

A COGNITIVE APPROACH TO OBLIGATORY CONTROL PHENOMENA IN ENGLISH AND GERMAN

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ABSTRACT

The aim of the paper is to develop a uniform semantic-pragmatic theory of controller choice for a number of German and English subject control verbs like *promise/versprechen* and object control verbs like *request/bitten*, *recommend/empfehlen*, *force/zwingen*, etc., which prototypically require a complement clause denoting an action performed by a human agent, who is left unexpressed in the infinitive clause (PRO). We propose the concept of 'semantic-pragmatic role' to account for a number of control phenomena which have hitherto been treated as exceptions. We show that controller choice and control switch heavily depend on two semantic-pragmatic factors, i.e. 'degree of agentivity of PRO' and 'role identity of a matrix NP and PRO'. Furthermore, at least in English, 'iconicity', i.e. the reflection of referential identity in formal closeness, plays an important role. Our analysis is based on two experiments conducted with 35 native speakers of German and 28 native speakers of American English.

1. INTRODUCTION

In this paper we shall deal with sentences like (1) and (2):

- (1) Bill promised Brian to buy the book.
- (2) Judy persuaded Joan to buy the car.

It is well-known that sentences of this type pose an interpretive problem regarding the reference of the implicit subject of the infinitive clause. In (1) it is the referent of the matrix subject (*Bill*) who is expected to perform the action denoted by the infinitival complement, whereas in (2) the person referred to by the matrix object (*Joan*) is supposed to be the performer of the action expressed in the infinitive clause. The antecedent of the implicit subject of the embedded clause is usually called the 'controller' (cf.

Postal 1970).¹ Following established usage, we shall label verbs of the *promise* class 'subject control verbs' and verbs of the *persuade* type 'object control verbs'. Furthermore, we shall call 'PRO' the empty subject position in the infinitive clause. This terminological usage is merely a matter of convenience. It does not entail that we adhere to any of the control theories which have been developed within the framework of generative grammar.

The terms 'subject control' and 'object control' misleadingly suggest that controller choice is uniquely determined by some syntactic feature of the matrix verb. However, sentences like (3) and (4), which are accepted by many speakers of English, show that this assumption is problematical:

(3) Bill promised Brian to be promoted.

(4) Judy persuaded Joan to be considered for promotion.

In (3), at least for some speakers, the preferred interpretation is that *PRO* is coreferential with the object of the matrix clause, whereas (4), for many speakers of English, admits a reading which assigns the controller function to the subject of the main clause. This phenomenon is often called 'control switch' or 'control shift' in the literature (most recently by Larson 1991).

It is well-known that verbs which usually trigger object control by far outnumber those which typically favor subject control. A consequence of this fact is that in many control theories subject control verbs, as opposed to object control verbs, are treated as exceptions, which are consequently viewed as being marked in the lexicon, e.g. Rosenbaum (1967, 1970), Chomsky (1980), and Bresnan (1982). However, as sentences (3) and (4) demonstrate, it is easy, at least with some control verbs, to construct morpho-syntactic and semantic contexts in which speakers tend to deviate from these supposedly marked (subject control verbs) or unmarked options (object control verbs). In other words, (3) and (4) show that a purely syntactic rule (supplemented by a list

¹ The notion of control was also used by Givón (1980) in the semantic sense of 'manipulation'. Köpcke & Panther (1991) argue that the degree of manipulation denoted by the matrix verb may have an influence on control behavior (in the syntactic sense).

of exceptional cases marked as such in the lexicon), which picks out the antecedent of the empty subject of the complement clause in a quasi-mechanical manner, is likely to be inadequate.²

In what follows, we shall briefly review some of the more important contributions to the theory of control. For ease of exposition, it is convenient to distinguish syntactically-based from semantically or pragmatically-oriented control theories.

1.1 Syntactic approaches.

In the 1950s Bech (1983) assumed the following basic syntactic regularity for German: Three-place verbs like *bitten* 'ask, request' or *befehlen* 'order, command' trigger object control, whereas two-place verbs like *annehmen* 'assume' or *hoffen* 'hope' trigger subject control. For English, generative syntacticians like Rosenbaum (1967, 1970) developed a *Minimal Distance Principle* (MDP) according to which the reference of the subject of the infinitival complement clause depends on the reference of the closest NP in the matrix clause. A version of this principle was adopted by Chomsky (1980) and recently by Larson (1991).

It is an obvious disadvantage of the MDP that it makes wrong predictions about verbs of the *promise* class.³ Moreover, although

² The idea that the infinitival complement contains an implicit subject is reasonable, although other solutions of the control problem, which do not necessarily rely on this assumption, have been proposed in the literature, e.g. within the theoretical framework of Montague Grammar, cf. Bach (1979), Partee (1975), and Thomason (1976).

³ Larson (1991) is able to avoid one empirical inadequacy of Rosenbaum's MDP by postulating that control relations are determined on the level of D-Structure. Larson (1991:115) claims that the MDP can be saved if there is the additional stipulation that the controller is 'the minimal c-commanding noun phrase in the functional complex of P [= Predicate, K.-U.P., K.-M.K.]' For a sentence like

John promised Mary to return home by 5:00 p.m.

Larson assumes a D-Structure in which the NP *Mary* is a sister of the V *promised*, whereas the infinitive clause is analyzed as an adjunct phrase adjoined to the V'-node which immediately dominates both V and NP. Consequently, the noun phrase *Mary* does not c-command the infinitival complement at this level. The only available controller c-commanding the complement clause is the subject *John*, which is accordingly chosen as the controller. On the other hand, in

John persuaded Mary to return home by 5:00 p.m.

the V *persuade* and the infinitive clause are sisters which are immediately

the MDP correctly identifies the controller in cases of control switch for 'subject control' verbs (cf. (3)), it is not capable of determining the controlling NP in the case of 'object control' verbs which undergo control switch (cf. (4)). As a consequence, subsequent theories of control phenomena began to acknowledge the importance of semantic factors, e.g. Manzini (1983) and Koster (1984), although these authors still focussed on the configurational aspects of obligatory control relations.

In contrast, Bresnan (1982) argued that the controller is identified on the basis of its syntactic function. According to Bresnan, the preferred controller is the indirect object of the matrix clause; in the absence of an indirect object, the direct object is chosen; and if there is no direct object, the subject assumes the control function. Bresnan's theory is explicitly anti-semantic, because it stipulates that only semantically non-restricted grammatical functions can play the part of (functional) controllers. Like Rosenbaum's approach her theory entails that verbs of the *promise* class must be marked as exceptions in the lexicon, since her control principle (wrongly) predicts that with verbs of this type the indirect object should function as the controller of *PRO*.

Phenomena of obligatory control have also been formalized within the framework of Montague grammar, e.g. by Partee (1975), Thomason (1976), and Bach (1979). The common denominator of these theories is that subject control verbs and object control verbs differ in their syntactic properties and that their control behavior is conditioned by these syntactic properties. Omitting technical details, the VPs of sentences (1) and (2) have roughly the following structure in this framework:

(5) [_{VP} [promise+Brian][to buy the book]]

(6) [_{VP} [persuade+to buy the car][Joan]]

dominated by the mother node V' , the NP *Mary* being in the specifier (subject) position of the VP immediately dominating V' . The closest c-commanding node is the NP *Mary*, which assumes the role of controller. In Larson's theory the behavior of *promise* would then not have to be marked as exceptional, since it immediately follows from its syntactic behavior.

This approach cannot adequately handle control switch phenomena, unless the ad hoc assumption is made that *promise* and *persuade* each have two lexical entries differing in syntactic subcategorization,⁴ cf. also the lexicalist approach put forward by Bartsch (1978).

1.2 Semantic and pragmatic approaches

Jackendoff (1972), though still arguing within the framework of generative grammar, stressed the importance of case roles or theta-roles in the formulation of an adequate theory of control phenomena. For example, with a verb like *get*, the thematic role 'theme' is always the controller, irrespective of its syntactic position, whereas *promise* selects the 'source' as the controller. However, as was pointed out by Foley & Van Valin (1984:306),

... Jackendoff does not attempt to derive the source control of *promise* or the theme control of *get* from the semantics of these verbs in any principled way, and consequently the specification of the controller in the lexical entry is ultimately arbitrary and non-explanatory."

A considerable step forward was taken by Růžička (1983 a,b). According to him, control verbs should be divided into two distinct classes: The first class, which includes verbs like *promise*, requires thematic identity or, at least, similarity between the controller and *PRO*; whereas the second class, which is exemplified by *persuade*, is subject to a constraint of thematic distinctness between the controller and controlled element. One important advantage of Růžička's theory is its ability to account for a number of control switch phenomena, which were left unexplained by previous theories. A drawback of Růžička's account is that, although it mentions some pragmatic factors, which may have an influence on the assignment of control relations, it does not incorporate these observations into a unified theory.

Chierchia (1983) put forward the hypothesis that unmarked controller choice is determined by a hierarchy of thematic roles. Preferably, the controller is supposed to be the Theme; if there

⁴ For a more detailed analysis and a critical assessment of the Montague approach to control phenomena, see Panther (in prep.).

is no Theme, the Source will be selected; and if there is no Source, the Goal will function as the controller. This approach is hardly convincing, because it categorizes the relatively small class of *promise*-type verbs as being (relatively) unmarked, selecting Source as the controller, whereas the large class of object control verbs like *require*, *order*, *ask*, and *tell*, which choose the Goal instead of the Source as their respective controllers, are treated as marked cases.

Foley & Van Valin (1984) proposed a theory of control phenomena which is grounded in the supposedly universal semantic functions 'actor' and 'undergoer'. The authors divided control verbs into 'undergoer control' verbs (causative verbs and directive speech act verbs) and 'actor control' verbs (e.g. *promise*, *vow*). Their theory predicts that verbs which can be used in a directive *and* a non-directive meaning should allow both control possibilities: 'undergoer' control, if the interpretation is directive, and 'actor' control on a non-directive reading, e.g. as in (7) and (8):

- (7) John asked Bill to sing something. (directive verb, therefore 'undergoer' control)
- (8) John asked Bill what to sing. (non-directive, therefore 'actor' control)

Foley & Van Valin claimed that their theory avoids the shortcomings of Rosenbaum's, Chomsky's and Jackendoff's proposals. However, it seems to us that their approach has fatal flaws. Consider e.g. the German sentences (9) and (10):

- (9) John bat Bill, das Zimmer zu verlassen.
'John asked Bill to leave the room'
- (10) John bat Bill, das Zimmer verlassen zu dürfen.
'John asked Bill to be allowed to leave the room'

In terms of Foley & Van Valin's theory (9) is a case of 'undergoer' control, and (10), with *John* as the controller, exemplifies their 'actor' control. However, this control switch cannot be explained by postulating a directive meaning, as in (9), in contrast to an allegedly non-directive meaning, as in (10). Foley & Van Valin's theory entails that the verb *bitten* has two lexical entries. In our view, there is no plausible semantic reason for this assumption.

More promising theories of control phenomena have been developed by Comrie (1984, 1985), Farkas (1988), Ladusaw & Dowty (1988), Wegener (1989), and Sag & Pollard (1991). Comrie noted the role of the notion of 'degree of agentivity' in the assignment of the controller, and, for the first time, pointed out some possible differences in control behavior among languages like English, German, and Russian. Farkas (1988) introduced the closely related notion of 'responsibility'. She claimed that, in the unmarked case, the controller is the Agent who is responsible for the situation expressed in the infinitive clause. The advantage of this semantic solution is that the subject control verb *promise* no longer needs to be marked as an exception. However, Farkas had to postulate a principle of 'marked controller choice' to account for control switch phenomena.

Ladusaw & Dowty (1988:69) argued that 'principles of rational actions and verb entailments' underlie the control behavior of verbs like *promise*, *persuade*, and *ask*, which have been 'grammaticized', i.e. have become 'a learned part of the grammar'

Recently, Sag & Pollard (1991) have proposed a semantic principle of obligatory control, which is supplemented by a syntactic principle based on their version of binding theory. A weak point in their approach is that their semantic control principle rests on a taxonomy comprising three distinct classes of control verbs: (i) the ORDER/PERMIT type (e.g. *advise*, *allow*, *forbid*, *order*, etc.), (ii) the PROMISE type (e.g. *agree*, *choose*, *decide*, *demand*, *promise*, *try*, etc.), and (iii) the WANT/EXPECT type (e.g. *ache*, *desire*, *hate*, *want*, etc.). Informally, Sag & Pollard's semantic control principle says that with verbs of class (i) the semantic role called the INFLUENCED controls the covert subject of the infinitive clause. For verbs of class (ii), the COMMITTOR, and for verbs of class (iii), the EXPERIENCER functions as the controller. In principle, we share Sag & Pollard's view that control phenomena have a semantic (or better, pragmatic) basis, i.e. that, among other things, control assignments depend upon the meaning of matrix verbs.

However, to our mind, the classification into three distinct types of control verbs misses a significant generalization. It is the aim of our paper to show that it is possible to treat (obligatory) control as a *uniform semantic-pragmatic phenomenon*. More

specifically, Sag & Pollard's semantic classification seems to us to be ultimately motivated not by semantic but by syntactic considerations. E.g., it is quite obvious that the class of control verbs listed under (ii) is semantically heterogeneous. Some of the verbs are illocutionary verbs like *promise*, *vow*, *pledge*, etc., others denote extralinguistic activities like *try*, *attempt*, *endeavour*, etc. or mental states like *intend*. But even the subset of illocutionary verbs is not semantically uniform. There is at least one verb, viz. *demand*, which, from a semantic point of view, does not belong to class (ii) at all, but rather to class (i). The only difference between *demand* and the other members of class (i) is that with *demand* the INFLUENCED is not lexicalized. But since members of class (i) trigger object control, *demand*, which in modern English is a subject control verb, does not fit into class (i) syntactically.⁵ Thus, we suspect that, although the authors claim that they provide a semantic taxonomy of control verbs, in fact, their classification is at least partially founded upon (unadmitted) syntactic criteria. From a semantic point of view, their control principle must be regarded as partially arbitrary and non-explanatory.

On the syntactic level, Sag & Pollard (1991:79) regard *PRO* as an anaphor, which is subject to Principle A of their version of binding theory: "A locally o-commanded anaphor must be locally o-bound." This principle seems to account for many English control phenomena, but it is not universally valid, as the authors seem to imply. Consider, for example, sentences (11)a.-c.⁶

- (11) a. Hans riet [PRO früh aufzubrechen].
 Hans advised [PRO early to leave]
 b. *Hans advised to leave early.
 c. Hans advised PRO leaving early.

⁵ The verb *demand* could be used as an object control verb as late as in the 18th century. Originally, it was possible to use *demand* with a lexicalized matrix object NP. As soon as, for whatever reason, this NP was (obligatorily) dropped *demand* changed into a subject control verb.

⁶ Other German control verbs exhibiting the same control properties as *raten* include *befehlen* 'order', *bitten* 'ask', *drängen* 'urge', *empfehlen* 'recommend', etc. For all these verbs, the controller *may* remain implicit, whereas in the case of *anordnen* 'order' the controlling element *must* remain implicit, e.g.

Der Präsident ordnete an, die Universität zu schließen.
 'The president ordered the university to be closed'

Sag & Pollard's binding principle correctly predicts that (11)b. should be ungrammatical. Their (semantically-based) control theory determines the INFLUENCED as the controller. Consequently the matrix subject *Hans* (the INFLUENCE) cannot be the antecedent of *PRO*. On the other hand, Sag & Pollard's binding principle A requires that the referential matrix argument *Hans*, which locally o-commands the anaphor *PRO*, be (incorrectly) coindexed with the latter. Thus one might be tempted to account for the ungrammaticality of (11)b. as resulting from the conflicting stipulations of control theory and binding theory. However, if this is the correct explanation, then examples like (11)a., which is fairly representative of a large class of cases in German (cf. Rohdenburg (1991)), and (11)c. should also be ungrammatical. These cases obviously involve 'implicit' control: the controlling element can usually be retrieved from the discourse context. In any case, data like (11)a. and (11)c., where the controller is not lexicalized but contextually present, cast doubt upon the hypothesis that the referential interpretation of *PRO* can be explained in terms of binding theory.

To summarize, an adequate theory of obligatory control faces three important problems:

- (i) It must give a cognitively plausible and, if possible, uniform account of how speakers select the appropriate controller.
- (ii) It must explain the apparently exceptional behavior of the *promise* type verbs.
- (iii) It must provide a theoretically satisfactory and an intuitively appealing account of control switch phenomena.

In our view, it is not sufficient to postulate configurationally-motivated conditions for obligatory control and to do away with the semantic and pragmatic aspects of controller choice and control switch as residual problems, cf. Manzini (1983), Larson (1991). It is the central aim of this paper to demonstrate that the interpretation of control structures is heavily guided by semantic, pragmatic, and cognitive factors. More specifically, we will propose an account of control phenomena which is centered around the notions of 'prototype' and 'semantic-pragmatic role' (see section 2).

We shall restrict our attention to a certain class of (well-known) subject and object control verbs. Our analysis is based

on experimental data, which were obtained from native speakers. We conducted experiments because, in our view, one major deficiency of previous control theories is that the acceptability of the sentences discussed in the literature almost exclusively depends on the linguistic intuitions of the investigator or, in the case of foreign languages, on data which have been adopted from other linguists. The acceptability tests which we carried out with both German and (American) English native speakers reveal some common properties, but also a number of interesting differences between these two languages with respect to their control behavior. To our knowledge, these differences have not been recognized so far. Furthermore, it turned out that the linguistic intuitions of native speakers frequently differed quite radically from those taken for granted in the literature on the subject.

2. HYPOTHESES

In our experiments we analyzed instances of five semantic verb classes given below (Table 1).⁷

Table 1: Verb classes tested in the experiments

Verb class	English control verbs	German control verbs
COMMISSIVES	promise give one's word	versprechen zusagen
CONSULTATIVES	recommend	empfehlen raten
DIRECTIVES	request implore	bitten beschwören
PERLOCUTIVES	convince persuade	überzeugen überreden
IMPLICATIVES	induce force	veranlassen zwingen

⁷ Note that in using the terms *commissives*, *consultatives*, *directives*, and *perlocutives* we do not refer to speech acts, but to verbs which denote illocutionary or perlocutionary acts. Furthermore, the English verbs and their German counterparts are not necessarily synonymous, although they are similar in meaning.

We assume that these matrix verbs evoke an action schema, which sets the stage for the interpretation of the complement clause; i.e. the verbs in Table 1 have in common that they 'ideally' or 'prototypically' require a complement clause with an action predicate in the active voice, cf. sentences (1) and (2) above. Even if the complement clause contains a non-actional predicate, it will always be interpreted as being part of an action schema.

There are at least five arguments which support a 'prototypical' approach to control phenomena:

- (i) It is obvious that, with regard to the matrix verbs investigated, infinitivals expressing an action which is syntacticized in the active voice are much more frequent than any other infinitival complement types.
- (ii) Our experiments reveal that native speakers hardly ever reject sentences with an action complement, whereas the rejection rate for other infinitival complement structures, e.g. passives, is significantly higher.
- (iii) The degree of agreement among the experimental subjects regarding controller choice is much higher in the case of action complements than for other complement types.
- (iv) Professional linguists show a high degree of agreement concerning the acceptability of control structures with action complements, but they considerably disagree on the acceptability and the controller assignment in the case of non-prototypical complements, cf. sentences (3) and (4).
- (v) Finally, speech act analysts have stressed that promises, requests, etc. require the propositional content condition that the speaker or the addressee perform a future action, cf. Searle (1969), Wierzbicka (1987).

We assume that the meaning and use of the verbs in Table 1 give rise to various *semantic-pragmatic* roles, which are assigned to the subject and object of the matrix clause and to *PRO*, the understood subject of the infinitive clause. The foremost semantic-pragmatic role is the *Agent*, which, in the prototypical case, is supposed to perform the action denoted by the complement clause; i.e. with *COMMISSIVES*, the subject of the matrix clause, and with all other verbs, the direct or indirect object. This Agent will henceforth be called the 'prototypical controller'. The second semantic-pragmatic role introduced by the matrix verb will

be called the *Beneficiary*, i.e. in the case of COMMISSIVES and CONSULTATIVES, this role is assumed by the matrix object, whereas in the case of DIRECTIVES and PERLOCUTIVES, it is the matrix subject which is associated with the role of Beneficiary.⁸ The situation is less clear with the IMPLICATIVES investigated: The subject of *force/zwingen* can easily be interpreted as Beneficiary, whereas the assignment of this role to the subject of *induce/veranlassen* seems to be highly context-dependent. Finally, we introduce the role *Dependent*: For example, the subject of *bitten* 'ask, request' is dependent upon the good will of the object of the matrix clause, whereas the (indirect) object of *raten* 'advise' or *empfehlen* 'recommend' is neutral with regard to this role, because the person denoted by the object is free to accept or reject the advice or recommendation given by the subject. The modal *dürfen* 'be allowed to', apart from assigning the role Beneficiary to its subject, also involves the dependence upon some authority, i.e. in a sentence like

- (12) Die Sekretärin überredet den Chef PRO das Büro während der Weihnachtsferien schließen zu dürfen.
 'The secretary persuaded the boss PRO to be allowed to close the office during the Christmas break'

PRO is both a Beneficiary and a Dependent, and it is naturally linked to the subject of the matrix clause as its controller, since the secretary is both (potential) Beneficiary and Dependent. We will henceforth call the shifted controller the *non-prototypical controller*.

We regard the roles Agent, Beneficiary, and Dependent as labels which abbreviate *pragmatic inference chains* based on default assumptions about the world. These roles are independently motivated as necessary components of a semantic-pragmatic description of speech acts or speech act verbs, cf. e.g. Leech (1983), Bach & Harnish (1979), Wierzbicka (1987). As an illustration, consider the verb *bitten* or its English near-equivalent *ask*. Wierzbicka

⁸ We assume that these roles are relevant for the control behavior of the verbs under investigation. This does not mean however that there are no other semantic-pragmatic roles which might be of importance in the analysis of other control verbs.

(1987:50) defines the verb in the following way: "The *asking* person wants the addressee to do something that would be to his (the speaker's) benefit." The definition shows (i) that the speaker wants the hearer to do something. Given normal background assumptions, this proposition pragmatically implies, i.e. conversationally implicates, (ii) that the desired action is in the interest of or benefits the speaker. Since *bitten* and *ask* entail a (potential) action of the addressee, there is obligatorily a (prospective) Agent. Finally, *bitten* (but perhaps not *ask*) implicates that the person denoted by the matrix subject has the role Dependent. In addition to the roles mentioned above, there may of course be additional roles which are needed in the analysis of other control verbs. Consider for example

- (13) Der Pastor drohte den Gläubigen
 The pastor threatened the-DAT(PL) faithful-DAT(PL)
 PRO Höllenqualen erleiden zu müssen.
 PRO torments-of-hell suffer-INF to must-INF

In this sentence the verb *drohen*, in contrast to its English equivalent *threaten*, allows an indirect object (here: *den Gläubigen* 'the-DAT(PL) faithful'), which functions as the controller of *PRO*. The latter is the subject of the modal *müssen* 'must' and may therefore be assigned the role Non-beneficiary ('Maleficiary'). The same role can be attributed to the indirect object of the matrix verb.

It should have become clear from the examples that semantic-pragmatic roles in our sense should not be confused with 'deep cases' in some case-grammatical framework, cf. Rudanko (1989), or 'theta-roles' in generative grammar, as e.g. in Jackendoff (1972) or Růžička (1983a, b). A semantic-pragmatic role, in our model, is defined with regard to the situation or state of affairs denoted by the infinitival complement clause. E.g. in sentence (2), we regard the matrix object *Joan* as the Agent who is supposed to perform the action expressed in the complement clause. The subject *Judy* will be considered as the Beneficiary, since *Judy* will potentially benefit from this action. In a case-grammatical or a theta-role approach the matrix subject would be regarded as the Agent (or Source) and the matrix object as e.g. the 'Theme' For linguists used to 'deep cases' in the classical sense, our approach, at first

sight, may look bizarre. However, to our mind, it is cognitively plausible to assume that the matrix verb introduces a scenario with 'prospective roles' which are assigned to the arguments of the matrix clause. We intend to show in this paper that the concept of semantic-pragmatic role has the advantage of accounting for a number of control phenomena which, in the past, have been treated as exceptions. Table 2 lists the semantic-pragmatic rôles which we think are relevant to the control behavior of the verbs under investigation.

Table 2: Distribution of prospective semantic-pragmatic roles.

	<i>Subject</i>	<i>Object</i>
OBJECT CONTROL VERBS		
raten/-	0	Ag, Ben
empfehlen/recommend	0	Ag, Ben
bitten/request	Ben, Dep	Ag
beschwören/implore	Ben, Dep	Ag
überreden/persuade	Ben	Ag
überzeugen/convince	(Ben)	Ag, (Ben)
veranlassen/induce	0	Ag
zwingen/force	Ben	Ag, Dep
SUBJECT CONTROL VERBS		
versprechen/promise	Ag	Ben
zusagen/give one's word	Ag	Ben

Ag = prospective Agent of the action scenario introduced by the matrix verb

Ben = prospective Beneficiary of the action scenario introduced by the matrix verb

Dep = the role of the participant whose action is dependent on, or determined by, some other participant mentioned in the matrix clause

0 = 'unmarked' with respect to Ag, Ben, or Dep.

Since these matrix verbs evoke an action schema, one of the matrix arguments is necessarily the (prospective) Agent, whereas all of the remaining semantic-pragmatic roles are more or less context-dependent. As examples illustrating this point, consider the following sentences:

- (14) a. Der Autohändler überredete den Kunden PRO das überteuerte Cabriolet zu kaufen.
 ‘The car dealer talked the customer into buying the over-priced convertible’
- (14) b. Der Professor überredete den Studenten PRO seine bahnbrechende Dissertation einzureichen.
 ‘The professor persuaded the student to submit his pioneering dissertation’

In both sentences the matrix object receives the (prospective) Agent role. However, the assignment of the (prospective) Beneficiary role is a much more complex process: Whereas in (14)a. the subject of the matrix clause is interpretable as the Beneficiary, given our world knowledge about (certain) car dealers, this is not necessarily true of (14)b.; on the contrary, it is perhaps more reasonable to assume that the action expressed in the infinitive clause is in the interest of the student. Obviously, there are various parameters that influence role assignment, e.g. the meaning and use of the matrix verb, its nominal arguments and their meaning and use, the social relationship between the participants denoted by the arguments (e.g. symmetrical or hierarchical relationships), and situational knowledge. In what follows, we will attempt to reduce the influence of contextual factors by limiting ourselves to an investigation of sentences which exclusively contain proper names as nominal arguments.

As Table 2 shows, it is possible for a matrix argument to have more than one role assignment. Consider the following sentence:

- (15) Pauline rät Uschi, der Schule den Rücken zu kehren.
 ‘Pauline advises Uschi to quit her job in the school’

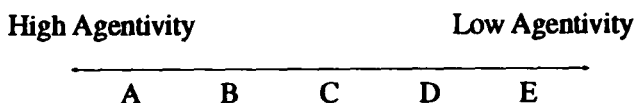
In this sentence the matrix object can have two roles: (i) the obligatory Agent role and (ii) the role of Beneficiary, which is derived via conversational implicature.

We now turn to the understood subject of the infinitival complement. Obviously, if the prototypical complement clause embedded under the above-mentioned matrix verbs contains an action predicate in the active voice, then the prototypical role of its implicit subject (= *PRO*) must be Agent. In Köpcke & Panther (1991), we have shown that, for the German control verbs listed in Table 1, the *degree of agentivity* is the most important factor

determining the reference of *PRO*. Our basic hypothesis was that the more the degree of agentivity of *PRO* decreases, the more the probability increases that the non-prototypical controller will be chosen, i.e. the object in the case of COMMISSIVES and the subject in all other cases.

The degree of agentivity of *PRO* results from an interplay of the meaning of the predicate of the complement clause and extralinguistic knowledge (i.e. world knowledge). On the one hand, agentivity is determined by the intrinsic meaning of the predicate of the complement clause; on the other hand, it may be a context-specific property based on pragmatic inferences. We assume a continuum of agentivity ranging from 'high' to 'low' correlating with specific construction types of infinitival complements, which will be discussed below:

Figure 1: Scale of Agentivity



We shall illustrate the scalar points A–E by means of the German verbs *versprechen* 'promise' (subject control) and *bitten* 'ask, request' (object control) before turning to the experimental results. As mentioned above, these verbs assign the role of the Agent to one of the matrix noun phrases. In the case of *bitten* the direct object is the Agent, whereas with *versprechen* it is the subject which assumes this role. In contrast, the role of the other matrix noun phrase can be defined as that of the Beneficiary. A promise conversationally implicates that the referent of the indirect object will benefit from the situation expressed in the complement clause, while with *bitten*, the subject will profit from the state of affairs denoted by the embedded clause. We hypothesize that, correlating with the decreasing agentivity of *PRO*, 'beneficence' will play an increasingly important role in the assignment of control relations.

Complement type A is the prototypical case.⁹

- (16) Egon bittet Paul PRO den Computer anzuschaffen.
'Egon asks Paul PRO to purchase the computer.'
- (17) Harry verspricht Jürgen PRO das Buch zu kaufen.
'Harry promises Jürgen PRO to buy the book.'

In these sentences, the action verbs *anschaffen* 'purchase' and *kaufen* 'buy' assign a high degree of agentivity to the empty slot *PRO*. Our hypothesis predicts that in (16) the object *Paul* will be the controller, while in (17) the subject *Harry* will assume this function.

Complement type B is an adjectival phrase in predicative position, which denotes or at least implicates an action. This type is fairly close to the most prototypical type A:

- (18) Paul bittet Egon PRO während der Mittagszeit ruhig zu sein.
'Paul asks Egon PRO to be quiet during lunchtime.'
- (19) Jürgen verspricht Harry PRO das nächste Mal nachsichtig zu sein.
'Jürgen promises Harry PRO to be indulgent next time.'

We assume that in (18) and (19) the same control relations will obtain as in (16) and (17), respectively.

Complement type C contains a non-actional verb such as *bekommen*, *kriegen*, *erhalten* 'receive' (in the active voice), which selects a 'recipient' as its subject:

- (20) Paul bittet Egon PRO für den Kostümball eine Einladung zu bekommen.
'Paul asks Egon PRO to receive an invitation for the fancydress ball.'
- (21) Harry verspricht Jürgen PRO die Schallplatte so schnell wie möglich zu kriegen.

⁹ Speech act analysts have usually emphasized the fact that e.g. *promises*, *requests*, etc. require the propositional content condition that the speaker/addressee perform a future action. Moreover, it is obvious that action complements in the active voice are much more frequent with these verbs than e.g. passive complements.

'Harry promises Jürgen PRO to receive the record as soon as possible.'

Although in (20) and (21) *bekommen* and *kriegen* semantically do not express actions, they nevertheless have a subject which may play an active part in the process of receiving or getting the object in question, e.g. *the record* in (21). In this case, both verbs would be interpreted as actional, with the pragmatically implicated meaning 'get, provide'. Usually, however, at least in German, *PRO* has a relatively low degree of agentivity in complement type C. Instead, in the context of (20) and (21), it is plausible to regard *PRO* as the *Beneficiary* of the state of affairs denoted by the verbs *kriegen* and *bekommen*. In case *PRO* is interpreted as Beneficiary, a control switch from subject to object control (*versprechen*) and from object to subject control (*bitten*) is likely to occur. The reason for this control switch can be seen in semantic-pragmatic features of the illocutionary verbs *versprechen* and *bitten*: The addressee of a promise, who is grammatically realized as the indirect object in (21), is regarded as the Beneficiary of the state of affairs expressed in the infinitival complement, and the indirect object is therefore the most plausible candidate for assuming the role of controller. On the other hand, with a verb like *bitten*, the person denoted by the subject NP in (20) is supposed to benefit from the situation denoted by the infinitive clause; *PRO* is therefore likely to have the subject NP of the matrix clause as its antecedent. It should be stressed again here that the identification of the controller is determined on the basis of both linguistic and factual knowledge.

Complement type D contains the modal auxiliary *dürfen* 'be allowed to'. Intuitively, the subject of *dürfen* has a still lower degree of agentivity than *bekommen/kriegen/erhalten*. Semantically there is virtually no agentivity at all, and pragmatically it is difficult to imagine a context in which the subject of *dürfen* plays an active role. This type is exemplified by sentences such as

(22) Paul bittet Egon PRO in der Mannschaft mitspielen zu dürfen.

'Paul asks Egon PRO to be allowed to join the team.'

(23) Jürgen verspricht Harry PRO ins Kino gehen zu dürfen.

'Jürgen promises Harry PRO to be allowed to go to the movies.'

The low degree of agentivity of *PRO* leads to a foregrounding of the pragmatic Beneficiary role. Under these circumstances, we predict a reversal of the prototypical control relations in sentences (22) and (23), i.e. in (22) *Paul* will be the controller, whereas in (23) *Harry* will be the antecedent of *PRO*.

Complement type E contains a passive construction, which induces a maximally non-actional interpretation of the complement clause. The subject of a passive construction is semantically (almost) non-agentive. The passive can be viewed as the prototypical syntactic construction expressing virtually 'zero agentivity' of its subject. Pragmatically, it is even harder, though not completely impossible, to figure out a situation in which *PRO* might receive an inferentially-derived agentive reading. This complement type is illustrated by (24) and (25):

- (24) Paul bittet Egon PRO bei der Arbeit unterstützt zu werden.
'Paul asks Egon PRO to be helped with his work.'
- (25) Jürgen verspricht Harry PRO befördert zu werden.
'Jürgen promises Harry PRO to be promoted.'

The low degree of agentivity approaching zero facilitates an interpretation of *PRO* as Beneficiary. Thus, in (24) the most likely controller is the matrix subject *Paul*, whereas in (25) this role is assumed by the indirect matrix object *Harry*.

In general, we assume that the interpretation of control relations in German (at least for the verbs listed in Table 1) is guided by a *Principle of Identity of Semantic-Pragmatic Roles*. If an NP can be identified in the matrix clause which has the same or roughly the same role as *PRO*, then this specific NP is selected as the controller.¹⁰ Preferably, this NP should be an Agent. In other words, coreference between two Agents, i.e. a matrix NP and *PRO*, is the optimal interpretive configuration, whereas the possibility that there is role identity between two Beneficiaries is only explored in those cases where the identity of Agents fails. For

¹⁰ Note again that 'pragmatic roles' in our sense should not be confused with the notion of theta-role, cf. Ružička (1983a, b).

example in (16) above, the semantic and pragmatic description of the matrix verb *bitten* has to make reference to an addressee, who is supposed to comply with the request, i.e. who has the pragmatic role Agent with regard to the propositional content expressed by the infinitive clause. Therefore, the object NP will be identified as the controller just in case *PRO* can be interpreted as the subject of an action verb. With a commissive verb like *versprechen* in (17), the subject of the matrix clause is the Agent of a future action expressed in the complement clause. Consequently, the subject will function as the controller if the complement clause denotes an action.

Role identity is also the motivating force behind control switch. In (22) the object NP (Agent) is highly implausible as a controller, since it is obvious that *PRO* has to be interpreted as a Beneficiary. This fact forces the hearer to search for a matrix NP which exhibits the same role as *PRO*, viz. the subject NP of the matrix clause. Conversely, in (23) the most plausible controller is the object NP of the matrix clause, because its pragmatic role (Beneficiary) is identical to the role of *PRO* in the complement clause. The verbs *versprechen* and *bitten* seem to be highly flexible with regard to control switch. Intuitively, with other verbs, e.g. the CONSULTATIVES *raten* and *empfehlen*, control switch from prototypical object control to the more peripheral subject control in the contexts C, D and E is less natural. E.g. for a sentence like

(26) ?Klaus empfahl Uwe, vor dem Ausschuß eine Rede halten zu dürfen.

??'Klaus recommended Uwe to be allowed to deliver a speech to the committee.'

in contrast to *bitten*, the subject of *empfehlen* is not available for the role of Beneficiary; on the contrary, it is the person referred to by the indirect object who assumes both the roles of Agent and Beneficiary with regard to the propositional content expressed by the infinitive clause (cf. Table 2). Moreover, the act of recommending has as one of its felicity conditions that the addressee (the grammatical object) is free to perform or to reject the recommended course of action. Thus, it seems to us that *empfehlen* (like *raten*) implies a relatively high degree of 'independence' of the referent of the matrix object. Therefore, this matrix verb is

pragmatically incompatible with a complement sentence containing *dürfen*, a modal verb which semantically conveys dependence on a third party authorizing the action.

It seems then that, with German control verbs, the assignment of the controller role to one of the NPs in the matrix clause is guided by a number of semantic and pragmatic principles. At first sight, there is no reason to believe that speakers of English apply different interpretive strategies when assigning a controller to the English equivalents of sentences (16)–(25).

On the other hand, there seem to be good reasons to question the cross-linguistic validity of this hypothesis. Some linguists, cf. Comrie (1984) and Farkas (1988), have claimed that in English a sentence like

(27) Otto persuaded Helga to be examined by the doctor.

preferably receives an interpretation with the object NP as the controller. Comrie (1984:456) rejects the literal German translation of (27) as unacceptable:

(28) Otto überredete Helga, vom Arzt untersucht zu werden.

We do not share Comrie's acceptability judgment. Since *Otto* can be interpreted as the Beneficiary of the situation expressed in the complement clause and since *PRO* is also plausibly assigned the role of Beneficiary, we predict that the matrix subject will control *PRO*. This reading is in accordance with the Principle of Role Identity. However, it remains an interesting fact that (27) with object control is most naturally translated into German as

(29) Otto überredete Helga, sich vom Arzt untersuchen zu lassen.

where *sich untersuchen zu lassen* 'to have herself examined' expresses a causative (agentive) relationship between *PRO* and the predicate of the complement clause. Sentence (29) perfectly conforms to the Principle of Role Identity, since the subject of the causative *lassen* is easily identifiable as Agent, which can be linked to the Agent defined by the matrix verb *überreden*.

The results of our experiments show that there are indeed some language-specific differences with regard to control properties between English and German. But we will demonstrate that

most of these differences can be subsumed under the Principle of Role Identity.

In conclusion, the aim of our empirical investigation was to test the following hypotheses for the verbs listed in Table 1:

1. *The Principle of Role Identity*: The semantic-pragmatic roles of the controller and *PRO* are identical or nearly identical. This principle subsumes the following cases:
 2. a. In the prototypical case both the controller and *PRO* are assigned the semantic-pragmatic role Agent.
 - b. In the non-prototypical cases, *decreasing agentivity* of *PRO* is a precondition for control switch, i.e. for the selection of a non-prototypical controller. In other words, decreasing agentivity increases the probability of a control switch.
 - c. The probability of control switch is reinforced if *PRO* is interpreted as Beneficiary and if it can be linked to an argument in the matrix clause, which in turn is also identifiable as Beneficiary. This matrix argument is of course distinct from the prototypical controller.

3. EXPERIMENTAL DESIGN

In order to verify our hypothesis on control assignment in English and German, we conducted two experiments with 35 native speakers of German and 28 native speakers of American English. In both experiments, the subjects were freshmen at the University of Hannover and the State University of New York at Buffalo, who, at the time the experiment was performed, had had no specific linguistic training. The subjects were between the ages of 19 and 26. An almost equal number of males and females participated in the experiments, but, since we discovered no sex-specific characteristics in the subjects' behavior, we shall not distinguish between the two sexes in the sections 4 and 5.

The experiments were constructed around the control verbs given in Table 1.¹¹ Each verb was presented in the five different

¹¹ As a matter of fact, one of the English 'subject control verbs' was the complex predicate *give one's word*. In what follows, we shall ignore this fact and shall simply refer to this phrase as a 'control verb'.

syntactic contexts (A – E) mentioned above in section 2, yielding a total of 50 German and 45 English test sentences. The verbs used in construction type C were *kriegen*, *bekommen*, *erhalten* in German and *get* and *receive* in English. The German modal auxiliary *dürfen* in construction type D was rendered as *be allowed to* in English. In all sentences, the subject and the object slots of the matrix clauses were filled by proper names, either both male or both female, to avoid the possible interference of social and cultural factors in the interpretation of the test items.

All subjects were tested simultaneously. Each informant received a booklet, which contained one test sentence per page. The sentences were presented in random order, i.e. each subject was confronted with a different sequence. The subjects were instructed to read each sentence carefully and to respond spontaneously. They were asked not to dwell too much on specific sentences, nor to flip back and forth through the pages of the booklet.

After reading a sentence the subjects were asked to determine the controller of the implicit subject of the complement clause. The subjects' responses were elicited through a paraphrase of the infinitival complement clause, e.g. for the sentence

(30) Harry convinced Allan to try on the suit.

the content of the complement clause was paraphrased as

(31) In this sentence the speaker mentions the possibility or the fact that Harry/Allan tried on the suit.

The subjects had to select either the grammatical subject or the grammatical object of the matrix clause as the controller. Furthermore, the subjects also had the possibility to reject the test sentence as uninterpretable, i.e. as making no sense semantically and/or pragmatically.

The experiment did not include questions about the formal (morphosyntactic) well-formedness of the test sentences. We suppose that the sentences presented to our subjects were "grammatically" correct, though some of them were no doubt stylistically awkward in the sense that they do not seem to be in current usage. For example, the control verb *promise*, for many speakers of English, does not allow an indirect matrix object when construed with an infinitive clause, cf. Mair (1990). We assume that,

syntactically, the control verbs under investigation freely admit embedded infinitive clauses of the form [*PRO* to/zu VP]. This includes the five construction types A–E exemplified above. Our aim was to elicit interpretations from our subjects which made sense to them in semantic and pragmatic terms. Only after having strained their interpretive imagination unsuccessfully had the subjects the option to mark the test sentence as semantically or pragmatically deviant. We will try to show that the oddity of certain sentences can exclusively be attributed to semantic-pragmatic factors.

4. EXPERIMENTAL RESULTS¹²

4.1 Commissives

For the prototypical infinitival complements, i.e. construction types A and B, in both English and German the majority of the subjects chose the subject NP of the matrix clause as the controller. However, there is a remarkable difference between the English and the German data: While 100% or nearly 100%, of the German speakers chose the subject NP as the controller, Table 3 shows that in English these rates are considerably lower and the decisions in favor of object control are surprisingly high. We will discuss this matter in section 5.2.

Furthermore, Table 3 reveals that with construction types D and E, in both languages for the four matrix verbs, subjects are inclined to switch from subject to object control. Construction type C, however, in the English data, patterns more like the prototypical types A and B in retaining subject control to a large extent, whereas in German there is a strong tendency to favor the object of the matrix clause as the controller. We will attempt to explain this interesting contrast in section 5.1 and subsequent subsections.

¹² The subjects in the experiment were asked to select *either* one of the matrix NPs as the controller of *PRO* or to mark the test sentence as unacceptable. Subjects who chose more than one of these three options were not taken into consideration for that particular test item. This explains the variation in the numbers of subjects in the tables of this section.

Table 3: Results for COMMISSIVES in English and German in percentages

Constr. types	<i>promise/versprechen</i>							
	N		Subj		Obj		reject	
	Engl	Ger	Engl	Ger	Engl	Ger	Engl	Ger
A) action verb	27	35	70%	100%	15%	—	15%	—
B) adj. phrase	28	35	71%	100%	18%	—	11%	—
C) <i>get</i> -constr.	28	34	68%	43%	25%	49%	7%	6%
D) <i>be allowed to</i>	27	35	30%	23%	52%	74%	19%	3%
E) passive	28	35	14%	9%	71%	86%	14%	6%
	<i>give one's word/zusagen</i>							
A) action verb	28	35	82%	97%	18%	3%	—	—
B) adj. phrase	28	35	89%	91%	7%	3%	4%	6%
C) <i>get</i> -constr.	28	35	79%	20%	18%	74%	4%	6%
D) <i>be allowed to</i>	28	35	21%	34%	68%	57%	11%	9%
E) passive	27	35	11%	9%	74%	91%	15%	—

4.2 Consultatives

Consider next the results for the consultative matrix verb *recommend* and the German near-synonyms *empfehlen* and *raten* 'advise'. As Table 4 shows, *recommend* behaves quite differently from its closest German counterpart *empfehlen*. Table 4 also reveals that an overwhelming majority of the English speaking subjects, ranging from 85% to 93%, preferred object control for *all* construction types. The German data show a 100%, or nearly 100%, preference for object control in the context of construction types A and B. Although for types D and E German speakers apparently hesitate to switch to subject control, nevertheless the figures for control switch to the subject NP are relatively high: e.g. *empfehlen* (construction type D = 26%, construction type E = 46%). Construction type C in German behaves quite differently from its English equivalent, since only slightly more than one half of the German subjects opted for object control. Another remarkable fact in the German data is the high rejection rate for the construction types C–E, ranging from 29% to 43%. The German matrix verb *raten* roughly shows the same control pattern as *empfehlen*.

Table 4: Results for CONSULTATIVES in English and German in percentages

Constr. types	<i>recommend/empfehlen</i>								
	N		Subj		Obj		reject		
	Engl	Ger	Engl	Ger	Engl	Ger	Engl	Ger	
A) action verb	28	35	4%	—	93%	94%	4%	6%	
B) adj. phrase	28	35	4%	—	86%	100%	11%	—	
C) <i>get</i> -constr.	27	35	4%	—	85%	57%	11%	43%	
D) <i>be allowed to</i>	28	35	4%	26%	89%	31%	7%	43%	
E) passive	28	35	11%	46%	86%	26%	4%	29%	
			<i>raten</i>						
A) action verb		35		—		100%		—	
B) adj. phrase		35		—		100%		—	
C) <i>get</i> -constr.		35		11%		54%		34%	
D) <i>be allowed to</i>		35		17%		40%		43%	
E) passive		35		40%		23%		37%	

4.3 Directives

Table 5 demonstrates that, for construction types A and B, in general, almost 100% of the subjects voted for object control. This holds for both languages.

With construction types C–E, however, there is a strong contrast between the two languages: The German informants overwhelmingly preferred subject control, whereas the English speakers were much more inclined to stick to the prototypical controller (object control), the only noticeable exception being the matrix verb *implore* in construction type D. Nevertheless, it is important to note that, at least for some English speakers, control switch is possible with the two directive verbs tested.

4.4 Perlocutives

For the prototypical construction types A and B the figures for both languages are almost identical, cf. Table 6.

For types C–E, there is a clear contrast between the verbs *persuade* and *überreden*, whereas the verbs *convince* and *überzeugen*

Table 5: Results for DIRECTIVES in English and German in percentages

Constr. types	<i>request/bitten</i>							
	N		Subj		Obj		reject	
	Engl	Ger	Engl	Ger	Engl	Ger	Engl	Ger
A) action verb	27	35	—	—	89%	100%	11%	—
B) adj. phrase	28	35	—	—	100%	100%	—	—
C) <i>get</i> -constr.	28	35	21%	89%	61%	9%	18%	3%
D) <i>be allowed to</i>	28	35	7%	91%	75%	6%	18%	3%
E) passive	27	35	25%	97%	59%	—	15%	3%
Constr. types	<i>implore/beschwören</i>							
	N		Subj		Obj		reject	
	Engl	Ger	Engl	Ger	Engl	Ger	Engl	Ger
A) action verb	28	35	—	3%	96%	97%	4%	—
B) adj. phrase	28	35	—	6%	96%	94%	4%	—
C) <i>get</i> -constr.	28	35	18%	37%	82%	37%	—	26%
D) <i>be allowed to</i>	26	35	50%	86%	35%	9%	15%	6%
E) passive	27	35	29%	86%	41%	6%	30%	9%

Table 6: Results for PERLOCUTIVES in English and German in percentages

Constr. types	<i>persuade/überreden</i>							
	N		Subj		Obj		reject	
	Engl	Ger	Engl	Ger	Engl	Ger	Engl	Ger
A) action verb	28	35	4%	3%	93%	97%	4%	—
B) adj. phrase	28	35	4%	—	96%	100%	—	—
C) <i>get</i> -constr.	28	35	14%	83%	82%	11%	4%	6%
D) <i>be allowed to</i>	28	35	43%	74%	43%	9%	14%	17%
E) passive	28	35	32%	69%	57%	11%	11%	20%
Constr. types	<i>convince/überzeugen</i>							
	N		Subj		Obj		reject	
	Engl	Ger	Engl	Ger	Engl	Ger	Engl	Ger
A) action verb	28	35	—	—	100%	94%	—	6%
B) adj. phrase	28	35	—	3%	96%	94%	4%	3%
C) <i>get</i> -constr.	27	35	37%	34%	54%	52%	7%	14%
D) <i>be allowed to</i>	27	35	56%	66%	29%	31%	15%	3%
E) passive	27	35	56%	66%	36%	20%	7%	14%

pattern very much alike. Most of the German informants preferred a switch to subject control with the verb *überreden* (up to 83%). The rate for non-prototypical subject control is lower, though still remarkable, for *convince* and *überzeugen*. Thus, the figures for control switch for the English PERLOCUTIVES are, in general, lower than for their German counterparts, but it should be noted that the verb *convince* is the only English object control verb which scored more than 50% for non-prototypical subject control in the two contexts D and E.

4.5 Implicatives

Table 7: Results for IMPLICATIVES in English and German in percentages

Constr. types	<i>induce/veranlassen</i>							
	N		Subj		Obj		reject	
	Engl	Ger	Engl	Ger	Engl	Ger	Engl	Ger
A) action verb	28	35	—	—	89%	100%	11%	—
B) adj. phrase	28	35	—	—	93%	97%	7%	3%
C) <i>get</i> -constr.	28	35	18%	29%	64%	51%	18%	20%
D) <i>be allowed to</i>	27	35	39%	20%	37%	60%	22%	20%
E) passive	28	35	25%	40%	46%	29%	29%	31%
	<i>force/zwingen</i>							
A) action verb	28	34	4%	—	96%	100%	—	—
B) adj. phrase	28	35	4%	—	93%	100%	4%	—
C) <i>get</i> -constr.	28	35	—	60%	96%	17%	4%	23%
D) <i>be allowed to</i>	27	35	29%	66%	41%	20%	30%	14%
E) passive	28	35	4%	43%	89%	34%	7%	23%

Table 7 reveals that, for construction types A and B, informants in both languages were heavily inclined to select the object of the matrix clause as the controller. With regard to construction types C–E, the verb *force* and its German equivalent *zwingen* show a striking contrast. While a majority of speakers (usually more than one half) opted for a control switch in the case of *zwingen*, apart from one exception (D), about 90% of the

English-speaking subjects retained object control with the matrix verb *force*. The judgments for the verb *induce* and its German counterpart *veranlassen* are, by and large, comparable. Although a switch to subject control is possible with both verbs for construction types C-E, the figures do not exceed 40% or are even considerably lower.

5. DISCUSSION

In the following discussion we will focus on two parameters, which seem to follow quite naturally from the results of the two experiments. We shall call the two parameters to which English and German are sensitive to varying degrees in the assignment of control relations

- (i) the Principle of Role Identity (cf. section 2),
- (ii) the Principle of Iconicity.

We do not claim that these two principles are the only ones that govern controller choice and control switch for the class of verbs investigated. Rather, we are aware of the possibility that there may be other, albeit minor principles, which guide control assignment and the acceptability of certain control structures.¹³

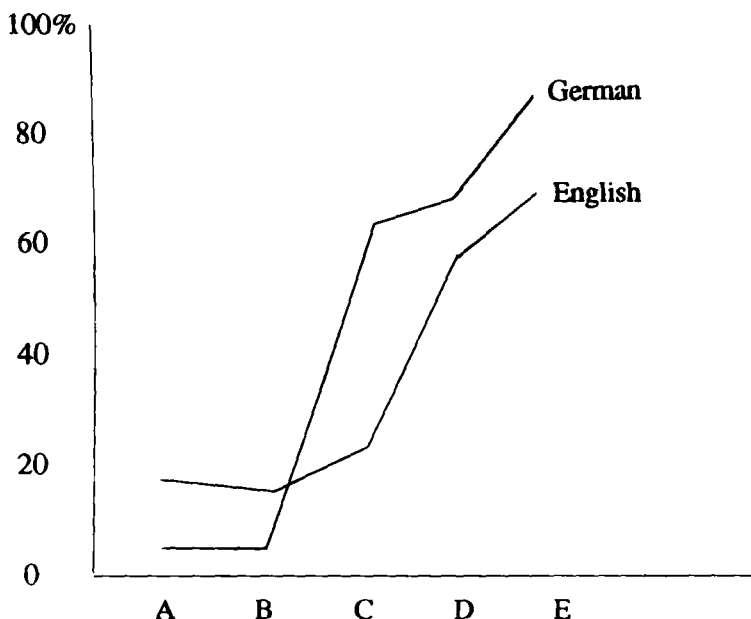
5.1 The principle of role identity

5.1.1 Agent and Beneficiary. As compared with German, the results of our experiments reveal that there is a relatively strong tendency in English to retain the prototypical control relation. The graphs in Figures 2 and 3 represent the average scores for control switch for subject control verbs (cf. Table 3) and object control verbs (cf. Tables 4-7), respectively.

The English speaking subjects are more hesitant than their German fellow students to select a non-prototypical controller in those cases where PRO has a relatively low degree of agentivity. Figures 2 and 3 reveal that, in both languages, decreasing agentivity correlates with an increasing tendency to shift the controller. However,

¹³ In Köpcke & Panther (1991), besides the requirement of role identity, we discuss 'manipulative strength' and 'semantic-pragmatic incompatibility of matrix verb and complement clause' as two additional factors that might influence controller choice and acceptability.

Figure 2: Subject control verbs in English and German
Average scores for control switch for construction type A-E



in English, this tendency is much more restricted. While Table 8 shows that for subject control verbs the results are similar,¹⁴ Table 9 clearly suggests that a tendency towards control shift with English object control verbs is almost exclusively limited to the matrix verbs *convince*, *implore*, *induce*, and *persuade* in connection with construction type D ('be allowed to').

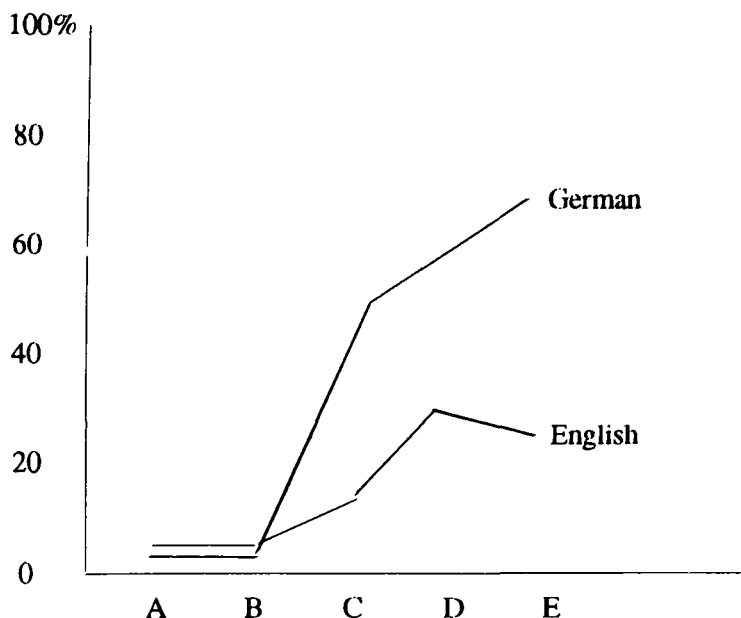
Thus, Figures 2 and 3 and Tables 8 and 9 provide evidence that the English speaking subjects prefer a pragmatically guided interpretation of *PRO* as Agent. Indeed, this is the interpretation for which the matrix verb 'sets the stage'.

As an example illustrating how the Principle of Role Identity may function in English, consider the following experimental sentence:

(32) Mary requested Barbara to be helped with her work.

¹⁴ A chi-square test reveals that a comparison of the results for *promise/give one's word* vs. *versprechen/zusagen* in the context of construction types D and E do not attain the .05 level of significance.

Figure 3: Object control verbs in English and German: Average scores for control switch for construction type A-E



About 60% of the subjects prefer the prototypical object control, cf. Table 5, although *prima facie* *PRO* has a very low degree of agentivity. However, for sentence (32) to make sense pragmatically, the implicit subject of the infinitival clause must receive a reading which attributes an *active* role to the implicit subject (= *PRO*) of the complement clause. We assume a kind of metonymical process of reasoning here, which involves an inference from the result of an action (denoted by the passive clause) to the action proper, with the matrix object *Barbara* as the (voluntary) causer of the action.

Thus, there seems to be a tendency in English to interpret *PRO* as Agent even if the complement sentence does not seem to justify such an interpretation. This interpretive strategy allows the native speaker of English to retain the prototypical controller and to satisfy the Principle of Role Identity at the same time.

The German speaking subjects obviously behave differently: In those cases where the complement clause does not match the scene set up by the matrix verb (construction types C-E) they

Table 8: Preferred choice of informants for subject or object control with subject control verbs under conditions A-E in English and German*

SUBJECT CONTROL VERBS					
English					
	A	B	C	D	E
promise	S	S	S	O	O
give one's word	S	S	S	O	O
German					
	A	B	C	D	E
versprechen	S	S	O	O	O
zusagen	S	S	O	O	O

* S = subject control

O = object control

A = infinitival complement containing an action verb

B = infinitival complement containing an adjective implying an action

C = infinitival complement with 'get', 'receive'/'bekommen',
'kriegen', 'erhalten'

D = infinitival complement with 'be allowed'/'dürfen'

E = infinitival complement in the passive voice.

tend to select a controller which is semantically more compatible with the low-degree agentive meaning of *PRO* than the prototypical controller. They try to identify a matrix NP which is distinct from the prototypical controller and which can be assigned a similar or even identical semantic-pragmatic role, cf. Table 2. We illustrate this strategy by means of the German test sentence (24), repeated here as (33):

- (33) Paul bittet Egon, bei der Arbeit unterstützt zu werden.
'Paul asks Egon to be helped with his work.'

In (33), in striking contrast to the English data, 97% of the experimental subjects opted for the subject NP as the controller. This reading seems to be motivated by an interpretive strategy which ascribes a non-agentive meaning to *PRO*, cf. hypothesis 2b (cf. section 2). In pragmatic terms, it is plausible to assume that the subjects analyzed *PRO* as the Beneficiary of the situation described in the complement clause. This entails that the matrix object, which functions as the prospective Agent responsible for the state of affairs denoted by the complement clause, is not a

Table 9: Preferred choice of the informants for subject or object control with object control verbs under conditions A-E in English and German*

OBJECT CONTROL VERBS					
English					
	A	B	C	D	E
convince	O	O	O	S	S
implore	O	O	O	S	O
induce	O	O	O	S	O
persuade	O	O	O	S=O	O
request	O	O	O	O	O
force	O	O	O	O	O
recommend	O	O	O	O	O
German					
	A	B	C	D	E
bitten	O	O	S	S	S
überreden	O	O	S	S	S
zwingen	O	O	S	S	S
beschwören	O	O	S=O	S	S
überzeugen	O	O	O	O	S
veranlassen	O	O	O	O	S
empfehlen	O	O	O	O	S
raten	O	O	O	O	S

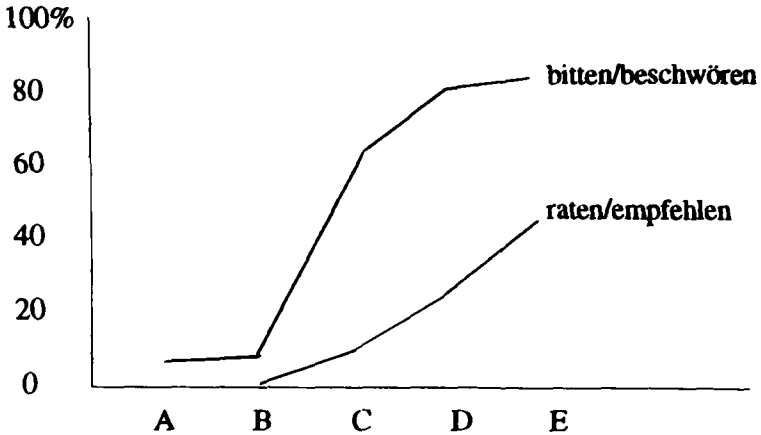
*cf. Table 8.

plausible controller of *PRO*, because its semantic-pragmatic status clashes with that of *PRO* (Agent vs. Beneficiary). Instead, it is the subject of *bitten* 'ask, request' which lends itself plausibly to an interpretation as Beneficiary.¹⁵

In what follows we shall demonstrate that the assignment of the role Beneficiary to the subject of object control verbs is an

¹⁵ We do not claim that the subject of *bitten/request* has the *intrinsic* property of being a Beneficiary. As noted above, we regard the roles which are relevant to control relations as (at least) partly inferentially derived. We assume that the native speaker makes use of different domains of knowledge in the interpretation of the respective roles that *PRO* and the potential controllers in the matrix clause may have.

Figure 4: Mean scores for control switch for the German object control verbs *bitten/beschwören* (Subject = Beneficiary) vs. *raten/empfehlen* (Object = Beneficiary).



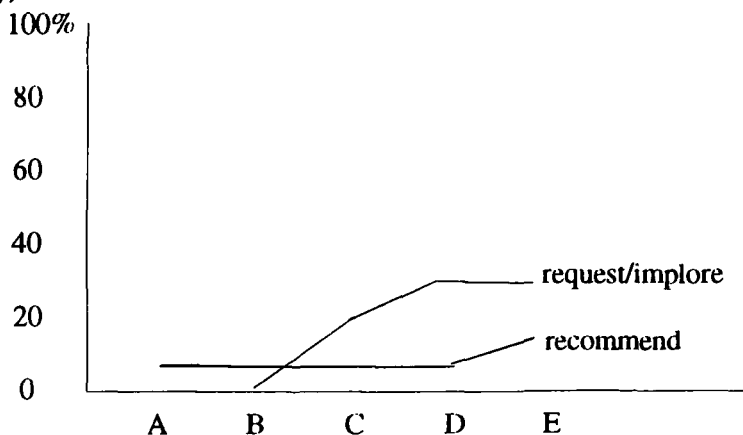
important factor, which may lead to control switch (i.e. subject control) in both languages, cf. Hypothesis 2c.

Figure 4 shows that decreasing agentivity of *PRO* results in an increasing tendency to switch the controller. However, there is a significant difference between *bitten/beschwören* on the one hand and *raten/empfehlen* on the other. The contrast between directives and consultatives, with regard to control switch in the context of construction types D ('be allowed to') and E (passive), is highly significant. A chi-square test shows that for both construction types the level at which the null hypothesis can be rejected is smaller than .005. We hypothesize that this difference is due to the Beneficiary role assigned to the subject of *bitten/beschwören*, which is absent in the matrix subject of *raten/empfehlen*. In principle, an analogous effect seems to be at work in English, cf. Figure 5, although to a far lesser degree than in German.

In English the quantitative difference between *request/implore* and *recommend* is significant at the .01 level for construction type D, but only at the .1 level for construction type E.

5.1.2 Dependent. Tables 3-7 show that in general the rejection rate for the test sentences is relatively low, except for the consultatives *raten/empfehlen* in contexts C-E. We assume that this

Figure 5: Mean scores for control switch for the English object control verbs *request/implore* (Subject = Beneficiary) vs. *recommend* (Object = Beneficiary).



result is due to a pragmatic incompatibility between the role of *PRO* and the roles of the matrix arguments. We will exemplify this hypothesis with regard to construction type D. In this context *PRO* is assigned the role Dependent, i.e. the person denoted by *PRO* is dependent on the authority or good will of some referent not mentioned in the complement clause. In the case of control verbs like *bitten/beschwören* it is fairly plausible to identify the direct object as the argument which (potentially) exercises his/her authority over the subject. Consequently, the subject of the matrix clause has the role Dependent and will thus be the most plausible antecedent of *PRO*. In contrast, the matrix verbs *raten/empfehlen* lack the role Dependent, cf. Table 2. Therefore, in the case of construction type D, it is difficult to recover an adequate coreferential antecedent for *PRO*. This seems to be reflected in the relatively high rejection rate, cf. Table 4. With respect to the rejection rate in context D, there is thus a telling contrast between *bitten/beschwören* and *raten/empfehlen*: the chi-square values for the two verb pairs reveal that this contrast is significant at the $<.005$ level. For context E the contrast between *bitten/beschwören* and *raten/empfehlen*, with respect to the rejection rate, is also highly significant ($<.005$). The corresponding chi-square calculations for the English data do not reach the .1

level of significance for construction type D, but are significant for construction type E (<.05).

As examples illustrating the above-mentioned contrast between directives and consultatives consider sentences (34) and (26), repeated here as (35):

- (34) Elisabeth beschwört Monika, in der Arbeitsgruppe mit wirken zu dürfen.
 'Elisabeth implores Monika to be allowed to join the team.'
- (35) ?Klaus empfahl Uwe, vor dem Ausschuß eine Rede halten zu dürfen.
 'Klaus recommended Uwe to be allowed to deliver a speech to the committee.'

In (34) *Elisabeth* is both Beneficiary and Dependent, *Monika* is the prospective Agent, and *PRO* is Beneficiary and Dependent. This is an optimal configuration for control switch: First, *PRO* has a low degree of agentivity, which according to hypothesis (2b), cf. section 2, is a prerequisite for control shift. Second, *PRO* has exactly the same role assignment as the matrix subject, and consequently, its most plausible antecedent is the subject NP *Elisabeth*.

In contrast, in (35) the subject NP *Klaus* is unmarked with respect to role assignment, cf. Table 2. The object NP *Uwe* is both Agent and Beneficiary and *PRO* has the same role assignment as in (34). Again, low degree of agentivity encourages control switch. However, in this case, there is a counter-force, i.e. the Beneficiary role associated with the matrix object (the prototypical controller), which is at least partially compatible with the role assignment of *PRO*. These conflicting demands are reflected in the high rejection rates for *raten/empfehlen* in context D. Furthermore, the scores in Table 4 show that for context D more subjects opted for object control than for control switch. Finally, we suspect that the role Dependent might have been a factor resulting in the high rejection rate: While *PRO*, in context D, is associated with the role Dependent, the matrix verbs *raten* and *empfehlen* suggest a more symmetrical relationship between the participants. As a result, many subjects seem to feel that the matrix clause and the subordinate clause are pragmatically incompatible, cf. Köpcke & Panther (1991).

A second argument supporting our claim that the role Dependent in the subject position of the matrix clause is an important factor motivating control switch can be derived from a comparison between the 'minimal pair' *bitten/beschwören* vs. *überreden/überzeugen*. These verbs exhibit the same role configuration, except for the role Dependent which is absent in the subject of *überreden/überzeugen*, cf. Table 2. Tables 5 and 6 show that, in German, the scores for subject control in context D are noticeably higher for the two directives than for the perlocutives. The contrast is significant at the .01 level. In other words, there is a perfect correspondence of roles (Ben, Dep) in the case of the directives investigated in context D, whereas for the two perlocutives the requirement of role identity is only partially fulfilled (*PRO* = Ben, Dep; matrix subject of perlocutives = Ben).

The corresponding English matrix verbs *implore*¹⁶ (directive) vs. *persuade/convince* (perlocutives) do not exhibit a significant contrast. Tables 5 and 6 show that for both verb types, apart from the idiosyncratic control properties of *request* (see fn. 16), control switch in context D is selected by about 50% of the experimental subjects. These results support again our claim that speakers of English tend to maintain the prototypical control relation, whereas for German speakers several factors, which have been isolated above, appear to facilitate or even force control shift.

5.1.3 A schematized model of control. The following diagrams will illustrate in a more systematic way how the Principle of Role Identity guides the interpretive strategies used by our experimental subjects. It should be stressed at this point that the flow charts represent tendencies in an idealized fashion.¹⁷ Furthermore, we

¹⁶ The control verb *request* patterns quite differently from *implore*. The reasons that led the experimental subjects to maintain the prototypical object control to a large extent, even in contexts D and E, are not entirely clear to us. We suspect that this behavior is due to the rather formal character of this verb, which might correlate with a relatively low degree of personal interest of the matrix subject (as compared to *implore* and German *bitten/beschwören*) in the propositional content of the complement clause.

¹⁷ Since the selection of a controller not only involves linguistic knowledge, but is rather, and more importantly, founded upon the language user's ability to make pragmatic inferences, there is nothing surprising about the fact that principles of controller choice can only be formulated as tendencies within the framework of the approach which has been argued for in this paper.

only consider those cases where the Agent role and the Beneficiary role are attached to *distinct* matrix arguments. This particular role configuration is optimally suited for inducing control shift.¹⁸ In the following flow charts we will concentrate on what we consider to be the basic pattern of controller assignment, neglecting the role Dependent, which seems to be of importance only in context D.

For the subject control verbs investigated we propose the interpretive schema in Figure 6. Here, as in Figures 7 and 8 below, the bold-lined rectangles represent prototypical controllers, i.e. Agents, whereas the lean-lined boxes symbolize non-prototypical controllers. Finally, the 'black' boxes indicate the different roles of *PRO*. The arrows labeled 'yes' are used to symbolize coreference between *PRO* and its respective antecedent.

Level I in Figure 6 schematizes the interpretive process underlying prototypical controller assignment for commissives. If *PRO* has a high degree of agentivity (Level I), the Principle of Role Identity requires that *PRO* be matched with the Agent introduced by the matrix verb, e.g. *promise*. This interpretive strategy is applied in both languages. Examples are sentences (1) and (17) above.

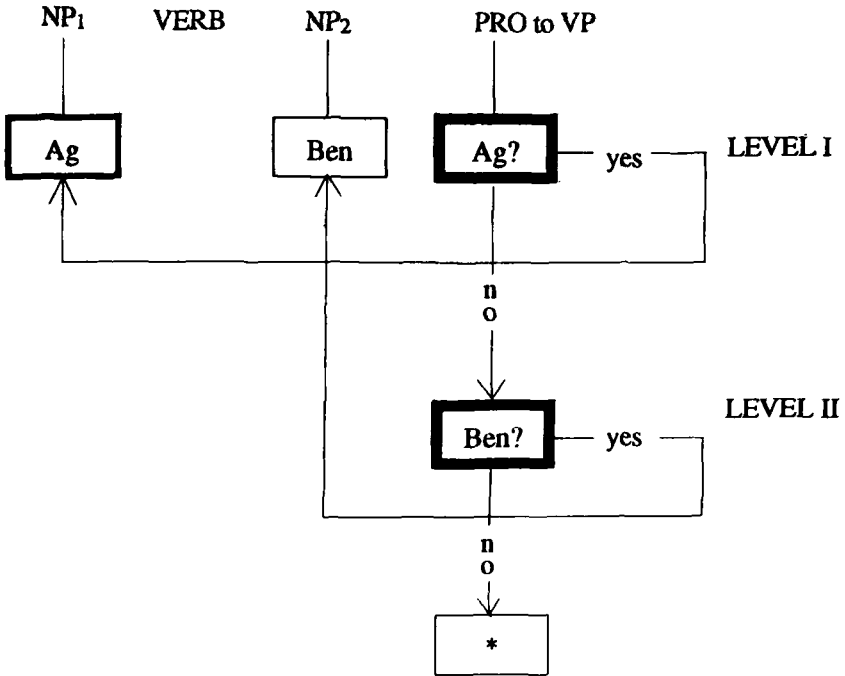
Level II applies whenever the interpretation of *PRO* as Agent fails. At this point, speakers explore the possibility of identifying *PRO* as a Beneficiary which matches the semantic-pragmatic role attributed to NP₂. If this matching process succeeds, the matrix object will be chosen as the controller. Again, this seems to work for both languages.

Finally, if the non-prototypical control assignment on Level II fails, the sentence will be rejected as being uninterpretable. This decision is marked by a starred box in the flow chart. As a possible example consider the following sentence:

- (36) Jürgen verspricht Harry, verprügelt zu werden.
'Jürgen promises Harry to be beaten up'

¹⁸ Of course we do not claim that this is the only relevant role configuration. Sentence (13) is an example that shows that the role configuration Maleficiary (matrix subject) and prospective Agent (matrix object) will also facilitate control switch, given the appropriate complement clause. The essential prerequisite is that the two relevant roles be assigned to distinct matrix arguments.

Figure 6: Interpretive strategies underlying controller choice for subject control verbs in English and German (Commissives).

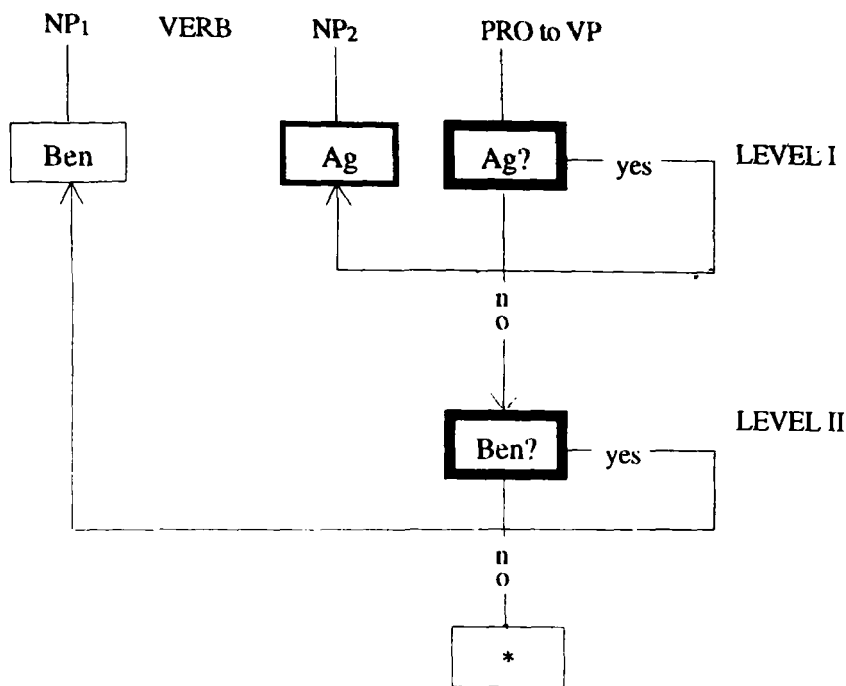


- NP₁: matrix subject
 NP₂: matrix object
 VERB: matrix verb
 to VP: infinitival complement
 Ag: semantic-pragmatic role of Agent
 Ben: semantic-pragmatic role of Beneficiary
 Re-Ag: reinterpreted Agent, derived by means of pragmatic inferences, see Figure 8
 *: uninterpretable utterance.

In this sentence *PRO* has a low degree of agentivity (Level I), therefore the listener will try to interpret *PRO* as Beneficiary (Level II). However, as the propositional content is normally not in the interest of the addressee, an interpretation of *PRO* as Beneficiary will be highly implausible.¹⁹

¹⁹ One possibility to avoid the rejection of (36) is to assume a context in which *versprechen* 'promise' is reinterpreted as 'threaten'.

Figure 7: Interpretive strategies underlying controller choice for object control verbs in German.



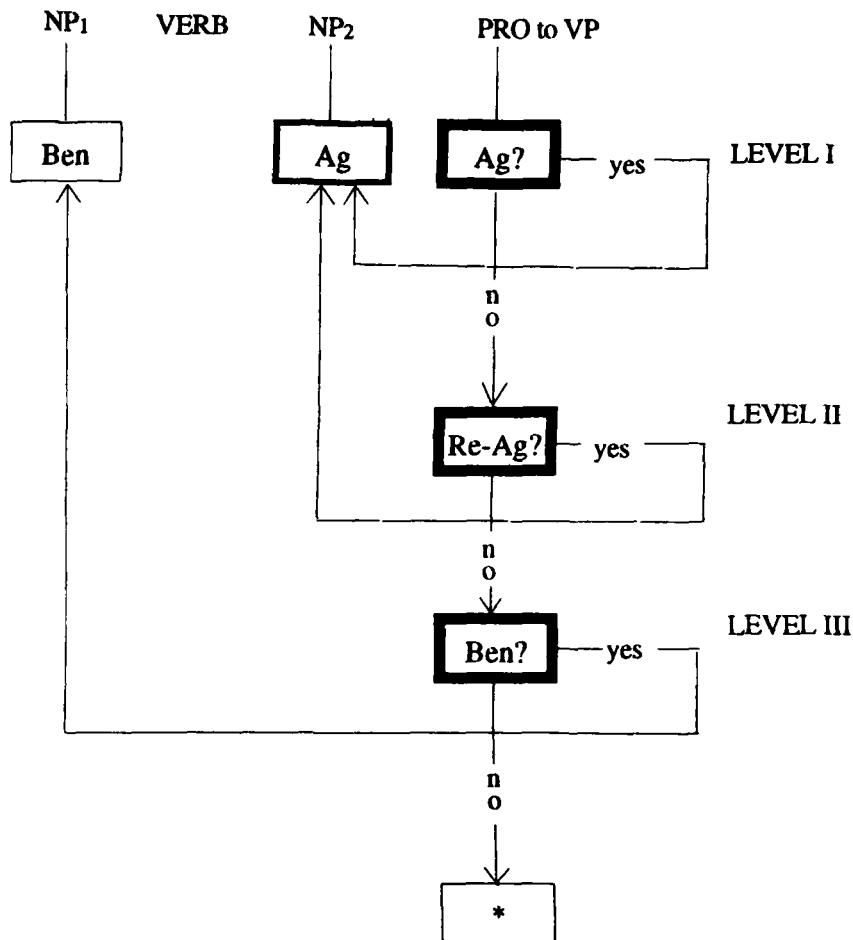
For abbreviations cf. Figure 6.

For the directives and perlocutives used in our experiments we propose the interpretive schemas given in Figures 7 (German) and 8 (English).

Level I in Figures 7 and 8 refers to the prototypical case, where the complement clause denotes an action. Consequently, the option 'yes' is chosen for *PRO* and its antecedent is the matrix object. At this point the interpretive process is terminated. For Level I German and English behave exactly alike.

Level II in Figure 7 concerns those cases which involve gradually decreasing degrees of agentivity of *PRO*, cf. sentences (22) and (27). Here, the German subjects tend to explore the 'hypothesis' that *PRO* is Beneficiary. If the 'yes'-option seems plausible, *PRO* will coreferentially be linked to NP₁ if the subject of the matrix verb can be pragmatically attributed the same role. Finally,

Figure 8: Interpretive strategies underlying controller choice for object control verbs in English.



For abbreviations cf. Figure 6.

we assume that the sentence will be rejected as making pragmatically no sense if the Principle of Role Identity is not even applicable at Level II.

In contrast, in English there seems to be an intermediate interpretive strategy at work, before a control switch is envisaged, see Figure 8. This involves a reinterpretation of *PRO*, which, although semantically non-agentive, for pragmatic reasons can be

assumed to play an active role in the situation, see Figure 8, Level II. As an example, consider the following experimental sentence:

(37) Mary requested Barbara to be helped with her work.

Almost 60% of the subjects, cf. Table 5, opted for object control, thus retaining the prototypical controller. This percentage is in striking contrast to the one for the near-synonymous German verb *bitten*. For this verb none of our German subjects decided on object control. Almost 100% shifted the controller in the case of *bitten*, whereas only 25% did so with *request*. Sentence (37), with object control, only makes sense pragmatically if the matrix object (*Barbara*) plays an active role in the situation expressed in the infinitive clause. A pragmatically meaningful, though somewhat clumsy, paraphrase of (37) would be (37a):

(37) a Mary asked Barbara_i that she_i should do something to the effect that somebody would help her_i with her_i work.

The tendency observed for *request* is valid for the large majority of the English object control verbs we have investigated, cf. Table 9.

Perhaps one of the most interesting results which provides evidence for the hypothesis that speakers of English preferably interpret *PRO* as Agent can be derived from the figures for complement type C, cf. Tables 3–7. The English recipient-oriented verbs *get/receive* (German *bekommen/kriegen/erhalten*) are read as actional predicates by an overwhelming majority of our English-speaking subjects, whereas the German subjects had a very strong tendency to switch the controller in the context of complement type C. It should be noted at this point that there are semantic-pragmatic differences among the above-mentioned verbs: We assume that English *get* has both an actional and a recipient-oriented reading, whereas *receive* semantically patterns more like German *bekommen/kriegen/erhalten*, all of which have a 'recipient' as their subject. With these verbs an actional interpretation can only be derived through pragmatic inferences. The ambiguity of *get* can be illustrated by sentences such as (38) and (39):

(38) He got (= received) a message from his friend.
(non-actional)

- (39) He went to the bookstore and got (= bought) a book on linguistics. (actional)

Thus, although a direct comparison between the English and the German complement types C is not possible, since the above-mentioned verbs are not exact synonyms, we believe that the fact that the subjects almost exclusively relied on the actional reading for complement type C in English provides strong support for our hypothesis that English favors an interpretation of *PRO* as Agent.

Level III in Figure 8 represents the case where an interpretation of *PRO* as an inferentially derived Agent is not plausible. Under these circumstances, our subjects will resort to control switch. This move will be facilitated if *PRO* can be interpreted as a Beneficiary which can be coreferentially linked to an NP₁ with the same semantic-pragmatic role. In comparison to the German data, the readiness of the English speakers to switch the controller is relatively weak: There is only one verb (*convince*) for which more than 50% of our experimental subjects applied Level III strategy, cf. Table 6, complement types D and E, i.e. they chose the subject (Beneficiary) as the controller. An example with a passive complement is given as (40):

- (40) Allan convinced Harry to be included generously in his last will.

For the German object control verbs the figures for control switch are significantly higher. For the verbs *bitten*, *beschwören*, *überreden*, and *überzeugen*, all of which suggest a Beneficiary reading for NP₁, speakers strongly tend to switch to subject control with complement types D and E. The figures range from about two thirds up to nearly 100%.

5.2 The Principle of Iconicity

A remarkable fact, however, which is in need of explanation, is the relatively high score which the English verbs *promise* and *give one's word*, in contrast to German *versprechen* and *zusagen*, obtained for object control in the context of construction types A and B (e.g. 15% and 18% in the case of *promise* vs. 0% for *versprechen*, cf. Table 3). Indeed, it has been observed by some

scholars, e.g. Comrie (1984), that some native speakers only accept object control in connection with *promise*. For example, in a sentence like

(41) Bruce promised Brian to be patient with his children.

for a noticeable minority of speakers, the addressee of the promise, *Brian*, seems to be a plausible candidate who can act as an Agent in the situation described in the complement clause. This interpretation is in conflict with the Principle of Role Identity, since *PRO* has a high degree of agentivity, whereas the matrix object *Brian* is conventionally associated with the Beneficiary role. The Principle of Role Identity predicts that NP₁ (*Bruce*) should act as the controlling element, and it is indeed chosen by an overwhelming majority of our experimental subjects. Nevertheless, *promise* and *give one's word* are the only control verbs investigated to which, for the most prototypical construction types A and B, a significant number of the subjects responded by deciding on the non-prototypical controller (NP₂).²⁰

A possible explanation for this unexpected behavior could be that those speakers who opt for object control in sentences like (41) regard this sentence as a kind of a.c.i.-construction (raising construction), with an objectless matrix clause and *Brian* as the subject of the infinitive clause. This interpretation would be supported by the well-known fact that *promise* tends to be used without a matrix object, cf. Mair (1990).

This account has the disadvantage of being highly item-specific, because it cannot be applied to the second COMMISSIVE *give one's word*, which shows parallel results, cf. Table 3. Thus, in general, English speakers seem to be more readily inclined to switch the controller with subject control verbs than with object control verbs. In other words, in this language, in

²⁰ A chi-square test reveals that the scores for the non-prototypical readings of the two COMMISSIVES in the context of construction types A and B are highly significant in comparison to the corresponding figures with regard to CONSULTATIVES, DIRECTIVES, PERLOCUTIVES, and IMPLICATIVES. The null hypothesis, i.e. that these quantitative differences are accidental, can be rejected at the .001 level of significance.

contrast to German, there is an overall tendency to prefer the object as the controller over the subject.²¹ With object control verbs, speakers of English are hesitant to switch from object control to subject control, even if the construction type of the complement (especially D and E) invites them to do so. The percentages for control switch, in most cases, remain well below the 50% mark, cf. Tables 4–7. On the other hand, for the subject control verbs *promise* and *give one's word* the percentages for object control in contexts D and E range from more than 50% up to almost 75%, cf. Table 3.

Given these facts, we propose for English a *Principle of Iconicity*, which does not seem to play any important role in German.²² In the case of object control verbs, this principle reinforces the choice of the object NP as the controller, whereas the same principle slightly reduces the tendency to select the subject as the controller with subject control verbs. Our Principle of Iconicity should not be confused with Rosenbaum's (1967, 1970) Principle of Minimal Distance, since the latter is assumed to be a purely syntactic constraint, whereas the Principle of Iconicity refers to a specific relationship between *form* and *content/function*. The Iconicity Principle in our sense says that the NP which is closest to the complement clause on the syntactic level is also most likely to be coreferential with the controlled element in the subordinate clause. Briefly then, formal closeness is reflected in referential identity.

²¹ The chi-square test shows that, in contexts A and B, there is a significant contrast between *zusagen/versprechen* and *promise/give one's word* with respect to the selection of the object as the controller ($p < .05$). It should however be mentioned that the expected cell values are smaller than 5.

²² This difference between English and German is reflected in other grammatical domains, e.g. the position of a relative clause with regard to its head NP. In German in a sentence like *Die Frau beobachtet den Mann, die/den der Junge umarmt* 'The woman observes the man, who(m) the boy embraces' the head NP can be separated from the relative pronoun, since the latter agrees inflectionally with the former, whereas in the English translation only the closest matrix NP can function as the head, i.e. *the man*.

6. CONCLUSION

Both experiments show that, to a certain extent, the subjects' responses deviated from the acceptability judgments found in the linguistic literature. This is especially true for construction types C-E. Furthermore, we discovered that language-specific interpretive strategies are exploited in the process of identification of the controller for *PRO*. Basically, German relies on the Principle of Role Identity. Generally, the matrix NP which assumes the Agent role is preferred as the controlling constituent. If, however, *PRO* has a low degree of agentivity and can be assigned the role Beneficiary, the Principle of Role Identity determines another controller, i.e. precisely that argument in the matrix clause which can be interpreted as the Beneficiary of the situation denoted by the complement clause. English satisfies the Principle of Role Identity differently by strongly adhering to a pragmatic reinterpretation of *PRO* as Agent, even in contexts which do not support this reading at all, viz. construction types D and E. This insistence on interpreting *PRO* as Agent enables the speakers to retain the prototypical controller, i.e. the subject of subject control verbs and the object of object control verbs.

In addition, in English the assignment of control relations seems to be guided by the Principle of Iconicity, i.e., contrary to German, there is a fairly strong tendency to select the closest matrix NP as the controller of *PRO*. Usually, the two principles are not in conflict with each other: With respect to object control verbs the pragmatic reinterpretation of *PRO* as Agent and the Principle of Iconicity reinforce each other. A conflict arises, as we have seen, in the case of the English subject control verbs in contexts A and B. Our experimental results seem to suggest the interpretation that semantic-pragmatic factors outweigh the Principle of Iconicity.

Finally, we would like to point out that the Principle of Role Identity is able to account for a number of recalcitrant data discussed in the literature on control phenomena. We shall restrict ourselves to two classes of cases. We will start out with sentences with a passivized matrix clause, assuming here that the grammatical judgements given in the literature on the subject are correct:

- (42) *John was promised PRO to leave.
 (43) John was promised PRO to be allowed to leave.
 (44) John was persuaded PRO to leave.
 (45) *John was persuaded PRO to be allowed to leave.

In (42) there is a clash of semantic-pragmatic roles: *PRO* is clearly agentive, whereas the only available lexical controller (*John*) has the role of Beneficiary. Therefore, the Principle of Role Identity cannot be satisfied. The acceptability of (43) is predicted by the Principle of Role Identity. The grammatical matrix subject (*John*) can be given the same semantic-pragmatic role as *PRO*, viz. Beneficiary. In (44) the prospective Agent *John* perfectly matches the high degree of agentivity of *PRO*. Consequently, (44) poses no interpretive problems. Finally, sentence (45), like (42), exemplifies a case of role conflict. The Agent *John* cannot be linked to *PRO* since the latter is most naturally interpreted as a Beneficiary.

Our framework also takes account of sentences like

- (46) The mother promised the children PRO to stay up till
 11 p.m. (Larson 1991)

This sentence, apart from the subject control reading, can also have an interpretation where the children will enjoy the pleasure of staying up till 11 p.m. *The children* can be attributed the role of Beneficiary and since the implicit subject in the infinitive clause can also be assigned this role, its most plausible antecedent is NP₂.

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