentence is additionally marked by a focusing particle 'überhaupt (at all)'. It may be interesting to note that the focus on the topic 'Hülle/envelope' has promoted the choice of a prenominal VP instead of a postnominal CP attribute, which would assign less relevance to the nominal head of the topicalized prepositional phrase. (That the third focus in the sentence is lexically marked by 'andernfalls/otherwise' may be noticed in passing.)

Similar restructuring may apply to inverted pseudo-clefts, which is the case in the following example, where the demonstrative pronoun is focused by being topicalized in the matrix clause of the cleft – a means which clearly amounts to a contrastive focus on 'this'.

(57)   *However in 25 years time this may be the gas which is piped into our homes to fuel boilers and cookers – once we have used up supplies of natural methane gas, CH4.* (h7)

The German translation declefts the sentence structure, inserting a focusing particle 'gerade/just':

(58)   *Doch könnte gerade dieses Gas in einem Vierteljahrhundert, wenn die Vorräte an natürlichem Methangas, CH4, aufgebraucht sind, in den Gasgeräten unserer Haushalte Verwendung finden.*

A later position of the contrastively focused subject which we would normally expect to follow a temporal modifier is blocked by the anaphoric relations between 'this gas' and its referential antecedent, which is 'hydrogen'. If we were to use the contrastive subject after the temporal modifier, 'methane gas' would become the closest antecedent.

(59)   *Doch könnte in einem Vierteljahrhundert, wenn die Vorräte an natürlichem*
       Methangas, CH4, aufgebraucht sind, gerade dieses Gas . . .

There are also clefts where the focused element does not present (immediately)
given information. (As Mats Johansson 2001:555, says "most writers agree that
the distinction between different information is not absolute but represents
'cutting-of' points along a continuum"). In such cases marked word order
may be sufficient to indicate the extra relevance of a contrastively focused NP
in German.

   The predicatively used definite NP of (60) introduces new information
linked to the preceding sentence by its complex attribute:

(60)   *It could well be a voltage produced across the cells by these currents that*
       rearranges cell components along the axis. (e80)

The preceding sentence explicitly states the basis for the high relevance of
the presupposition when it introduces the 'animal-vegetal axis of asymme-
try' and specifies it by an apposition as 'a polarization for organizing early
development'.

   The German translation nominalizes the presupposition of (60) and pre-
poses it to the beginning of the declefted sentence:

(61)   *Die Neuanordnung der Zellen entlang dieser Achse könnte sehr wohl über*
       eine Spannung erfolgen, die durch die elektrischen Ströme zwischen den
       Zellen aufgebaut wird.

Consequently, the focused NP occurs in the most prominent position of the
German sentence structure and the extraposition of the relative clause at the
end of the sentence underlines the focusing effect. (Despite its apparent nov-
elty, the focused element introduces merely another instance of the determin-
ing factor of growth and cellular organization which is the main hypothesis of
the entire text.)

   It is clear that under certain conditions processing ease may also favour
clefted structures in German. But there is one more class of such focussing
sentence structures in English, which are, as a rule, also declefted in the
German translation. They resemble cleft sentences and involve semantically
weak nominal heads.

4.5 Cleft-like sentences

Quirk et al. (1985 : 1388ff.) mention a type of paraphrases of pseudo-cleft sentences where a NP with general reference "is used in place of the wh-item". NPs like "the person, the way, the reason, the place, the time" etc. compensate the constraint on the use of wh-pronouns in such sentence structures. Our translational data suggest that such NPs may often contain a prenominal attribute carrying a contrastive or partitive focus. The English original could be analysed as an inverted copular sentence with a VP or CP subject and a predicative NP with a weakly informative nominal head which serves as a grammatical anchor of more informative attributes. The biclausal structure of these sentences is formed by the copula as the matrix verb and a finite or non-finite verb in the postcopular structure. Together with the dummy noun of the topicalized phrase it is the biclausal structure of such copular sentences which strikes us as cleft-like and it is this cleft-like structure which will in most cases disappear in the German translations. Declefting deletes one of the two verbs – in most cases the copula – and removes the initial noun phrase by various forms of attribute raising and extraction or deletion of the nominal head. (Examples will be presented shortly.)

Deletion of the nominal head may also characterize the few structures which retain the biclausal form of the original in the German translation. As this means fewer structural changes, we will first take a look at such cases. The translation of

(62) *One of the most direct and simplest methods is to inject the DNA directly into the nucleus using a very fine syringe.* (g32)

retains the cleft-like structure but reduces the initial NP to an AP by dropping its abstract head (and the first conjunctive adjective, 'direct', as it reoccurs in the adverbial of the postcopular VP).

(63) *Am einfachsten ist es, die DNS mit einer sehr feinen Kanüle direkt in den Zellkern zu injizieren*

(The VP adverbial of the English original with its weak verb 'using' is reduced and preposed as a PP.)

The nominal head itself may serve as a source of the reduced phrase. Its adjective will then be restructured. The translation of (62) recategorizes the nominal head 'surprise' as an adjective 'erstaunlich/suprising' and the prenominal attribute 'main' as an adverbial 'vor allem/primarily'.

(64)   *The main surprise of Jupiter's meteorology is that it seems to be driven in a similar manner to terrestrial weather systems.* (j65)

(65)   Erstaunlich an den atmosphärischen Prozessen auf dem Jupiter ist vor allem, daß sie wohl denselben Mechanismen folgen, wie das Wettergeschehen auf der Erde.

The German translation begins with a predicative adjective phrase in those cases but the grammatical role of the initial English NP is less obvious. There is some indirect evidence of the English NPs being subjects (Doherty 2001, suggests to use concord between subject and verb as the discriminating feature.) The dummy head of such copular sentences in English could thus be seen as the more complex case of dummy nouns (discussed in Section 2.4) due to the subject-first condition, while the use of the cleft-like structure secures identification of the postcopular focus on a VP or CP constituent.

In most cases the German translation will not only restructure the initial noun phrase but decleft the sentence by eliminating one of the two verbs, usually the copula. Thus, the sentence immediately preceding (62)

(66)   *Whatever method is used to provide copies of the gene, the next problem is to get the gene into the cell nucleus.* (g31)

is translated by reframing the object of the matrix clause complement as subject (pronominalized as 'sie/they' because of the close distance to the antecedent).

(67)   *Wie auch immer die Genkopien gewonnen werden, sie müssen als nächstes in den Zellkern eingefügt werden.*

The precopular NP with its inherently focused superlative ('the next problem') is recategorized as a modal verb 'müssen/must', its attributive modifier reframed as an adverbial: 'als nächstes/as next'.

Restructuring can comprise more parts of the sentence. The copular VP of the next original contains a subject of its own in form of a prepositional phrase before the infinitival complement.

(68)   *To resolve such issues, the first need is for long-term monitoring to establish the unperturbed state of the stratosphere, so that the impact of volcanoes can be assessed.* (v57)

Similar to the translation of (66), the matrix clause is reframed and reduced in the German translation, using the modal verb 'müssen' and an instrumental adverbial instead of the cleft-like structure

(69)   … *muß zunächst mithilfe längerfristiger Beobachtungen der Normalzustand der Stratosphäre bestimmt werden.*

But as the restructuring concerns an integral part of a more complex sentence, there are further changes, in which the consecutive relation of the original sentence ('so that') is replaced by an asyndetic coordination between the two main clauses ('erst dann'):

(70)   *Zur Klärung solcher Fragen muß zunächst mithilfe längerfristiger Beobachtungen der Normalzustand der Stratosphäre bestimmt werden, erst dann läßt sich die Auswirkung von Vulkanausbrüchen wirklich einschätzen.*

So far, the precopular NPs of the cleft-like clauses were relatively short, but if they are more complex and contain a postnominal attribute, restructuring may also involve attribute raising of the postnominal part. A frequent pattern in such cases is the use of a postnominal VP as matrix VP. In the following example, the cleft-like original

(71)   *An alternative way of getting foreign genes into a cell nucleus is to use the DNA of a virus as a kind of Trojan horse.* (g38)

has been declefted in the translation:

(72)   *Fremde Gene lassen sich aber auch durch die Verwendung der DNS eines Virus als eine Art Trojanisches Pferd in den Zellkern bringen.*

The differences involve prenominal and postnominal attribute raising and a structural reduction of the postcopular VP. The VP of the German translation contains the head from the precopular phrase in form of the two adverbs 'aber auch/but also' and the postcopular infinitival phrase ('to use') in form of a nominalized prepositional phrase ('durch die Verwendung') with the semantic role of an instrumental adverbial.

   If there is no verb in the postnominal attribute to serve as the matrix verb of the declefted translation, recategorizing of the nominal head as a verb may be the solution. The translation of

(73)   *The main purpose behind the development of these techniques is to study how the activity of genes is controlled.* (g54)

(74)   *Die verschiedenen Verfahren der Genübertragung wurden vor allem für die Erforschung genetischer Steuerungsmechanismen entwickelt.*

raises part of the postnominal attribute ('these techniques/diese Verfahren') into the matrix structure of the translation and replaces the prenomi-

nal attribute 'main' as the focusing adverbial 'vor allem'. The postcopular part is nominalized with a reduction of the original interrogative clause, including compounding ('the activity of genes is controlled', 'genetische Steuerungsmechanismen/genetic control mechanisms'). The nominal head of the precopular phrase 'purpose' is expressed by the final meaning of the preposition 'für', which introduces the object of the German version.

The discussion of the preceding examples shows that declefting of cleft-like sentences will either use the postcopular structure or the postnominal verb of the precopular structure as the matrix VP. The prenominal attribute will be adverbialized, leaving the initial position of the sentence to elements from the postcopular or the postnominal structures of the original.

The transfer patterns are even the same for more complex cases, as e.g. in (75), where the postcopular clausal complement contains too much information to be reduced and preposed. Thus, it is retained as a clause but reframed as an adverbial, leaving a grammatical placeholder, the pronominal adverb 'dadurch', as its trace in the matrix sentence, when extraposed behind the main verb at the end of the matrix VP:

(75) *The major problem limiting all the applications of these new techniques is that at present there is little control over the activity of foreign genes after they have been inserted.* (g116)

(76) *Der Einsatz der neuen Technik wird bisher hauptsächlich dadurch eingeschränkt, daß sich fremde Gene nach der Übertragung kaum steuern lassen.*

While the dummy head of the English precopular structure has been deleted from the translation, its prenominal attribute is adverbialized as 'hauptsächlich/main'. The postcopular structure of the English original has the form an existential sentence with 'there', which the translation reduces along the lines described in Section 4.3: The clause is reduced to a prepositional adverbial and used in its basic VP position.

Declefting of English cleft-like sentences yields in most cases German versions where the NP of the English original is dissolved and the prenominal attribute is turned into an adverbial modifier: 'zunächst', 'als nächstes', 'vor allem', etc. Restructuring of the remaining postcopular part and any postnominal attribute of the precopular phrase completes the reduction into a monoclausal structure in various ways as illustrated above.

If the monoclausal structure of the German translation is contextually equivalent to the English original, what is the structural redundancy of the cleft-like sentence good for? Do these sentences share the focus indicating

function of cleft sentences or existential sentences with 'there'? And if they do, will the translations not lose certain properties of the discourse appropriateness carried by the original?

Looking at the structural options English has for the monoclausal versions translated back from German, we are in most cases confronted with grammatical constraints controlling the position of adverbials. It is well known in linguistics that sentence-internal, medial positions of adverbials are much less frequent in English than final positions. Lindquist (1989:63) counts about 10% medial and 15% initial versus 75% final adverbials The constraints also concern various types of the categorial form of adverbials. Most initial and medial cases are adverb phrases with closed class adverbs (p. 62) and the semantic type, in particular, 'conjuncts' and 'disjuncts' are more frequent (p. 65f.). Altenberg (1998), comparing initial phrases in English and Swedish, specifies the position of discourse relating adverbials in medial position of English sentences as lower than 12% (p. 123).

We could consider the limited use of adverbials in medial position as one more aspect of the rigid word order of English, due to the grammatical cohesion of subject, verb, and object. The basic position of adverbials is to the right of this grammatical core and their medial use in between is even more constrained than their initial use (recall section ... where the constraints on topicalization were discussed in all detail). The stronger the bonding between the verb and its extension, the greater the constraints on word order variability are. This could be the reason for using semantically weak verbal and nominal heads to make up for the invariability of word order by creating additional clausal cores, particularly by using copular structures. As we have seen, what would otherwise be an adverbial can then be used as an attribute of a (dummy) nominal head which provides a grammatical anchor for the subject of the additional clause.

In German word order variation is hardly constrained, so that such additional clausal structures are clearly redundant in many cases and declefting translations is justified in the interest of the economical use of language in compliance with the principle of relevance. As the text-structuring nature of the prenominal attributes 'major', 'next', 'another', 'most' etc. is retained by the adverbial of the declefted German version, the discourse function of the original English clefts and their declefted German translations can be claimed to be equivalent, provided the rest of the structural translation can cover all other aspects – which may involve quite complex changes – as demonstrated in the examples above.

There are, however, cases of attribute raising in German translations which go beyond the theoretical framework we have used so far in the comparison of English and German discourse appropriate sentence structures. They will be dealt with in the next chapter, which will also look at various subclasses of NP restructuring in translations involving shifts of sentence borders.

Summarizing the fourth chapter we can extend our set of major hypotheses by the following assumptions:

– A certain part of NP restructuring translations result in NP-external changes, which raise the grammatical status of the extracted element to improve its discourse-appropriate integration in the matrix structure.
– Securing processing ease in line with the German conditions for BID or GIN, clause-final parts of NPs carrying lower relevance will be preposed to medial or initial positions in the German sentences, while attributes or heads of clause-initial NPs will be restructured in medial or final positions.
– NP external restructuring will also be involved in the translation of NPs which participate in various types of bi-clausal focusing structures reduced to mono-clausal structures in German (existential sentences with 'there', cleft sentences and cleft-like sentences).

Cross-sentential restructuring of NPs and prospective relevance

The theoretical framework accounting for the structural propensities we can observe in the discourse appropriate use of NPs in an SVO and an SOV language (with a greater/lesser degree of word order freedom) has to be extended to include two more classes of NP restructuring in the translations from English into German. The first class will be dealt with in Sections 5.1–5.3, which extend assumptions about structural propensities beyond sentence borders, discussing cases of separating (5.1), linking (5.2) of clauses and independent sentences, and a combination of both (5.3). The second case concerns appositions, some of which reverse the patterns characteristic of the distribution of information in NPs with attributes. Sections 5.4 and 5.5 will discuss such cases under a possible generalization, which assigns more relevance to the prospective aspects of discourse.

5.1 Separation of clauses into independent sentences

The English possibility of using less relevant information towards the end of a sentence causes a great variety of restructuring in German translations. In most cases discourse appropriateness can be achieved within the same sentence. But there are also cases where processing ease cannot be reached sentence-internally. And such difficulties can also concern NP-internal information, especially relative clauses and PP attributes. The problematic part of information will then be extracted from the original structure and either be used as an independent sentence or as a part of the following sentence.

For example, the second subclause in a sentence about hydrogen fluoride:

(1) *It too has a much higher melting temperature (–92°C) and boiling tem-*
perature (+19°C) than would be expected by comparison with the heav-
ier molecule hydrogen chloride, HCl, which melts at –112°C, and boils at
–84°C. (h66)

which informs us about its nominal head 'hydrogen chloride', is of lower discourse relevance than the comparative clause containing it. As its structural weight blocks a prenominal use, the final relative clause is separated into an independent sentence in the translation

(2)   *Es hat ebenfalls eine viel höhere Schmelz- und Siedetemperatur (−92°C bzw. +19°C), als etwa im Vergleich zum schwereren Molekül Chlorwasserstoff, HCl, zu erwarten wäre.*

(3)   *Chlorwasserstoff schmilzt bei −112°C und siedet bei −84°C.*

It may be interesting to note that the anaphoric subject of (3) is not pronominalized (despite the close distance to its antecedent), which helps to avoid referential ambiguity. (A detailed theoretical discussion of such cases of defocused nouns is presented by Umbach 2001.)

The overweight phenomenon of an additional attribute could also result from restructuring a preceding attribute, as e.g. in

(4)   *The "month" in which we're interested is not the simple orbital time of the Moon, which averages about 27.2 days, but the more readily observed period from, say, full Moon to full Moon (the synodic month), which averages 29.305879 days.* (c14)

The second of the contrastively related postcopular NPs contains the rare case of a prenominal VP attribute in English 'the more readily observed period'. It has been extended in the translation into a postnominal relative clause with an extraposed apposition, containing yet another apposition (in brackets):

(5)   *Der "Monat", um den es uns geht, ist nicht einfach die Umlaufzeit des Mondes um die Erde, die im Durchschnitt 27,2 Tage dauert, sondern eine Zeitspanne, die sich leichter verfolgen läßt, etwa die Zeit von Vollmond zu Vollmond (der s y n o d i s c h e Monat).*

(6)   *Diese Periode beträgt durchschnittlich 29,5305879 Tage.*

The final relative clause is squeezed out of the translation into a sentence of its own (even though the parallel structure of the contrastive nature of the sentence is lost by this.)

Both examples display cross-sentential extraction of attributes containing information that could be considered of lower relevance in their original sentence. Similarly, the information presented in the new sentence is of lower relevance for the discourse progress than the structure from which it has been extracted. The information of (3) and (6) could be deleted from the discourse

without affecting its progress. We could consider such information as side structures of a text.

However, there are cases where cross-sentential attribute extraction concerns more relevant information. In

(7) *This is because X-rays produce images of a substance when they are deflected by electrons, which are in rather short supply around the hydrogen in a hydrogen bond.* (h49)

it is the relative clause at the end of the sentence which provides the basic reason for the problems with a scientific proof presented in the preceding sentence,

(8) *The technique of X-ray crystallography has enabled researchers to elucidate the structures of molecules, but it has provided only indirect proof of the existence of hydrogen bonds.* (h48)

But the conditional embedding of the relative clause promotes a restrictive reading of the final attribute in line with end focus expectation in German. This interpretation of an analogous clause would be simply wrong as the original clause is non-restrictive. Extraction of a relative clause into a sentence of its own avoids this.

(9) *Röntgenstrahlen bilden nämlich erst dann einen Stoff ab, wenn sie durch Elektronen abgelenkt werden.*

(10) *Elektronen aber sind im Wasserstoff einer Wasserstoffbrückenbindung nur in geringer Anzahl vorhanden.*

Semantic reasons for cross-sentential attribute extraction may also promote restructuring in cases with no sentential overweight. The original

(11) *The inconvenience remained until the middle of the 18th century when the Parliament of Great Britain agreed to adopt the Gregorian or "New Style" calendar.* (c64)

contains a temporal relative clause which cannot be translated analogously into German as it causes a semantic confusion

(12) *Diese Unannehmlichkeit blieb bis in die Mitte des 18. Jahrhunderts erhalten, als das Parlament Großbritanniens der Einführung des Gregorianischen Kalender oder Kalender "Neuen Stils" zustimmte.*

Separation into an independent sentence resolves the processing problem

(13) *Diese Unannehmlichkeit blieb bis in die Mitte des 18. Jahrhunderts erhalten.*

(14)   *Erst dann stimmte das Parlament Großbritanniens der Einführung des Gregorianischen Kalender oder Kalender "Neuen Stils" zu.*

The pronominal anaphor of the temporal adverbial is emphatically focused by 'erst/only' to justify the separation also informationally.

A linguistic explanation of such semantic differences between English and German attribute interpretation is still missing, but cases like these show that informational overweight is not the only reason for the separation of clauses – albeit a major one.

Reduced postnominal attributes containing verbs may be subjected to similar restructuring if they have to be extended into postnominal clauses with less relevant information. The following example presents information of continually decreasing value of the predicative head:

(15)   *The strength of such hydrogen bonds is 10–30 kJ/mole (where a mole contains approximately* 6×10^{23} *molecules), this being the energy required to separate the pairs of molecules again.* (h42)

The translation retains the order of the original attributes but extends each one into a sentence of its own.

(16)   *Die Bindungsenergie solcher Wasserstoffbrückenbindungen beträgt 10–30 kJ/mol.*

(17)   *(Ein Mol enthält ungefähr* 6×1023 *Moleküle.)*

(18)   *Diese Energie ist erforderlich, um die Molekülpaare wieder zu trennen.*

Cross-sentential attribute extraction need not result in a sentence of its own. If the attribute does not contain enough information for an independent sentence, it may be integrated into the following sentence, for example as an attribute of an anaphoric noun phrase resuming the reference of the original head. Thus, the weakly informative VP attribute in (19) is integrated into the subject of the following sentence as a prenominal VP attribute in German

(19)   *We can separate the interstellar extinction curve into absorption and scattering components (dashed lines in Figure 1) by observing the faint background glow of the Milky Way, also known as the diffuse galactic light.* (d41)

(20)   *Interstellare Extinktionskurven lassen sich in ihre Streuungs- und Absorptionskomponente zerlegen, wenn man das schwache Hintergrundleuchten der Milchstraße berücksichtigt.*

(21)   *Dieses als "galaktisches Streulicht" bezeichnete Phänomen . . .*

The demonstrative pronoun in (21) is enriched by a dummy noun 'Phänomen', which can serve as a grammatical anchor of the prenominal attribute extracted from the preceding sentence. We will return to similar cases when we take a closer look at the translation of appositions in 5.5.

So far, attribute extraction has caused separation at the end of the sentence containing the attribute. There is a sentence in our data where the separated part is the main information of the sentence and is cut off at an early position

(22)   *A further problem with Jupiter is that eddies would resupply the mean zonal kinetic energy in about 50 days if they were the only available source of energy transfer.* (j71)

has a cleft-like structure in the original where the subject of the matrix clause introduces the discourse topic, which is spelled out not only by the subclause but by the next two sentences.

Declefting of the German translation uses the form of sentence separation in which the precopular structure is extended into a sentence of its own.

(23)   *Daraus ergibt sich ein weiteres Rätsel des Jupiter.*

(24)   *Selbst wenn die Turbulenzen die einzige Quelle des Energietransfers wären, würden sie die durchschnittliche zonale kinetische Energie in ca. 50 Tagen regenerieren.*

The contrastive partitive topic is used as the main focus of the first sentence, where the copula has been relexicalized as the reflexive 'ergibt sich/result' and a pronominal adverb, 'daraus/from this', added providing the grammatical anchor for the shifted perspective. The structural brevity of (23) is justified in German by the macrostructural relevance of the phrase which provides the discourse topic elaborated by the following topic (compare discussion of alternative cases in Section 5.2).

Cross-sentential restructuring which integrates information from a preceding sentence into the following sentence may also lead to a unification of two sentences into one. Such cases of sentence linking may be directed forward or backward – with backward linking being much more frequent in our text than forward linking.

5.2 Sentence linking using attachment to an NP-internal position

It is clear that conditions for attribute extraction are language-specific also in their cross-sentential version. None of the original English sentences in 5.1

was subjected to the constraints (like less relevant information at the end of a complex sentence) which promoted cross-sentential attribute extraction in German. But it may also be English which has to distribute the information onto independent sentences for reasons that do not exist in German. In such cases analogous translations into German may feel too 'short' – the relevant bit of information they contain being expanded by anaphoric information which does not seem worth a sentence of its own.

The following sequence has been translated as one sentence into German, in which the second sentence has been attached as a relative clause to the last nominal head:

(25) *They removed newly fertilized eggs from mice and injected into the nuclei a gene coding for a protein called beta-haemoglobin.* (g68)

(26) *This gene was taken not from another mouse, but from a rabbit.* (g69)

(27) *Sie entnahmen Mäusen eben befruchtete Eizellen und impften die Kerne mit einem das Eiweiß Betahämoglobin kodierenden Gen, das nicht einer anderen Maus, sondern einem Kaninchen entnommen wurde.*

The postnominal information in (25) – a VP attribute containing another VP attribute – has been reduced to a prenominal attribute (using the second attribute as an apposition) in line with SAP. The structural reduction makes way for another – postnominal – attribute. As the experiment is designed to incorporate foreign genes into living animals, the information of the relative clause carries the discursive focus of the sentence: its final position is discourse appropriate.

As English cannot use the postnominal attribute prenominally, attachment of (26) as another postnominal attribute is excluded for semantic reasons.

(28) *A gene coding for a protein called beta-haemoglobin, which was taken . . .*

The relative clause would be interpreted as an anaphor of 'protein' and not of 'gene'. Thus, the English constraint on prenominal attributes promotes the separation into an independent sentence in form of cross-sentential attribute extraction.

The structure resulting from the attachment in the translation can itself be subject to further changes, which may even redistribute information over more than two sentences. Thus, the sequence (29), (30) presents in its second sentence information which is integrated into the preceding sentence as a postnominal attribute.

(29)   *"On a chi-chhou day in the fifth month of the first year of the Chi-Ho reign period, a guest star appeared at the south-east of Thien-Kuan, measuring several inches.* (n4)

(30)   *After more than a year, it faded away."* (n5)

(31)   *… daß an einem Tschi-Tschhou-Tag im fünften Monat des 1. Jahres der Regierung von Tschi-Ho im Südosten von Thien-Duan ein mehrere Zoll großer Gaststern erschien, der erst nach über einem Jahr wieder verblaßte.*

This has become possible because the postnominal VP attribute in (29) (extraposed in the original) is used as a prenominal adjective phrase in the German translation: 'measuring several inches/ein mehrere Zoll großer'. (An analogous distribution of attributes within the English subject is not possible because of the positional differences of VP attributes. And linking of both sentences by coordinating both attributes is also excluded because 'measuring … and fading away …' do not offer a common integrator.)

The cross-sentential restructuring between (29) and (30) participates in a second shift of sentence borders. The third sentence of the sequence, which localizes the event in a report

(32)   *So said the Chinese historian Toktaga in his Records of the Sung Dynasty.* (n6)

is used as a matrix clause introducing the report in the translation

(33)   *In der Chronik der Sung-Dynastie berichtet der chinesische Geschichtsschreiber Toktaga, daß an einem Tschi-Tschhou-Tag im fünften Monat des 1. Jahres der Regierung von Tschi-Ho im Südosten von Thien-Duan ein mehrere Zoll großer Gaststern erschien, der erst nach über einem Jahr wieder verblaßte.*

It has to be left open whether this additional case of linking (and clausal reordering) can be justified by language-specific conditions or is only due to textual conventions (– which could themselves be promoted by language-specific processing conditions). But the reversal of the cross-sentential attribute extraction in the original (30) by the CP attribute attachment of (30) to (29) in the German translation is clearly due to the language-specific differences between NP-internal structures in English and German.

Sentence linking may concern independent sentences which have undergone various forms of sentence-internal restructuring before being embedded, for example as a CP attribute of the preceding sentence in the translation. For example, n22 and n23

(34)   *Supernovae, on the other hand, are very much one-shot affairs.* (n22)

(35)   *The progenitor star, which may be single or one of a star pair, either collapses to become a neutron star or is blown to smithereens.* (n23)

has been translated as

(36)   *Demgegenüber ist die Supernovaexplosion eher ein Einzel-Geschehen, bei dem der Originalstern, der auch einem Doppelstern angehören kann, zu einem Neutronenstern zusammenstürzt oder wie ein Feuerwerkskörper explodiert.*

Attachment of (35) as a relative clause is associated with reframing of its pronominal subject as object of a local preposition 'bei dem'. The example differs from the preceding case also by the informative weight of the second sentence/CP attribute.

Attributes carrying adverbial functions are more often than not attached to the preceding sentence in form of a free relative clause. Although they do not acquire an NP-internal relation this way, their formal relation to relative clauses may justify their inclusion in this section.

In the following case the deletion of a dummy relative clause at the end of the first sentence promotes attachment of the second sentence to the first as a free relative clause. The sentence

(37)   *Because the adsorption reactions are so efficient the particle surfaces may become saturated with the trace components they are removing.* (s69)

follows a passage describing the removal of trace and ultratrace elements by 'scavenging' reactions of particles falling through the water column.

An analogous translation would assign end focus to the prepositional object and its relative clause

(38)   *... bald mit den Spurenelementen gesättigt sein, die sie abbauen.*

But the prepositional object is merely a background element and is downtoned in the translation by deletion of the relative clause

(39)   *Da die Adsorption so wirksam erfolgt, könnten die Oberflächen der Teilchen bald mit Spurenelementen gesättigt sein ...*

(The consequences of this reduction for the role of definite and indefinite NPs present a real challenge to theories on definiteness and specificity in sentence and discourse structure.)

Discourse analysis shows that the two sentences (40) and (41) form an argument in the critical assessment of an equilibrium model on the composition of sea water.

(40) *Because the adsorption reactions are so efficient the particle surfaces may become saturated with the trace components they are removing.* (s69)

(41) *The rate of removal would then be fixed, not by the rate of reaction, but by the rate of supply of fresh reaction sites.* (s70)

Although both sentences express hypotheses, it is only the second sentence which returns to the level of macrostructural argumentation. An analogous translation of both sentences fails to indicate the discourse shift as the discourse relation will be interpreted as merely continuous due to the primary temporal meaning of 'dann – wenn'.

(42) *Der Abbau würde dann durch . . .*

Processing is improved by sentence-linking, using the connector of a free relative clause: 'womit/wobei' (which refers to the instrumental role of its antecedent – the hypothetical assumption of the matrix sentence).

(43) *Da die Adsorption so wirksam erfolgt, könnten die Oberflächen der Teilchen bald mit Spurenelementen gesättigt sein, womit der Abbau nicht durch die Reaktionszeit, sondern durch den Nachschub von neuen Reaktionsflächen bestimmt würde.*

Although sentence linking through free relatives itself is no case of NP restructuring, it is the NP-internal restructuring of the prepositional object in the first sentence which has paved the way for the cross-sentential change.

So far, all examples were cases of backward sentence linking, but there are also cases where the direction is reversed. The sequence (44), (45) is such a case where the first sentence is integrated into the second sentence in the translation.

(44) *The banding terminates at about 45° latitude in each hemisphere.* (j79)

(45) *At this position, the effects of energy from the Sun become negligible, so that Jupiter's internal energy becomes the dominant heat source.* (j80)

Commenting upon the flows of westerly and easterly winds on Jupiter as results of thermal contrasts between the equator and the pole, (the differences between the banded appearance of Jupiter were introduced at an early place in the text),

(44), (45) informs us about a shift of Jupiter's source of energy at latitudes beyond the banded area.

An analogous translation into German assigns more relevance to the specification of the position in the first sentence due to German end focus and a fully lexicalized resumption of the local referent at the beginning of the second sentence.

(46) *Die Bänderstruktur endet in jeder Hemisphäre ungefähr beim 45. Breiten-grad. Hier wird die Energiezufuhr der Sonne so unbedeutend ...*

Attachment of the first sentence to the second sentence as a PP replacing the local anaphor in (47) avoids the redundancies:

(47) *Jenseits 45° nördlicher und südlicher Breite, wo die Bänderstruktur endet, wird die Energiezufuhr der Sonne so unbedeutend, daß die Energie aus dem Planeteninneren zur bestimmenden Wärmequelle wird.*

The structural reduction replaces the anaphoric adverbial of (45) 'at this position' by a somewhat reduced version of the antecedent, which permits subordinating of the major part of (44) to the head of the local adverbial as a CP attribute.

If the English original had distributed the information in a similar way

(48) *Beyond 45° latitude in each hemisphere, where the banding terminates, the effects of energy from the Sun become negligible, so that Jupiter's internal energy becomes the dominant heat source.*

the topical position of the local adverbial might attract so much informational relevance that the main and contrastive focus on Jupiter's internal (energy) might be missed.

The case shows clearly that forward attachment is basically guided by the same language-specific conditions on processing ease as all the sentence-internal cases of restructuring.

5.3 Backward or forward shifting of sentence borders

In many cases of cross-sentential restructuring, the changes concern only a part of the sentence, which is separated from its original sentence and attached to a preceding or following sentence. The difference can be read off visibly from the rightward or leftward re-localization of the full stop.

It seems that in all previous cases it was the structural overweight which promoted the status of an independent sentence in the German translation. But the remaining structure preceding the separated segment in the original may not be informative enough for a sentence of its own and will then be attached to the preceding sentence – in most cases as a CP attribute.

S 94 is a sentence which presents the major part of its meaning in a long chain of VP adverbials following the VP with the finite verb.

(49) *In the twilight zone immediately below the surface layers bacterial action rapidly degrades the soft organic parts, reversing the photosynthetic process by consuming oxygen to release from the complex organic molecules inorganic nitrate, phosphate and bicarbonate, along with the associated trace components.* (s94)

As the use of such non-finite VPs is grammatically excluded in German, the original sentence has to be restructured in German. Structural reduction of all adverbials would yield a chain of verbless PP or NP modifiers beset with a number of processing difficulties. By extending some of the non-finite verb phrases into finite ones and reducing the others into verbless phrases, we could retain all the information of the original modifiers in a translation subordinated or coordinated to the original matrix clause if the restructuring were to remain sentence-internal.

A German translation of (49) could, for example, use a complex sentence with a subordinating or coordinating relation between the two major clauses. As the object of the matrix clause, the 'soft organic parts', were mentioned in the last but one sentence, while the subject 'bacterial action' is new information, the matrix clause requires a shift of perspective for a balanced distribution of information in German.

(50) *In der Dämmerlichtzone direkt unterhalb der oberen Schichten werden die organischen weichen Teile sofort durch Bakterien abgebaut, wobei in einer Umkehrung der Photosynthese aus den komplexen organischen Molekülen mit Hilfe von Sauerstoff anorganisches Nitrat, Phosphat, Bikarbonat und die damit verbundenen Spurenbestandteile freigesetzt werden.*

Discourse analysis shows that it is the series of chemical elements which has the highest discourse relevance – the distribution of elements in sea water being the main topic of the entire text. The discourse analysis is supported by the structural form of the English original, where the object (together with its comitative phrase) has been placed after the local adverbial, deviating from basic word order in line with the principle of end weight.

As the subordinating translation may also be interpreted as an informational subordination, it would have to be dismissed in German in favour of a coordinating version.

(51)   *In der Dämmerlichtzone direkt unterhalb der oberen Schichten werden die organischen weichen Teile sofort durch Bakterien abgebaut, und dabei in einer Umkehrung der Photosynthese aus den komplexen organischen Molekülen mit Hilfe von Sauerstoff anorganisches Nitrat, Phosphat, Bikarbonat und die damit verbundenen Spurenbestandteile freigesetzt.*

But despite all the reduction, reordering and reframing, which adapts the translation to the specific conditions of discourse appropriateness in German, the resulting structure is still difficult to process and can be considerably improved by separation of the two clauses.

(52)   *In der Dämmerlichtzone direkt unterhalb der oberen Schichten werden die organischen weichen Teile sofort durch Bakterien abgebaut.*

(53)   *In einer Umkehrung der Photosynthese werden dabei mit Hilfe von Sauerstoff aus den komplexen organischen Molekülen anorganisches Nitrat, Phosphat, Bikarbonat und die damit verbundenen Spurenbestandteile freigesetzt.*

However, while the second clause can be used as a sentence of its own, the first clause is less good as an independent sentence, following (54):

(54)   *Die Tier- und Pflanzenreste aus der Nahrungsaufnahme in den oberen Schichten sinken in das dunklere, kältere Wasser ab.*

(55)   *In der "Dämmerlichtzone" direkt unterhalb der oberen Schichten werden die organischen weichen Teile sofort durch Bakterien abgebaut.*

(56)   *In einer Umkehrung der Photosynthese werden dabei mit Hilfe von Sauerstoff aus den komplexen organischen Molekülen anorganisches Nitrat, Phosphat, Bikarbonat und die damit verbundenen Spurenbestandteile freigesetzt.*

Attachment of (55) to the preceding sentence as a relative clause makes for much better reading.

(57)   *Die Tier- und Pflanzenreste aus der Nahrungsaufnahme in den oberen Schichten sinken in das dunklere, kältere Wasser ab, wo in der "Dämmerlichtzone" direkt unterhalb der oberen Schichten die organischen weichen Teile sofort durch Bakterien abgebaut werden.*

(58)   *In einer Umkehrung der Photosynthese werden dabei mit Hilfe von Sauerstoff aus den komplexen organischen Molekülen anorganisches Nitrat, Phosphat, Bikarbonat und die damit verbundenen Spurenbestandteile freigesetzt.*

If native speakers agree that the separation into two sentences is better than the separation into three sentences, what processing aspect is there that could explain the difference?

Any answer to this question presupposes a theory as to how independent sentences as opposed to clauses contribute to progress in discourse. No such theory seems to be available and any explanation can only be highly speculative. In 2.5 we suggested a strategy of incremental parsimony as an economical principle of information packaging in language production and assumed that its application yielded different results due to the language-specific conditions of sentence processing. If we assume that the original English version and its German translation present language-specific results of the strategy, the question is again what are the differences accounting for the shift of sentence border? In particular, what are the specific conditions in this case promoting forward attachment in English, and backward attachment in German?

Translating the German sequence back into English, we find processing obstacles in both sentences, resulting from the special conditions on word order and perspective. Backward attachment to the first sentence may not produce noteworthy processing difficulties:

(59)   *Detritus from hunting and grazing in the ocean rains down from the surface layers into the colder, darker waters below, where in the twilight zone immediately below the surface layers the soft organic parts are rapidly degraded by bacterial action.*

The remaining part of (51) could be extended into an independent sentence in a relatively simple way by using one of the non-finite VPs as the finite VP. But the subject of the finite verb requires resumption of the agent. However, the antecedent of a pronominal subject 'it' in

(60)   *Reversing the photosynthetic process by consuming oxygen it releases from the complex organic molecules inorganic nitrate, phosphate and bicarbonate, along with the associated trace components.*

is likely to be identified with the subject of the preceding matrix sentence.

(61)   *Detritus from hunting and grazing in the ocean rains down from the surface layers into the colder, darker waters below, where in the twilight zone immediately below the surface layers the soft organic parts are rapidly degraded by bacterial action. Reversing the photosynthetic process by consuming oxygen, it releases from the complex organic molecules inorganic nitrate, phosphate and bicarbonate, along with the associated trace components.*

Repetition of the fully lexicalised phrase 'bacterial action' would avoid this, but is stylistically at odds with specificity constraints on the use of anaphoric elements. Neither an indefinite 'bacterial action' nor a definite subject 'the bacterial actions' would be appropriate:

(62)   *. . . the soft organic parts are rapidly degraded by bacterial action. Reversing the photosynthetic process by consuming oxygen, bacterial action/ the bacterial action releases from the complex organic molecules inorganic nitrate, phosphate and bicarbonate, along with the associated trace components.*

The theoretical challenges opened up by such cross-sentential cases of restructuring are enormous, but the discussion of the example should also have shown that even such cases can be traced back to typologically based different preferences of language use.

While separating and linking of sentences does not show any dominating trend in our translations from English into German, there is a higher frequency of sentences in original English texts that strike us as too 'short', that is, they are not informative enough to form a sentence of their own. Is there any objective basis for this impression? If attachment were more constrained in English than in German, could the importance of the verbal anchor for the English sentence structure carry over to sequences of sentences?

Among the great number of aspects that have to be taken into account in answering these questions is one phenomenon of NP restructuring, which – so far – has been excluded from our considerations. It concerns the translation of NPs with appositions, which involve NP-external restructuring (5.4) as well as cross-sentential restructuring of NPs in the German translations (5.5).

5.4 Appositions and the strategy of prospective appropriateness

The following observations are the result of a small-scale study of German translations of appositions (from an English text on genetics), which are included in the book as they suggest an alternative trend in the language-specific distribution of NP-internal information. It remains to be seen whether the generalization drawn from these data can stand up to closer scrutiny based on a wider range of data.

Theoretically, we proceeded from highly simplified assumptions: Unlike attributes, appositions are not subordinated to their nominal heads (there are also appositions to other heads, which will be ignored in the following) but in most cases – asyndetically – coordinated with them. The bulk of appositions is

used postnominally and as long as the semantic relation is that of equivalence, head and apposition can replace each other in discourse. This is not the case with attributive appositions, and even less so for appositions with inclusive relations towards their heads (the taxonomy follows Quirk et al. 1985).

Discourse appropriate translations show that there are also language-specific conditions for the use of appositions. Concentrating on appositions which are separated from their heads by punctuation: commas, dashes, brackets, we found up to four times as many cases restructured as opposed to appositions retained in the German translations. The bulk of the changes suggested a strategy organizing dependencies in German corresponding to the prospective relevance of head and apposition so that the more relevant element dominated the less relevant one.

Prospective relevance can in most cases be read off from (literal) resumption in the following discourse. If neither head nor apposition is taken up in the following, prospective relevance is defined by default, i.e. by which element can be assumed to be more relevant for the discourse in general.

We have called the strategy which organizes dependency in NPs with appositions the strategy of Prospective Appropriateness, PROSA. In German, the strategy says

PROSA (German):
    The prospectively less relevant information is used as apposition.

As PROSA inverts the dominant iambic information structure of German noun phrases, appositions could be seen as an indicator of an alternative information structure. While BID and GIN represent strategies relying on restrospective relevance in most cases, i.e. are looking 'backwards' in discourse, PROSA is a strategy looking forward in discourse. Appositions that are not equivalent with their heads, i.e. appositions which participate in an attributive or inclusive relation with their heads are semantically more like attributes and thus not controlled by PROSA (see below).

The following section represents cases of PROSA requiring a reorganisation of dependencies in German translations of English NPs with appositions. They suggest an alternative distribution of information in the original NP, which will be discussed afterwards, together with a number of apparent counter-examples.

PROSA was secured in the German translations by various types of changes, including deletion or insertion of elements, yielding NP-internal or NP-external shifts of dependencies (which may even extend beyond sentence borders – see 5.5). Discussion will proceed from the simpler to the more com-

plex cases, exemplifying the various factors determining prospective relevance. The subsequent part will be devoted to an interpretation of the language-specific aspects and suggest German and English constraints on PROSA.

The simplest change in the translation of an English NP with apposition results in a dependency shift of head and apposition. Sentence

(63) *She used a long growing cell – the outgrowth produced by pollen grains – to make the difference in calcium concentration between each end easier to distinguish than it would be in short, round Fucus eggs.* (e60)

contains an object with apposition. As the preceding discourse discusses polarizing of growing cells, the head of the NP can be considered contextually given except for its prenominal adjective. But it is the postnominal apposition of the object that is the prospectively more informative modifier, taken up in the following context. Thus, the global reordering of the sentence in line with BID (the object being more relevant than the final adjunct) includes an NP-internal dependency shift in accordance with PROSA:

(64) *Um Unterschiede in der Kalziumkonzentration beider Hälften besser erkennen zu können als in den kleinen runden Fucuseizellen, benutzte sie einen Sproß von Pollenkörnern, eine Zelle mit starkem Längenwachstum.*

(NP-internal restructuring of the original head uses a postnominal PP in the German apposition instead of the prenominal AP of the original in line with C5 as the attribute is the specific, focused information of this NP.)

The dependency shift between head and apposition may be associated with further changes. In

(65) *This, at least, was what occurred to Lionel Jaffe, beginning a research career in the early 1950s with one of the knottier problems of development – that of polarity.* (e19)

the apposition introduces a new topic of discourse, 'polarity', which – as the text tells us – became a new focus in developmental research. The translation

(66) *So jedenfalls dachte Lionel Jaffe, als er sich zu Beginn seiner Forscherlaufbahn Anfang der 50er Jahre der Polarität, einem der vertrackteren Entwicklungsprobleme, zuwandte.*

restructures the sentence so as to secure easy processing in German dispensing with the redundant pseudo-cleft of the matrix clause: the participial modifier is extended into a temporal clause, with the meaning of the verb distributed onto the temporal phrase – which replaces the original object: 'zu Beginn seiner

Laufbahn' – and the verb 'zuwenden/turn to'. The dependency shift within the complement of the prepositional object '*with one of the knottier problems of development – that of polarity'* turns *polarity* into the head of the original object and uses the original head as apposition: 'der Polarität, einem der vertrackteren Entwicklungsprobleme'.

The change is associated with additional structural 'streamlining': deleting of the partitive used in the original (*that of polarity)* and reframing the original prepositional object as indirect object to match the relexicalized matrix verb, instead of 'begin with', 'zuwenden/turn to'.

If the apposition is more complex it may itself undergo greater structural changes, as in

(67) *Count Volta and Luigi Galvani, great pioneers of electricity in the 18th and early 19th centuries, were largely attracted to that phenomenon because of its biological manifestations.* (e11)

where the adjunct of the original apposition is extracted and topicalized in the translation:

(68) *Im 18. und beginnenden 19. Jahrhundert hatten sich zwei große Pioniere auf dem Gebiet der Elektrizität, Graf Volta und Luigi Galvani, für dieses Phänomen gerade wegen seiner biologischen Erscheinungsformen interessiert.*

The additional change is due to parsing difficulties which would arise if the temporal adjunct were retained in its original NP. The example demonstrates the importance of the prospective view as a criterion for the use of discourse appropriate appositions. Seen from the preceding context, the two scholars are new information, while the original apposition is anchored to the background by the key concept of electricity. But it is *electricity* which is the prospectively more relevant information, while the two scholars are not resumed in the following text.

The next example involves a technical proper noun. Technical terms without any prospective relevance can be considered per default as less informative than the referentially equivalent common noun so that PROSA requires dependency shift if the technical term is the head of the NP. The initial NP in

(69) *In Cecropia, the silk moth, the cell which will give rise to an egg cell divides three times, to produce eight cells.* (e66)

is translated as

(70)   *Bei der Seidenmotte, Cecropia, teilt sich die Zelle, aus der ein Ei hervorgeht, dreimal in insgesamt acht Zellen.*

Although the referent (shared by head and apposition) is maintained in the following, it would require special conditions to use the technical term as head of the construction (cf. the discussion of the sentence with *aequorin* below). The reader who is unfamiliar with the term 'Cecropia' may even be garden-pathed into interpreting the PP as a direct location if the more prominent position of the German NP with apposition were occupied by the proper noun.

The discursive irrelevance of the technical term may also promote elimination of the apposition in the translation.

(71)   *But it settles to the sea bed, and then generates polarity in response to light, elongating and then forming a holdfast (the root-like structure that acts as an anchor) on the darker side.* (e27)

(Bracketed appositions appear to follow the same translational patterns as other appositions – although the graphic means itself may be used differently in English and German; compare for example the discussion of (88) below. Generalizations on bracketing would have required a special study on punctuation along the lines of Nunberg 1990.)

The translation

(72)   *das Ei wird länglich und bildet auf der lichtabgewandten Seite eine wurzelartige Struktur aus, die ihm als Anker dient.*

uses the bracketed apposition as head and drops the German version of the apposition '*Haftor,* holdfast'. The word is morphologically and hence also semantically opaque as it ends on the agentive suffix -or, which will be mistaken as a part of the more frequent -tor, leading the parser into a strong and hardly reversible morphological garden path:

(73)   *... die ihm als Anker (Haftor) dient.*

As PROSA promotes dependency shift in all the German examples, we can assume that the English version of PROSA requires an opposite distribution of head and apposition. This fits in nicely with our observation about verbless attributes in English, which show a tendency towards a trochaic information structure – just opposite to the iambic structure of German NPs.

Recall that verbless modifiers, i.e. modifiers which lack the focus potential of verbs, can be said to share the language specific focus expectations of extensions in the VP. German VPs and verbless NPs tend towards an iambic

pattern, increasing informativity towards the right, while English VPs and verbless NPs tend towards the trochaic distribution of information, decreasing informativity towards the right. Thus, we can generalize that PROSA is a means of reversing basic expectations of informativity in the NP in German and English.

But the set of the examples above contrasts with cases where English and German NPs show the same dependency. While the translation of the following examples is in line with the German version of PROSA, the original English NPs contradict the English version of PROSA. We can again assume that the English use of discourse appropriate NPs with appositions is more constrained than the German options. Consider e.g.

(74)   *The answer was the vibrating probe, a platinum electrode that is vibrated between two points outside the organism and measures the voltage between those points.* (e41)

Head and apposition are both new information, but it is only the head which is resumed – repeatedly – in the following text. Thus, the prospective relevance of the head is higher than that of the apposition and the analogous German translation is in line with the German version of PROSA:

(75)   *Die Lösung war die Vibrationssonde, eine Platinelektrode, die zwischen zwei Stellen außerhalb des Organismus vibriert und dabei die Spannung zwischen diesen Punkten mißt.*

But the trochaic pattern characterizes also the original, contradicting the English version of PROSA. Being extraordinarily heavy, the apposition reminds us of the principle of end weight in English, which is assumed to be responsible a.o. for changes of the basic word order in the English VP and for extraposition of relative clauses in both languages. It may well be that the principle of end weight also applies to appositions, thus accounting for one of the constraints on the English version of PROSA.

But end weight can also interfere with the German version of PROSA, cf.

(76)   *Jaffe, John Gilkey and Ellis Ridgeway observed the wave with the aid of a protein, aequorin, which emits light when it binds Ca^{++}.* (e85)

Neither head nor its apposition ('a protein, aequorin') are resumed in the following text. But the prospectively relevant information, *calciumion, (Ca^{++})*, is contained in the temporal clause of the relative clause, that is, it is part of the postnominal attribute of the NP under discussion. This heavy relative clause is placed after the apposition in the English original.

The German translation reverses head and apposition and extraposes the apposition together with the relative clause.

(77)   *Jaffe, John Gilkey und Ellis Ridgeway konnten diese Welle … mit Hilfe von Aequorin beobachten, einem Eiweiß, das Licht abgibt, wenn es sich mit Ca^{++} verbindet.* (e85)

Using less relevant information as head contradicts the German version of PROSA, but the heaviness-condition for the extraposition of relative clauses is obviously superimposed upon PROSA. It requires the more relevant information to be extraposed together with its heavy, postnominal attribute. Compare the parsing problems of the alternative order:

(78)   *… mit Hilfe eines Proteins, Aequorin, beobachten, das Licht …*

or the relative clause together with the weaker head:

(79)   *… mit Hilfe eines Proteins beobachten, Aequorin, das Licht …*

The interaction between weight and PROSA can even involve sentence borders.

As appositions are frequently involved in cross-sentential restructuring translations, which result from the most complex interplay of language-specific conditions, such examples will now be dealt with in a section of their own, focussing once more on cross-sentential restrictions involving NPs.

5.5   Cross-sentential restructuring involving appositions

Appositions in German translations can be the result of sentence linking. That is, restructuring some of the original sentence can provide the condition for attachment of the information from an adjacent sentence. Thus, (81) from the sequence:

(80)   *One of the most prominent and universal features of the total extinction curve is a broad "hump" centred at a wavelength of 220 nm.* (d47)

(81)   *This feature turns out to be due purely to absorption.* (d48)

has been attached to its preceding sentence as a finite VP in place of the original finite VP of (80), which has been added to the subject as an apposition:

(82)   *Eines der auffälligsten und allgemeinsten Merkmale der Gesamtextinktions-kurve, eine breite Ausbuchtung bei einer Wellenlänge von 220 nm, ist ausschließlich auf Absorption zurückzuführen.*

The second sentence of an analogous translation is not informative enough for the status of an independent sentence in German:

(83)   *Eines der auffälligsten und allgemeinsten Merkmale der Gesamtextinktions-*
       kurve, ist eine breite Ausbuchtung bei einer Wellenlänge von 220 nm. Dieses
       Merkmal/Es ist ausschließlich auf Absorption zurückzuführen.

It repeats the referent of the subject at too short a distance, which is due to the VP-to-PP reduction of the attribute at the end of (80) (and the compounding used in the translation of the subject: Gesamtextinktionskurve/ total extinction curve).

The postcopular structure of the original (80) specifies a feature of the extinction curve which is of lower relevance than the predicate of (81): The passage containing both sentences has 'the pure absorption curve' as its explicit discourse topic (explicitly referred to in d46). Thus, lowering the syntactic rank of the original postcopular structure into that of an apposition and attaching the predicate of (81) as predicate of (80) secures end focus in German in line with SIP.

But lowering into an apposition by linking two sentences through backward attachment may also result in a nominal phrase that carries the main focus. In the following sequence the prospectively most relevant element of both sentences is *electricity,* which is extraposed as a sentence of its own in the original:

(84)   *In the past few decades, however, they have largely ignored one important*
       property of organisms which, it now seems, may well play a significant part
       in determining growth and form. (e8)

(85)   *That property is electricity.* (e9)

Translation of (84) requires restructuring in line with GIN so as to secure focus-position for the new element: "important property." This can be achieved by reframing and reordering the clauses:

(86)   *Eine wesentliche Rolle in den Wachstums- und Gestaltungsprozessen scheint*
       nun aber einer wichtigen Eigenschaft der Organismen zuzukommen, die in
       den vergangenen Jahrzehnten meist vernachlässigt wurde.
       (Diese Eigenschaft ist die Elektrizität.)

Matrix clause and relative clause 'swap' places: the original relative clause is now restructured as the subject. Further changes include: reduction of the attitudinal clause ('it now seems/scheint nun'), reframing (the transitive verb 'play' is replaced by the unergative verb 'zukommen', which is associated with

a case frame dative before nominative), topicalizing the subject before the adversative connector and passivizing the newly formed relative clause.

Although (85) could be translated analogously and form something like a 'rhetorical climax' (as was pointed out by an anonymous referee), the stylistic 'gain' would not outweigh the prosaic repetitiveness of (85). Backward attachment of the copula sentence, using it as head of the object in (86) with the remaining structure as its apposition – extraposed because of endweight – is the solution:

(87)   *Eine wesentliche Rolle in den Wachstums- und Gestaltungsprozessen scheint nun aber der Elektrizität zuzukommen – einer wichtigen Eigenschaft der Organismen, die in den vergangenen Jahrzehnten meist vernachlässigt wurde.*

The order of head and apposition is discourse appropriate according to the trochaic version of German PROSA – it would be inappropriate according to the iambic version of English PROSA (even if we were to adapt the structure by simpler case frame, for example, 'have a role').

But the macrostructural relevance of 'electricity' would not be indicated by the iambic informational pattern of the apposition in English – hence the extra sentence in the original.

Appositions can also be involved in sentence splitting. The next example contains two cases of appositions in the original:

(88)   *Zygotes – fertilised eggs that have not yet begun to divide – were placed near a source of A23187, a material known as an ionophore, which binds to membranes and provides a channel that allows Ca^{++} to cross them.* (e52)

The first NP with apposition could be considered to be in line with PROSA in the English original and in the German translation. Although neither the name of the species nor the explanatory paraphrase present prospectively relevant information, we can consider the technical term as less relevant by default.

(89)   *Zygotes – fertilised eggs that have not yet begun to divide – were placed near a source of A23187,*

(90)   *. . . brachte man befruchtete Eizellen, bei denen die Zellteilung noch nicht eingesetzt hat (Zygoten), in die Nähe einer Quelle von A23187*

The second NP with apposition is a much more complex case. The apposition follows the numerical expression serving as an attribute of the local adverbial and is itself modified, in the original, by a participial phrase containing a non-restrictive relative clause with a restrictive relative clause inside.

(91)   *near a source of A23187, a material known as an ionophore, which binds to membranes and provides a channel that allows Ca^{++} to cross them.*

The prospectively relevant information is *ionophore*, which is part of the apposition, more precisely, it is part of the VP attribute of the apposition. Since postnominal VPs are normally not available in German, the participle phrase is restructured in line with German focus expectations, which promote an extension into a relative clause with the focus on *ionophore:*

(92)   *. . . eine Substanz, die bekanntlich als Ionophore wirkt.*

The following description of the way in which ionophores work is clearly too heavy to be included in the relative clause of the apposition and thus separated into a sentence of its own.

(93)   *Sie setzt sich an der Membran fest und bildet einen Kanal, durch den Ca^{++} – Ionen fließen können.*

(The separation is even more urgent as the preceding question

(94)   *Could this asymmetric influx of Ca^{++} be directing the polarised growth of the embryo?* (e51)

was attached to (90) in line with German register conventions:

(95)   *Um herauszufinden, ob das polarisierte Wachstum des Embryos durch diesen asymmetrischen Zufluß von Ca^{++} – Ionen gesteuert wird, . . .*)

Separation in form of an attribute extraction from an apposition may have to repeat the head of the apposition in the new sentence. Sentence f15 uses an extremely weighty apposition in the English original, which is not only extended by a relative clause but by a parenthetical sentence at the end

(96)   *The second problem in photosynthesis is photorespiration, a seemingly almost perverse process that was detected only about 20 years ago (the term photorespiration was first used and first described in detail by John P. Decker and Marco A. Tio in 1959).* (f15)

Again, the English end weight follows a focused head, which is placed into the appropriate end position of the German translation by separating/extracting the relative clause from the apposition. The remaining postcopular NP of (57) is restructured as a PP (complement of 'bestehen/consist'), in which the original apposition has been reframed as a prenominal AP attribute:

(97)   *Das zweite Problem besteht in dem zur Photosynthese geradezu widersinni-*
        gen Prozeß der Photorespiration.

The separated part repeats the new term explicitly (indicating its termino-
logical status by quotation marks) and adds the originally bracketed clause
by coordination as its discourse relevance is comparable to that of the first
predicate:

(98)   *"Photorespiration" wurde erst vor etwa 20 Jahren entdeckt und erstmalig*
        erwähnt und genau beschrieben 1959 von John P. Decker und Marco A. Tio.

Cross-sentential restructuring can also move the apposition of the NP of one
sentence to that of another, adjacent sentence. The following example involves
a passage of three sentences describing the sequence of events by which certain
plants avoid photorespiration during photosynthesis:

(99)   *the initial fixation to oxaloacetate takes place in the cells in the middle layers*
        of the leaf (the mesophyll) and the oxaloacetate so formed is then converted
        to four-carbon malate or aspartate. (f52)

(100)   *But the four-carbon products are then transported to specialized cells which*
        surround the vascular bundles in the leaves, the tubes and columns of cells
        that convey water and nutrients through the plant. (f53)

(101)   *In these specialised bundle cells $CO2$ is released from the four-carbon*
        molecules, and then re-fixed with ribulose bisphosphate. (f54)

The medial sentence ends on a directional argument which is specified by
a relative clause containing a complex apposition. But despite the structural
weight of this attribute, it is the nominal head 'specialized cells' which carries
the most relevant piece of information – its referent is directly resumed in the
following sentence. Thus, it is the informationally weaker apposition after the
focus of the medial sentence which impedes discourse appropriate processing
in German in an analogous translation:

(102)   *. . . aber die C4-Moleküle werden dann in besondere Zellen transportiert,*
        welche die Gefäßbündel der Blätter umgeben, jenen Röhren und Säulen, in
        denen Wasser und Nährstoffe durch die Pflanze geleitet werden.

The solution is a German translation which dissolves (100) into two parts and
attaches one part to the preceding sentence, the other to the following sentence:
The weighty but relevant apposition of (100) is forward-attached to

(103)   *Erst in diesen speziellen Bündelzellen, jenen Röhren und Säulen, in denen*
        Wasser und Nährstoffe durch die Pflanze geleitet werden, wird Kohlendioxyd

> *aus den C4-Molekülen freigesetzt und wieder mit Ribulose-Biphosphat gebunden.*

The initial part of (100) (which would be less appropriate as a sentence of its own) is attached backward to the preceding sentence by coordination. This is possible after reducing the original coordination of (99) into an asyndetic sequence of two finite VPs, which allows attachment of (100) as a third VP by coordination.

(104)   *So wird Oxalazetat zunächst in den Zellen der mittleren Schicht des Blattes (Mesophyll) gebunden, dort in C4-Malinsäure oder Aspartate umgewandelt und dann in besondere Zellen transportiert, welche die Gefäßbündel der Blätter umgeben.*

Restructuring translations which distribute the information of one sentence onto two sentences surrounding it are probably the most complex cases of shifting sentence borders in the German translation. But as the case (103), (104) suggests they are also due to the language-specific conditions determining discourse appropriate distribution of information in German and English. Translating the series of finite VPs back into English would require reframing the matrix clause in the way used in the German translation by attribute raising into the subject position of the translated sentence and recategorizing the nominal head of the subject as the verb of the matrix clause:

(105)   *Oxaloacetate is initially fixed in the middle layers of the leaf (the mesophyll), converted to four-carbon malate or aspartate and then transported to specialised cells which surround the vascular bundles in the leaves.*

(101) would have to present the remaining part of (100) as an apposition to the local adverbial – analogously to German:

(106)   *In these specialized bundle cells, the tubes and columns of cells that convey water and nutrients through the plant, CO2 is released from the four-carbon molecules, and then re-fixed with ribulose bisphosphate.*

The result has a clear processing disadvantage. The long apposition will be mistaken for the subject of the sentence, which leads into a garden path that can only be discovered when the parser encounters the real subject, CO2, before the finite verb. (The problem does not arise in German with its subject verb inversion.) Thus, the apposition promotes backward extraction. But as it is not informative enough to be used as an independent sentence, it would have to be

attached to the preceding sentence. The result are processing difficulties with the third VP of the matrix sentence, which is now clearly overweight:

(107)   *Oxaloacetate is initially fixed in the middle layers of the leaf (the mesophyll), converted to four-carbon malate or aspartate and then transported to specialised cells which surround the vascular bundles in the leaves, the tubes and columns of cells that convey water and nutrients through the plant.*

The original sequence (repeated below), with its extra sentence in between (99) and (101), demonstrates how the information of the passage can be organized in line with the specific options of English:

(108)   *the initial fixation to oxaloacetate takes place in the cells in the middle layers of the leaf (the mesophyll) and the oxaloacetate so formed is then converted to four-carbon malate or aspartate.* (f52)

(109)   *But the four-carbon products are then transported to specialized cells which surround the vascular bundles in the leaves, the tubes and columns of cells that convey water and nutrients through the plant.* (f53)

(110)   *In these specialised bundle cells CO2 is released from the four-carbon molecules, and then re-fixed with ribulose bisphosphate.* (f54)

It may be interesting to note in passing that the English structure is highly nominal with its deverbal head of the subject in (108) and the repetition of identical referents in the coordinated clause of (108) and the independent sentence of (109), (which has been avoided by coordination reduction in the German version). But as all these NPs are accompanied by VPs (even redundant ones as in the case of 'so formed' in (108) – or in all those copular structures discussed in 4.3–4.5), the overall impression of a more verbal language, or rather a language with more clauses or clause-like structures prevails.

Summarizing the discussion of cross-sentential restructuring of NPs with or without appositions, we can conclude that the basic typological differences between German and English and their impact on structural parsing and interpretation determine discourse appropriateness of structures not only within but also beyond sentence borders. Even in cases where the processing difficulties originate in a structural disadvantage that seems to be somewhat similar in both languages (as in the last example where postverbal overweight promoted separation into two independent sentences in German and English), structural solutions may lie quite apart.

Summarizing the fifth chapter we can now complete our set of hypotheses by the following assumptions:

– If sentence internal options are exhausted, restructuring involve cross-sentential options to improve discourse appropriateness under target language conditions of sentence processing.

– Discourse organisation in text production is controlled by a general Strategy of Incremental Parsimony, promoting structural attachment to the sentence under construction (which will often result in attributive or appositive parts of NPs).

– If there is no discourse appropriate point of attachment available (especially in complex sentences), phrases or clauses are extracted (also from original NPs) and used as independent sentences or integrated in preceding or subsequent sentences.

– There is a major subclass of NP-external (and sometimes cross-sentential) changes involving (semantically equivalent) appositions, which are subjected to a Strategy of Prospective Appropriateness.

Retrospective and prospective aspects of structural propensities

Looking back at the preceding five chapters we can say that we have covered some ground regarding the differences between discourse appropriate distribution of information in German and English. Certainly, we have not yet exhausted all possibilities of NP restructuring – even if we ignore aspects of stylistically marked translations guided by other norms. But we may have looked at a sufficient number of subclasses to rely on the generative potential of the approach. The following, concluding sections discuss several aspects of this potential by applying the hypotheses used in Chapters 1–5 to topics which were not systemically investigated in the research projects based on the Berlin translation corpus. This means anything except popular-scientific, neutral written texts translated from English into German. Before leaving this register, we will return once more to our introductory example by Russell to explore the explanatory potential of our basic assumptions further (6.1) – also for an aspect of restructuring translations traditionally associated with 'cultural' subjective forms of language use (6.2); 6.3 will take up a major aspect of literary translations and 6.4 the typological impact of other languages; 6.5 will take a final look at the prosaic goal of discourse-appropriate translations against the dazzling light held up by its major opponents.

6.1 The subjectivity problem revisited

The preceding discussion of examples should have provided sufficient evidence for the claim that the method of control paraphrases is an efficient research tool to discover language specific conditions on discourse appropriate translations. But there are so many paraphrases possible and the subjectivity problem comes back from various angles. Yet, some of the problems which, at first sight, seem to originate in other areas than those dealt with in the preceding chapters

can also be traced back to those differences of typologically parameterized information that we have focussed on until now.

Returning to our introductory example, Russell's critical comment, we can now classify the preferred German paraphrase as a case of NP external restructuring just opposite to the type of raising restructurings looked at in the fourth chapter.

(1)   *Bacon's inductive method is faulty through insufficient emphasis on hypothesis.*

is a mono-clausal sentence turned into a bi-clausal one in the translation:

(2)   *Die Schwäche von Bacons Induktionsmethode besteht darin, dass sie die Bedeutung von Hypothesen verkennt.*

The German translation involves NP restructuring at both peripheries of the sentence, the NP at the left-hand side has incorporated the original predicate as its nominal head, while the NP at the right-hand side has been extended into a clause. Analysing the informational relevance of these segments in their context, we can confirm the discourse appropriateness of the restructuring translation in all details. But we have to use a much finer-grained information structure than a simple segmentation into topic/background and comment/focus. Together with our basic assumptions about the language specific different distribution of information involving NP structures the greater subtlety cannot only explain our preference regarding the control paraphrases formulated in the introduction but can also help us assessing the discourse appropriateness of the published translation:

(3)   *Bacons induktive Methode krankt daran, dass sie der Hypothese zu geringen Wert beimisst.*

At first sight, both versions seem to be equally appropriate – especially when compared with the other paraphrases – and the preference of the one or the other merely a personal, subjective matter. But regarding all the features involved in the case, our own version can be more easily processed in the discourse than the published version.

If we take a look at the right-peripheral NP first, we can accept the clausal extension of both paraphrases as an improvement of a structurally similar version. There are two reasons for this improvement. The first reason is associated with a lexical difference constraining the combinatorial properties of the NP inside of the adverbial: 'insufficient emphasis' seems to be a lexical gap in German, whichever equivalent lexical combinations we try ('ungenügender

Nachdruck auf Hypothesen', 'fehlende Berücksichtigung von Hypothesen' etc.). They would all be assessed as stylistically if not grammatically inadequate.

But even if there were an appropriate collocation, the use of an NP as part of the causal adverbial after the predicative adjective would not be discourse appropriate in terms of information structure. Which brings us to the second reason for the clausal extension. The analogous position at the end of the sentence deviates from the neutral German word order with its leftward directionality of the VP, which requires the adverbial to precede the complement. But if we use the neutral order in German 'ist aufgrund von ... fehlerhaft', we assign the focus of the sentence to the predicate and not to the adverbial it belongs to. Extending the NP into a clause helps to overcome both problems. Whether we use a causal clause or an object clause after a pronominal adverb, the violations of the phrasal versions in terms of selection restrictions and focus expectation can be avoided.

However, the subclause has its own information structure and if we look a bit more closely at the details of the published version 'dass sie der Hypothese zu geringen Wert beimißt', it seems to suggest an information structure which localizes the definite object in the background and restricts the focus to the indefinite object: zu geringen Wert. The readers have to identify the generic interpretation and the most relevant part of the information, 'Hypothese', via discourse inference – that is, the first-pass reading of this paraphrase has to be reanalysed. This is different in our own clause as the paraphrase 'dass sie die Bedeutung von Hypothesen verkennt', presents the most important information in the prototypical, verb adjacent focus position.

Let us turn to the initial NP now. Although the published version has relexicalized the predicate to allow a clausal form of its extension ('is faulty through .../krankt daran, dass ...') it has retained the initial NP in an analogous form: 'Bacons inductive Methode krankt daran dass ...' Our own paraphrase has moved away from the original NP but retained a similarly weak finite verb ('bestehen' instead of the copula). The meaningful part of the original predicate has been incorporated in the subject NP as its nominal head, and the original subject has been attached to it as its attribute. The restructuring pattern seems to be a step further away from the original than could be justified by the criterion of discourse appropriateness.

However if we look at the discourse more closely, we see that the referential antecedent to 'inductive method' is much further away than the antecedent to the negative predicate. The entire preceding paragraph criticizes Bacon's knowledge of 'what was done in the science of his days', that is, it criticises the most relevant part of Bacon's scientific knowledge, and this critical presen-

tation is extended onto Bacon's method in the sentence introducing the passage under discussion. While the critical feature is merely continued information, the topic it is related to is information resumed from earlier passages. The sentence shifts the discourse topic from scientific theories to scientific methods.

Retaining the original NP in the published translation

(4)   *Bacons inductive Methode krankt daran dass. . .*

the translator leaves it to the readers to figure out the shift of discourse topic by themselves as the definite form of the subject does not indicate the shift. Instead of this, the restructured NP of our own translation 'die Schwäche von Bacons Induktionsmethode', carries the iambic pattern we would expect for a German NP with a verbless extension after the nominal head. In line with our generalization of German postnominal verbless 'attributes' (C5) we will interpret the postnominal extension as more relevant than the nominal head – which is precisely what the contextual analysis suggests.

Although our own version could be interpreted in various ways, its primary reading yields the discourse appropriate information structure right away: the main presentational focus on 'Hypothesen' is in its verb adjacent position at the right periphery of the sentence, and the secondary, contrastive/partitive focus on 'Induktionsmethode' at the right periphery of the initial NP. Both restructuring patterns contribute to a nicely balanced distribution of information at CP level, with less relevant pieces of information in between the more relevant ones; at NP level they contribute to an iambic distribution of information – typical of German NPs with verbless extensions.

If we look back at the English original, our assessment can be confirmed by the alternative conditions on discourse appropriate distribution of information in English. Translating our preferred paraphrase back into English we could think of something like

(5)   *The weak spot in/failure of Bacon's inductive method is that it/he does not emphasize hypothesis sufficiently.*

If we compare this with the original

(6)   *Bacon's inductive method is faulty through insufficient emphasis on hypothesis.*

we might again consider the preference of the one or the other version a personal matter. But if our generalizations about processing conditions in English are correct, the back-translated version contains more processing problems than Russell's original sentence. There is, first, the anaphoric problem

concerning the pronominal subject of the complement clause: 'it' is ambiguous as to its antecedent (the preferred nominal head would be wrong, the attribute evoke a somewhat personifying effect); 'he' requires the syntactically embedded (and thus – at best – less accessible) 'Bacon' as its antecedent. We can avoid the problem by reducing the clause to a phrase: 'insufficient emphasis on hypothesis' – which is what the original uses. But then the phrase needs to be integrated into the matrix sentence. We might add it to the back-translated subject by way of a copula:

(7) *The failure of Bacon's inductive method is insufficient emphasis on hypothesis.*

Seen by itself, the result looks quite plausible, but integrated into the context it is again less good than Russell's original sentence:

(8) *Bacon's inductive method is faulty through insufficient emphasis on hypothesis.*

As supposed in C5, the postnominal PP is likely to be processed as unfocussed, that is, the focus of the subject NP will be attracted to 'failure'. This will hamper the identification of the shifted topic more than the structure of the original subject, which increases 'visibility' of the (resumptive) focus on the prenominal adjective 'inductive'.

Assessing the stylistic merits of Russell's original sentence would definitely require more criteria than the ones of processing ease and structural propensities associated with the different grammars of German and English. But within this framework the number and type of processing problems could serve as a yardstick for successful linguistic encoding of original and translated texts. Yet – while it may be relatively easy to determine the number of processing difficulties comparing different structural versions, weighing the gravity of different types of processing problems requires an elaborate theory determining the degree of 'violation' the processor has to overcome.

There is a theory in linguistics, dominating much of linguistic research for the last dozen years or so, which focuses on the varying strength of grammatical violations to account for the different degrees of accessibility associated with grammaticality judgments. The theory is called 'optimality theory'. In his study of German word order, Gereon Müller (1998), pointing out shortcomings of competition-based models, says that "with the advent of optimality theory (cf. Prince & Smolensky 1993; Grimshaw 1997), a second line of research has recently come into existence that views grammatical constraints systematically violable and ranked" (p. 2). In addition to the general part of a grammar,

which "consists entirely of constraints that are neither violable nor ranked," there exists a second evaluating part of grammar that determines the optimal syntactic structures, which consists of constraints "assumed to be (a) universal, (b) violable, and (c) ranked" (p. 12). To account for the different degrees of grammaticality in terms of German word order variations Müller suggests seven constraints (a 'Nominative constraint': [+nom] precedes [−nom], the 'Definiteness constraint': [+def] precedes [−def], . . . the 'Focus constraint': [−focus] precedes [+focus] etc.) and a hierarchy ranking these constraints relative to each other and to the strong grammatical constraints of the general part (p. 22f.).

Something like this, determining the rank of processing problems associated with the identification of anaphoric relations and discourse relevance is needed for the systematic assessment of different degrees of appropriateness of contextually equivalent paraphrases like the different versions of Russell's sentence in German and English. But this would require much more research and exceed the frame of this book by far. Although we could think of a ranking of CP or NP information values explaining our preference of the NP external restructuring to the analogous subject of the published version, there is not yet any theoretical framework which would allow us to rank, for example, the processing problems at the level of information structure in comparison to the personifying effect of both translational paraphrases of Russell's sentence. A greater degree of objectivity is thus not yet within the reach of the research done so far.

6.2 Idols of the academic theatre

Michael Clyne, in his widely quoted paper *The Sociocultural Dimension: The Dilemma of the German-speaking Scholar* (1991) argued "that the discourse patterns in academic texts are culturally determined". Looking at "discourse structure indices", Clyne focuses on "linearity . . ., symmetry, hierarchy of the text, continuity of text, presence and position of definition, functional sentence types, data integration, and the relation between these indices. " (p. 49) He summarizes the findings of his analyses of German-based or English (Australian)-based linguistic or sociological texts (including English texts by German speakers) as a preference of German authors for impersonal constructions and modalized sentences – which he subsumes under 'hedging'. Following Galtung (1988), Clyne distinguishes between a 'Teutonic' and a 'Saxonic' intellectual style and says that the Saxonic style 'promotes dialogue

and debate' while German texts are basically more 'monologue-oriented'. "In English-speaking countries, most of the responsibility falls on writers to make their texts readable" whereas German texts "can afford to be less easy to read." "Knowledge is idealized in the German tradition. Thus, texts are written to transmit knowledge, and the onus is on the reader to make the effort to understand them in order to benefit from this knowledge." (p. 65).

There is no doubt that German scholars are free to make their texts less easy to read. But what about translations of academic texts from English into German? If the translated text is difficult to read we will not be impressed by its scholarly nature but blame the translator for the difficulties. The translator cannot afford to equate target language appropriateness with whatever distortions language for academic purposes may be subjected to by original German writers.

But are all of Clyne's claims cases of 'hedging' really cases of 'Teutonic style'? Clyne's claim that "impersonal constructions reduce the responsibility of the author" (p. 48) ignores the language-specific conditions of 'easy reading' – the structural propensities determined by the typological properties of English and German language use. The preceding chapters contain quite a few cases where the use of expletive pronouns or of agentless passives helps to process sentence structure more quickly and promote comprehension in discourse.

Certainly, academic texts – even those written for a wider readership – are more difficult to read than non-academic texts. Not least, the frequency of abstract nouns contributes to the complexities of their messages. It is often amazing how difficult such English texts are if their linguistic structure is retained in the German translation. We have already looked at one of those cases, the beginning of a passage from Russel's essay on Bacon.

The whole passage is rich in abstract nouns and propositions. Yet, in English the passage reads easily (as easily as such abstract contents permit):

(9) *Bacon's inductive method is faulty through insufficient emphasis on hypothesis. He hoped that mere orderly arrangement of data would make the right hypothesis obvious, but this is seldom the case. As a rule, the framing of hypotheses is the most difficult part of scientific work, and the part where great ability is indispensable. So far, not method has been found which would make it possible to invent hypotheses by rule. Usually some hypothesis is a necessary preliminary to the collection of facts, since the selection of facts demands some way of determining relevance. Without something of this kind, the mere multiplicity of facts is baffling.* (Russell 1945: 544)

In German, this would be something like:

(10)   *Bacons induktive Methode ist wegen der unzureichenden Berücksichtung von Hypothesen fehlerhaft. Er hoffte, dass die bloße systematische Anordnung der Daten die richtige Hypothese erkennbar machen würde, aber dies ist selten der Fall. In der Regel ist die Hypothesenbildung der schwierigste Teil der wissenschaftlichen Arbeit und der Teil, wo großes Können unentbehrlich ist. Bisher ist keine Methode gefunden worden, die es möglich machen würde, Hypothesen durch Regeln zu erfinden. Gewöhnlich ist eine bestimme Hypothese eine notwendige Vorbedingung für das Sammeln von Fakten, da die Auswahl der Fakten irgendeine Form der Relevanzbestimmung erfordert. Ohne etwas dieser Art ist die schiere Vervielfältigung von Fakten verwirrend.*

Although we can comprehend the message, the linguistic form is rather irritating and the great number of inappropriate devices transposes Russel's clear statement into an off-key affair.

We can improve transparency considerably if we make use of all the restructuring patterns (reordering, reframing, reducing and extending) which, we know, can help secure discourse appropriateness in German translations – beginning with those of the first two sentences we have already commented upon:

(11)   *Die Schwäche von Bacons Induktionsmethode besteht darin, dass sie die Bedeutung von Hypothesen verkennt. Er hoffte, dass sich die richtige Hypothese aus der systematischen Anordnung der Daten ergeben würde…*

Subordinating the adversative clause at the end of the second sentence as a free relative clause will enhance easy reading in German:

(12)   *Er hoffte, dass sich die richtige Hypothese aus der systematischen Anordnung der Daten ergeben würde, was jedoch selten der Fall ist.*

The adversative relation seems to prevent the 'lower' key of such a subordinating attachment in English; compare the back translation from German:

(13)   … *make the right hypothesis obvious, which, however is seldom the case.*

In the third sentence of the original (which is added through coordination), the prenominal constraints of English NPs require an extra structure for the second characteristic of the framing of hypothesis:

(14)   *As a rule, the framing of hypotheses is the most difficult part of scientific work, and the part where great ability is indispensable.*

The prenominal options of German NPs make the extra structure of an analogous version:

(15)   *In der Regel ist die Hypothesenbildung der schwierigste Teil der Forschung, der Teil, wo großes Können unentbehrlich ist/der am meisten vom wissenschaftlichen Können abhängt.*

redundant. Relexicalizing the VP attribute allows a parallel structure and thus a prenominal position of the second attribute:

(16)   *In der Regel ist die Hypothesenbildung der schwierigste, am meisten vom wissenschaftlichen Können abhängige Teil der Forschung*

The fourth sentence does not have to be as explicit as the English original, either. Instead of the analogous version:

(17)   *Bisher ist kein Verfahren bekannt, das es ermöglichen würde, Hypothesen durch Regeln herzuleiten.*

we can express the modality of the matrix clause by the reflexive modal verb 'sich lassen', which allows us to reduce the structure:

(18)   *Bisher ist kein Verfahren bekannt, mit dem sich Hypothesen durch Regeln herleiten ließen.*

Stronger processing difficulties arise again with the analogous translation of the last two sentences, which involve a great variety of abstract nouns or nominal compounds: *preliminary/Vorbedingung, collection of facts/Faktensammlung, (way of) determining relevance/Relevanzbestimmung, selection of facts/Faktenauswahl, multiplicity of facts/Faktenvielfalt.* We can make the German version much more transparent if we recategorize the head of the predicative NP of the matrix sentence as a verb incorporating the modal necessity: 'presuppose', and use the complement of the original predicative as subject

(19)   *Normalerweise setzt das Sammeln von Fakten Hypothesen voraus, da die Auswahl von Daten irgendeine Form der Relevanzbestimmung erfordert. Ohne etwas dieser Art ist die schiere Anhäufung von Fakten verwirrend.*

As the topic is shifted from the framing of hypotheses to the collection of facts, recognition of the topic shift can be improved by reordering the sentence adverbial and subject (in line with Doherty 2001, who discusses appropriate positions of discourse relators and propositional elements)

(20)   *Das Sammeln von Fakten setzt normalerweise Hypothesen voraus, . . .*

Focus recognition in the subclause will profit from a focus indicator of its own. Since sentence adverbs like 'normally', which could carry this function are no longer 'free', two corresponding particles can fill the slot:

(21)   *Das Sammeln von Fakten setzt normalerweise Hypothesen voraus, da die Auswahl von Daten immer schon irgendeine Form der Relevanzbestimmung erfordert.*

Reading all sentences together, we can improve comprehension of the passage further if we explicate the discourse relation separating the sentence about the collection of facts from the preceding part of the paragraph. The sentence under discussion reverses the perspective relating data and hypotheses. In fact, it divides the whole paragraph into two parts: the collection of data which results in hypotheses versus the collection of data which presupposes hypotheses. An additional adversative discourse relator ('aber') can signal the shift and contribute to processing ease in the German translation:

(22)   *Das Sammeln von Fakten setzt aber normalerweise Hypothesen voraus, da die Auswahl von Daten immer schon irgendeine Form der Relevanzbestimmmung erfordert.*

The last sentence will again profit from a focusing particle ('nur'), which can separate the two foci at the end:

(23)   *Ohne etwas dieser Art ist die schiere Anhäufung von Fakten nur verwirrend.*

Altogether:

(24)   *Die Schwäche von Bacons Induktionsmethode besteht darin, dass sie die Bedeutung von Hypothesen verkennt. Er hoffte, dass sich die richtige Hypothese bereits aus der systematischen Anordnung der Daten ergeben würde, was jedoch selten der Fall ist. In der Regel ist gerade die Hypothesenbildung der schwierigste, am meisten vom wissenschaftlichen Können abhängige Teil der Forschung. Bisher ist kein Verfahren bekannt, mit dem sich Hypothesen durch Regeln herleiten ließen. Das Sammeln von Fakten setzt aber normalerweise Hypothesen voraus, da die Auswahl von Daten immer schon irgend eine Form der Relevanzbestimmung erfordert. Ohne etwas dieser Art ist die schiere Anhäufung von Fakten nur verwirrend.*

Marking discourse relations like the adversative relation between the first and the second part of Russel's argument or using lexical clues to speed up focus interpretation are so much part of the structural propensities of German that the English parsimony in using such discourse organizing clues feels like a real

processing disadvantage. But the typological differences of English affecting information structure contribute to processing ease by the early position of the verb, which serves as a natural border between information of lower and higher relevance. The early position will also promote a natural balance in the distribution of information. If the assumption is correct that focus exponents are verb adjacent in general, focus identification is more difficult in German, especially in cases where a focus projects beyond the focus exponent, that is in cases with more complex VPs. Thus, an additional clue is welcome in German, indicating the informational relevance of an element which might otherwise be perceived as defocused.

In the German translation of the last but one sentence, the double clue of 'immer schon' indicates the beginning of the focus projection with 'irgendeine' and the 'nur' of the last sentence prevents the predicative adjective 'irreführend' from being defocused after the lexically inherent focus on 'bloße/schiere' in the preceding subject. In English 'some way' in the first case and 'baffling' in the second are verb adjacent and thus focus exponents per default.

The attentive reader will have noticed the insertion of 'bereits' between the contrastive topic and the presentational focus in the second sentence of the passage, which is equally 'helpful' in preventing focus failure. Similarly, the affirmative continuation of the discourse topic 'hypotheses' by the subject of the third sentence after the negative implication of the second sentence has been marked by the focus particle 'gerade'. Both cases have the corresponding NPs separated by verbs in the English original. Additional focus markers are clearly welcome in German to compensate for processing disadvantages of a verb final language.

But should we not need an extra discourse indicator like 'aber/but' in English, too, to organize the passage into larger chunks around different discourse topics? The answer can only be very speculative, but it is reasonable to assume that an indicator of a shift in discourse topic is particularly welcome in a language like German with almost no grammatical constraints on the initial position in a sentence. As the discourse could be continued or shifted with the first phrase of the sentence, it may have to be interpreted as background or as new/contrastive information, that is, the informational status of the first phrase will often be underdetermined at first-pass parsing. Stricter constraints on the elements used in the English topic position could under certain conditions reduce this under-determination of the first informational element and make additional indicators redundant.

Spelling out the details of the interaction between focus expectation and the selection of topics under the specific conditions of topic positions in

English or German is a challenge that leads far beyond the topic of this book. But there can be no doubt that NP internal and external forms of restructuring will involve yet more and other aspects of position, perspective and explicitness than those we have looked at in the preceding chapters. And, idols of the academic theatre which Michael Clyne has found in German texts of the 'Teutonic' type may not only – to some extent – have a rational core but enhance processing ease rather than impede it. Avoiding 'hedging' altogether will then be simply counter-productive in translations from English into German.

6.3 Information structure and rhetorical figures

The language-specific conditions for discourse appropriate translations may also play a role in cases of language use which are known to be characterized by other functions than the merely informative one. Thus, rhetorical figures like parallelism, climax/anti-climax or chiasmus are carried by linguistic structures participating in the structural propensities of their language and require therefore restructuring translations no less than stylistically more neutral structures.

The following example is taken from a literary classic, a novel, whose internationally famous author, Graham Greene, has won 'the rare combination of critical and popular admiration' (Oxford Companion to English Literature).

It is a passage of four short sentences forming a tiny subsection in the fifth part of the novel *Our Man in Havana*:

> (25)   *'I have come back', he said to Beatrice. 'I am not under the table. I have come back victorious. The dog it was that died.'* (Greene 1976: 178)

The linguistic form of the sequence suggests a primary interpretation contrasting the dog's death with the victorious return of the speaker. And this is what the readers of the book have as their background knowledge when they begin to process the linguistic form of the passage after the matrix clause: The speaker is the main character of the book, Wormold, an agent of the British Secret Service in Pre-Castro's Havana, who has returned from a business lunch, where the 'others' had planned to poison him. He had been warned of the plot and the wording of his 'summarizing' report takes up some parts of the dialogue in which Hawthorne, his liaison officer, urged him to participate in the lunch in spite of the poisoning plans:

(26) *'You aren't afraid, are you? This is a dangerous job. You shouldn't have taken it unless you were prepared . . .'*
'You're like a Spartan mother, Hawthorne. Come back victorious or stay beneath the table.'
'That's quite an idea, you know. You could slip under the table at the right moment. The murderers would think you were dead and the others would just think you were drunk.' (Greene 1976: 161)

Wormold had told Beatrice about this 'conversation', which means that she could fully interpret the first three sentences and their implications. It is only the statement about the dog which is new to her. Unlike the reader, who is familiar with the dog from the preceding part of the story (which describes the lunch and Wormold's hair breath's escape), Beatrice does not know that there was a dog involved in the event. Wormold's utterance requires her to infer ('accommodate' as semanticists would say) the dog's existence.

The structure of the sequence does not only establish a syntactic parallelism between the first three sentences, but something like a chiasmus with the earlier passage referring to the Spartans:

(27) *Come back victorious or stay beneath the table . . . I am not under the table. I have come back victorious.*

The contrast between 'not under the table' and 'victorious' can be interpreted as a climax, to be turned into an anti-climax by the last sentence, the sentence about the dog.

Translated analogously into German, the sequence reads:

(28) *'Ich bin zurückgekommen', sagte er zu Beatrice. 'Ich bin nicht unter dem Tisch. Ich bin siegreich zurückgekommen. Der Hund war es, der starb.'*

But the linguistic features of the original which carry the parallelism and the contrastive relation of the anti-climax are in German inappropriate in more than one way. The first sentence, for example, is much better if translated as

(29) *'Hier bin ich wieder.'*

which renders the resumptive meaning of 'back' by 'wieder/again' and the deictic feature of 'come' by 'hier/here'.

If we compare the linguistic form of the analogous version *'Ich bin zurück-gekommen'* with *'Hier bin ich wieder'*, we can isolate the crucial feature of the difference. It is the meaning of the verb 'zurückkommen/return' which in its perfective aspect refers to the result of an event. The event feature is absent

from the explicit version with the statal copula 'bin/am'. In German the deictic part of the sentence meaning makes an explicit assertion of the event redundant and inappropriate. It would be more natural if used with a really informative part, for example, a causal clause specifying the reason of the return:

(30)   *Ich bin zurückgekommen, weil ich den Zug verpaßt habe.*

Spelling out details of the interaction between syntax, semantics and information structure in cases like this poses quite a challenge to theoretical linguistics, but there are semanticists (like Maienborn 2003; Umbach 2001; Steube 2004, to name just a few of the specialists in German linguistics), who offer sufficiently detailed compositional semantic theories to cope with such a task.

Returning to the question of rhetorical figures and restructuring translations, it is clear that the new version of the first sentence affects the translations of the second and third sentences. Due to the restructuring of the first sentence, the second sentence is attached to a state and not to an event:

(31)   *'Hier bin ich wieder', sagte er zu Beatrice. 'Ich bin nicht unter dem Tisch.'*

This requires an extra inferential effort to separate the local and temporal settings of the two sentences. If we reverse the order of the following sentences and continue with the third sentence, we can avoid the extra effort by a parallel structure

(32)   *Hier bin ich wieder . . . Ich bin siegreich.*

However, the predicate of the third sentence will now be interpreted as just another (albeit negated) property of the speaker, which creates the stylistic impression of a highly repetitive structure:

(33)   *Hier bin ich wieder ... Ich bin siegreich. Ich bin nicht unter dem Tisch.*

We can avoid it by applying cross-sentential, coordination' reduction using the second and third sentence as ellipses:

(34)   *Hier bin ich wieder . . . Siegreich. Nicht unter dem Tisch. . . .*

The implication of the last sentence, *alive, not dead* is now the (ironically presented) climax and it is this happy-ending to which the last, the fourth sentence of the sequence is related to through a contrast.

However, the English cleft sentence with its topicalized subject is inappropriate in German and this for at least two reasons. One is associated with a selection restriction of the verb 'sterben', the other with the redundancy of the

extra focussing means of cleft and topicalization. Even if we give up the latter and place the nominal head in its basic position, the German cleft:

(35)   *Es war der Hund, der starb/gestorben ist.*

remains inappropriate. A more neutral syntactic form with another predicate and an impersonal structure with an expletive pronoun for the subject of the perfective structure:

(36)   *Es hat den Hund erwischt.*

can secure the appropriate focus position for the object. The predicate is more in line with the accidental death of an animal to which neither the speaker nor his addressee have any personal, empathic relation. Everything else: contrastive relation and existential 'presupposition', is left to accommodation.

Unlike the English original, the structure of the fourth sentence in German is neutral (similar to the original only in its use of a definite NP for a referent unknown to hearer.) But the rhetorical figures of parallelism, climax and anti-climax can also be read off from this form of the sequence.

(37)   *'Hier bin ich wieder', sagte er zu Beatrice. ' Siegreich. Nicht unter dem Tisch. Es hat den Hund erwischt.'*

(It is only the chiasmus formed by the intertextual relation with the earlier reference to Sparta which is 'neutralized' into a mere parallelism – but deleting a rhetorical figure which is almost invisible as it spans some twenty pages is no real loss.)

Considering all aspects, the restructuring has helped to avoid problems of processing which would spoil the stylistic elegance of the passage and thus not be on a par with Greene's original. But if the analogous translation contains such processing problems (as redundant structures or false presuppositions), why does the English original use those forms to begin with?

Translating the German version back into English, we would end up with a highly inappropriate passage:

(38)   *'Here I am again', he said to Beatrice. 'Victorious. Not under the table. It has hit the dog.'*

The last sentence is the worst, but let us begin 'chronologically'. The implications of the first sentence are clearly different from those of the original. While the original

(39)   *'I have come back',*

implies that this is the speaker's 'normal' loalization, the back-translated version

(40) *Here I am again.*

implies that the speaker's localization is 'special' – although repeated. This effect is puzzling not only regarding the question how apparently equivalent linguistic structures can create such different meanings, but also why the analogous German paraphrase:

(41) *Hier bin ich wieder.*

implies that this is the speaker's normal localization.

It seems that the effect is due to the meaning of 'again' and the different conditions of topicalization in English and German. In German, VP-internal elements are topicalized in line with GIN and BID, which permit sentences with topicalized background. In English, topicalization is more constrained, requiring a contrastive or partitive discourse relation for the element in the topical position (compare Doherty, for example, 2003). Thus, topicalized 'here' implies a set of alternative localizations, promoting the 'special' interpretation of the English version.

If we retain the version of the original, the shift from process to state, from coming to being, blocks the reduction of the second and the third sentence to an elliptical predicate. Due to their parallel structures the second and third sentence can be ordered both ways, but the full wording of the predicates promotes the order of the original, in which the more important predicate – at least in terms of their direct interpretation – follows the less important one: 'not under the table . . . victorious.'

As to the fourth sentence, which requires a focus on the 'dog', there is hardly any other discourse appropriate form in English than a cleft sentence. Any monoclausal form would be strongly ambiguous and attract the focus at first-pass reading to the verb and not to the subject. (This would make it even more difficult for Beatrice to interpret the sentence about a dog she has not yet heard of.)

(42) *The dog* died.

(43) *The dog* has *been poisoned.*

But even the biclausal form

(44) *It was the dog that died*

is syntactically ambiguous as it allows a predicative interpretation in place of the identifying interpretation of a cleft sentence. By topicalizing the subject in this biclausal form, the English original uses a clear indicator of the contrastive focus.

The rhetorical figures of parallelism, climax and anticlimax (including the intra-textual reference) are thus present in the original and the translation, but realized differently by the linguistic means available in the source and the target language for discourse appropriate sentence structures. The detailed discussion of the interdependencies between syntax, semantics, pragmatics and stylistics has, however, shown that a precise account of the language-specific conditions for felicitous translation (or felicitous linguistic performance in general) is a herculean task requiring comprehensive research efforts on a wide scale. And testing the generalizations with other languages will yet multiply the demands. But, as 6.4 may illustrate, the typologically based hypotheses used to explain the structural propensities we can observe between German and English should at least offer a serious basis for further projects.

6.4 Typological peculiarities

The discussion of the last example has involved even more levels in comparing an English original and its German translation than all the preceding examples. But despite the surface structural differences of the rhetorical figures formed by the original and the translated sequences, the preferred restructurings are by no means cases of ideosyncratic properties promoting the use of syntactic and/or lexical means just as they happen to be available in the TL. That is to say there is something systematic in the use of 'come back' and 'wieder da sein' versus 'return' and 'zurückkommen' and also in the use of a clefted sentence versus a declefted impersonal sentence.

That the clefted structure of the original is considered redundant in the German translation is no mere ideosyncratic property of this example but participates in the typologically based structural propensities we have diagnosed for non-literary translations of English clefts into German. Biclausal structures like clefts or cleft-like sentences or of existential sentences with 'there' were used to compensate processing disadvantages associated with stricter constraints on topicalization in English.

As the example shows English clefts are also used to avoid the focus ambiguities of unergative verbs. Since these present the same processing problems in German the typological explanation seems to fail in cases like 'The dog

died/Der Hund starb'. But the English cleft is not retained in the German translation which uses a monoclausal structure instead. Yet 'Es hat den Hund erwischt' is more explicit than 'Der Hund starb.' It is a sentence with an expletive subject securing the focus position for the "victim", which is now used as an object (that is in the canonical syntactic function of a 'patient'). The lexical-syntactic option could be considered as yet another version of a focusing device in German – though with a lower degree of structural explicitness than clefts and cleft-like means.

There can be no question that impersonal constructions like the one under discussion are more frequent in German than in English. Although English knows the expletive 'it', that is the pronoun which replaces the subject as a mere grammatical placeholder, it does not allow impersonal structures like 'Es wurde gelacht' or 'Es hat ihn getroffen'. Monoclausal structures without a proper subject are restricted to weather verbs and the like. The expletive pronouns 'there' or 'it' in biclausal structures (like clefts or sentences with extraposed subject clauses) are different as they are always followed by a 'proper' phrase, which they 'replace'. Although such weightier structures serve various functions, they share one property which may well be related to a typological characteristic of English: they are structures expanding to the right. That is, they expand into the direction characteristic of a rightward branching language like English.

Although most of these rightward branching constructions are also available in German, there are additional possibilities to avoid such clause-multiplying extensions towards the right by impersonal sentences like the one under discussion. If we assume – which seems plausible – that languages involve certain means to compensate for processing disadvantages associated with their typological characteristics, the greater variety of expletive subjects in German could be considered one of those means.

We have already come across another case of such a compensatory mechanism: in Chapter 2.2, the frequency of restructuring translations resulting in a shift of perspective was said to be associated with the greater variability of semantic roles that can be projected into English subjects. It was suggested that the greater constraint on topicalization in English may be compensated by the greater range of lexical transfer (at the grammatical and the stylistic levels). Restructuring translations with shifted perspectives are phenomena related to the variability constraints at the left periphery of sentences. In the case of structural economy in focus marking it is the constraint of a leftward branching language at the right periphery where everything placed beyond the verbal frame needs special justification. This constraint is compensated for by the greater range of

lexical options with an expletive 'es/it'. Rightward branching promotes cleft-ing instead, with all its variations, which also – in existential sentences with 'there' – secure the necessary attention on the subject by moving it out of its unmarked position.

The assumption can be corroborated by the frequency of clefts in other right branching languages. Thus, it has been confirmed that Germanic lan-guages like Swedish or Norwegian, use clefts even more often than English (M. Johannsen 2001; S. Johannsen 2001; J. Gundel 2001). It is no coincidence that the sentence about the dog is translated into Norwegian by a cleft:

(45) *Jeg er kommet tilbake, sa han til Beatrice. Jeg er ikke under bordet. Jeg er kommet tilbake som seierherre. Det er hunden som blir begravet.*

It may be unclear why the translator did not use a lexically closer version in the subclause of the cleft. Although a well-known difference in the use of past and perfect promotes a grammatical change to the present perfect, the translation

(46) *Det er hunden som har dødd*

could also be considered discourse-appropriate (Hilde Hasselgard, p.c.). But unlike English, Norwegian does have a monoclausal structure that looks very much like the German expletive version

(47) *Det rammet hunden.*

However, if the clefted version is preferred (as we are told it is), we can con-sider this a natural consequence of the structural propensities in a rightward branching language. Unlike the German 'it', the Norwegian 'det' is no exple-tive pronoun, which would compensate for constraints at the right side of the sentence: there simply will be no more such constraints in right branching Norwegian than in right branching English.

If we assume that English and Norwegian are both right branching lan-guages, it makes their preference of clefts in comparison to German usage consistent. But the assumption cannot explain the different degree of frequency observed between English and Norwegian clefts. Although it is hardly pos-sible to form any serious hypothesis on the greater frequency of Norwegian clefts without the necessary empirical research, we can at least point at the typological difference that has emerged as a controlling factor of discourse appropriateness in translations between German and English.

Similar to German, Norwegian does not constrain topicalization as strongly as English does. Thus, the compensatory mechanism which has promoted lexical transfer in English but is not needed in German may not be needed

in Norwegian either. That is, topicalization constraints in English lead to a greater proportion of prominent subjects so that only some of the structural options securing discourse appropriate information structures with focussed subjects are provided by clefts. In a right branching language like Norwegian free topicalization leads to a greater proportion of clefts and similar structures marking their subject as focussed by moving it out of its basic position. In a left branching language like German free topicalization increases the proportion of impersonal structures securing the appropriate focus position by a different case frame.

The typological differences manifest themselves in the lexical and syntactic components of the languages systems and in the different preferences of their usage, the 'structural propensities', securing discourse appropriateness. The interrelation between lexic, syntax and preferred usage may also play a role in the different translations of the first sentence into German and Norwegian. Unlike German, Norwegian uses a verb plus particle which extends the VP to the right, securing sentence focus on the verb adjacent element 'tilbake'. The Norwegian translation is thus structurally analogous to the English original where the verb plus particle assigns the discourse appropriate focus in the same way.

Section 6.3 has already commented on the different conditions of German. Although the prefix 'zurück' in 'zurückkommen' is separable, the closer binding to its stem makes the verb more similar to the English 'return' with all the semantic consequences we have looked at in 6.3. Discourse appropriateness is secured by distributing the relevant semantic feature onto two adverbs, which are localized in line with BID as applied to an SOV language.

In contrast to this, the verb plus particle option of the Norwegian translation is no different from the English condition and needs no restructuring in the interest of discourse appropriateness. The structure of the complex lexical element is of the rightward branching type that characterizes Norwegian syntactically. 'Tilbake' receives the final stress automatically, which secures discourse appropriateness of the most relevant feature directly.

However, the complexity of languages does not permit simple generalizations. Thus, it may be interesting to note that the French translation of Greene's passage uses a cleft – as we could expect of a right branching language like French – but it uses an analytical form in restructuring the first sentence which is somewhat reminiscent of the German solution: 'Me voici de retour' replaces a superficially similar 'Je suis revenue.'

The verb plus particle solution available in English and Norwegian is no structural option in French and the discourse appropriate focus marking on

the semantic element which carries the highest relevance in the first sentence of Wormold's report is secured by other means. We will leave the analysis of the French particularities to the expert but emphasize once more what is no more than a trivial conclusion: typological similarity between languages is a highly complex affair in which one commonality, like right branching, may or may not promote others. But the impact of the typological differences we have observed between German and English should have provided sufficient evidence of the important role grammatical parameters play in shaping the most general structural propensities of language use. Needless to say that of the basic assumptions about a typological source of structural propensities in the discourse appropriate use of language have yet to be confirmed by future systematic research on translations in a wide variety of language pairs.

6.5 Summary and outlook

The list of future research topics was opened in 6.1 with the demand for a more systematic ranking of the constraints that determine discourse appropriate language use, and extended from the informative function of language use onto other parameters – ranging from the 'idols' of the academic register (in 6.2), over the aesthetic function of rhetorical figures (in 6.3) to a critical assessment of the typological basis shaping structural propensities in the discourse appropriate use of languages (6.4). It can and should be extended onto ever more of the variables we had set on fixed values at the beginning of the book: oral use of language, special languages, culture specific aspects, including diachronic parameters, different registers and genres. To the extent that informative language use is involved in all these aspects associated with translations, the assumption of structural propensities will help to sharpen our understanding of the different language specific conditions contributing to the translational problems arising in all these areas.

But – coming to an end of this book – it is time to admit that its key concepts: *discourse appropriateness, processing ease, sentence structure, information structure, typological parameters* help us to deal with problems of translation which are not seldom considered a negligible part of the really important aspects of translation. Criteria like relevance, or fluency (Venuti's 'fluent domestication') have been explicitly rejected in theoretical work on translation by such highly influential authors as Benjamin, Steiner, Derrida, who (as Munday's 1991 impressive survey about philosophical theories of translation shows) propagate 'abusive fidelity' (Lewis), 'foreignization', 'resistancy' (Venuti), advo-

cating even 'a literal rendering of the syntax, which proves words rather than sentences to be the primary element of the translator' (Benjamin):

> (48)   *A real translation is transparent; it does not cover the original, does not block its light, but allows the pure language . . . to shine upon the original all the more fully. This may be achieved, above all, by a literal rendering of the syntax which proves words rather than sentences to be the primary element of the translator.* (Benjamin 1968/2000: 21)

Even if we are not willing to follow this view of Benjamin's on the task of the translator, we have no reason to doubt his claim that translators like Luther and Hölderlin "have extended the boundaries of the German language" (1968/2000: 22). There is no denying that good translators cannot but increase the expressive power of their target languages.

Do we then, in the end, have to revoke our basic criterion of discourse appropriateness as determined by the specific target language conditions on processing ease? A look at existing translations suggests that this is a merely scholastic question – not only because of the depressing frequency of poor translations (whether through interference or through overgeneralizations) but because the criterion of processing ease will even promote a transfer of source language options whenever they offer some processing advantage over competing target language forms.

This is a well-known phenomenon with technical terms, which are, ever so often, imported into the target language via loaning or calques, but it may also concern syntactic options. TL forms analogous to SL structures can be expected to surpass competing TL forms if the latter suffer from processing disadvantages. For example, the personifying ring of non-intentional inanimate subjects, which was dealt with in Section 2.2 seems to be weakening in today's German. This is no surprise: the advantage of a 'bare' NP without a governing preposition to be processed in addition to the NP may outweigh the advantage of an isomorphic relation between semantic roles and syntactic functions (projecting a lower semantic role like 'cause' into an adverbial).

Thus, translations retaining the active perspective of the original may suppress the slightly personifying effect (described in Chapter 2.2) in favour of the simpler phrasal structure used for the initial referent:

> (49)   *Durch Supernovaexplosion werden diese Elemente dann im galaktischen Gas verteilt . . .* (n41)

> (50)   *Supernovaexplosionen verteilen diese Elemente dann im galaktischen Gas . . .*

Whether the impact of the SL structural options will eventually contribute to a diachronic change in the use of TL elements depends upon a variety of factors, one of which is the trade-off between processing advantages and disadvantages of competing structural options. (The necessary framework for a systematic discussion of such questions is provided by Optimality Theory – recall the arguments in 6.1.)

The call for resistance to fluency, which Benjamin depicts as a breaking "through decayed barriers of his own language" (1968/2000: 22), requires the translator to use a translational maxim opposite to the one used in this book. Resisting processing ease as a control factor of language use can be a welcome means available to the original author to break up bad habits in the sense of Bacon's 'Idols of the market-place'. But the translator who is no creative writer or poet may run the risk of 'foreignizing' the target text to the extent that turns resistance into its opposite, a case of ideological subordination. Looking at the extraordinary impact of English on German – there is even a special word for the blend of English and German: Denglisch – we would definitely not want to contribute to it by a foreignizing strategy.

In fact, the English version of Benjamin's credo demonstrates nicely that felicitous translations must not take the criterion of 'literal' literally. Referring to his idea of a universal 'pure' language, which underlies all languages, Benjamin advocates a literal translation, which 'allows the pure language to shine upon the original':

(51) *Das vermag vor allem Wörtlichkeit in der Übertragung der Syntax, und gerade sie erweist das Wort, nicht den Satz als das Urelement des Übersetzers.*

The structure of the first clause

(52) *Das vermag vor allem Wörtlichkeit in der Übertragung von Syntax*

is poetically marked by the lexical choice of the verb 'vermag'. Its use with a non-intentional referent has a personifying ring to it – in addition to its elated style. The original is normal in terms of discourse appropriateness as it makes use of a topicalized object securing end position for the focussed subject NP. The English translation distributes the meaning of the main verb onto a verbal group consisting of a modal and a main verb and uses a passive perspective in the interest of discourse appropriateness:

(53) *This may be achieved, above all, by the literal rendering of the syntax*

The lexical gap – there is no corresponding form of 'vermögen' in English – blocks a literal translation into English and causes the translator to use a less

poetic form, where the literal rendering of the syntax does not any longer carry the semantic role of the agent.

The effect is continued in the concluding part of the sentence

(54) *... sie erweist das Wort, nicht den Satz als das Urelement des Übersetzers*

which adds a second predication about literal translation. The structure of the German original uses a main clause coordinated to the first clause, but although the predicate 'erweisen' is associated with the same case frame as 'ver-mag/achieve', the order of the arguments of 'erweisen/prove' is canonical and requires the subject to be resumed explicitly despite the immediately preceding antecedent. The direct resumption by 'sie' is 'justified' by an additional focussing particle 'gerade', indicating a contrast between this and other types of evidence for the dominating role of words.

Again, the English translation uses a more casual structure, subordinating the conjunct of the original as a relative clause (which is syntactically ambiguous as it could be a modifier of the NP or of the clause preceding it).

(55) *This may be achieved, above all, by a literal rendering of the syntax which proves words rather than sentences to be the primary element of the translator.*

The down-toning effect of the TL-appropriate translation could indeed be interpreted as a 'token-reflexive' (a proof) of Benjamin's claim. But Benjamin's opposition between words and sentences does not do justice to the syntactic properties of words and a more literal translation would simply 'cover the original' and 'block its light':

(56) *... to shine upon the original more fully. Above all, a literal rendering of the syntax will achieve this, and just this proves the word, not the sentence the primary element of the translator.*

It is the lexical gap of 'vermögen' which is the major reason for the syntactic restructuring of the English version (passivizing the first conjunct and subordinating the second):

(57) *This may be achieved, above all, by a literal rendering of the syntax which proves words rather than sentences to be the primary element of the translator.*

(A smaller, but similar point can be made about the German compound 'Ur-element', which has been decomposed in the translation as 'primary element'.)

Certainly, spelling out all these factors involves so many linguistic and extralinguistic aspects that the stimulating part of such a challenge may easily be endangered by one or more of Bacon's idols: personal prejudices, blind rules, and – above all – the academic theatre and the market place. However, whatever translational changes of linguistic structures in general and of nominal word groups in particular may depend upon, typologically based structural propensities will play a role in it and they can be pinned down in a detailed way – provided the 'multiplicity of facts' and possible hypotheses does not exhaust our patience and fascination with the intriguing nature of translation.

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