A Study of the Pattern Adjective + *To* with the Focus on *To*-Infinitive and *To* + *-ing* Complements

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Tämä pro gradu –tutkielma käsittelee englannin kielen rakennetta, jossa adjektiivia seuraa rakenne, joka alkaa sanalla *to*, kuten virkkeessä *I am <u>reluctant to</u> write this*. Tutkielmassa tarkoituksena on tutkia tätä adjektiivi + *to* -rakennetta mahdollisimman monesta eri näkökulmasta. Toisaalta tutkimuksen kohteena ovat ne adjektiivit, jotka esiintyvät tässä kyseisessä rakenteessa, ja toisaalta ne erilaiset *to*-rakenteet, jotka voivat seurata eri adjektiiveja. Erityistä huomiota tutkielmassa kiinnitetään *to*-infinitiiveihin ja *to + -ing* – lauseisiin.

Tutkimus koostuu teoriaosasta ja empiirisestä korpusosasta. Teoriaosassa käydään ensin läpi hieman tutkimuksen metodologiaa ja sitä teoriapohjaa, jolle tutkimus perustuu. Tämän jälkeen tutkittavan rakenteen kaikki osat käydään läpi lähdekirjallisuudesta löytyvän aineiston avulla. Adjektiiveja tarkastellaan sanaluokkana, sekä niiden piirteitä ja funktioita kielessä. *To*:n kaksoisluonne sekä prepositiona että infinitiivin merkkaajana, sekä sen merkitykset ja funktiot esitellään. Teoriaosan viimeisessä kappaleessa rakenne adjektiivi + *to* käsitellään kokonaisuutena. Eri *to*-elementit, jotka voivat seurata adjektiiveja (*to*-infinitiivi, *to* + substantiivilauseke, *to + -ing* -lause ja *to + wh*-lause), analysoidaan, sekä adjektiivit, jotka voivat esiintyä tässä rakenteessa, luokitellaan semanttisiin ryhmiin. Kappaleen lopussa käsitellään muutamia erityistä huomiota vaativia seikkoja, kuten *to*-infinitiivin ja *to + -ing* - lauseen suhdetta ko. rakenteessa.

Empiirisessä korpusosassa tutkitaan rakennetta adjektiivi + *to* Collins Wordbanks - korpuksesta saadun aineiston avulla. Korpuksesta valittiin kaksi alakorpusta, joista toinen on puhuttua kieltä ja toinen kirjoitettua kieltä. Puhuttu kieli on normaalia keskustelua, ja kirjoitettu on koottu sekä fiktiivisistä että tietokirjoista. Molemmat edustavat Englannin englantia. Molemmista korpuksista otettiin 10% rakenteesta adjektiivi + *to* tutkittavaksi. Ensin kaikkia teoriaosassa mainittuja elementtejä tutkitaan molemmissa korpusmateriaaleissa erikseen, jonka jälkeen korpuksista saatuja tietoja vertaillaan toisiinsa. Myös eräitä mielenkiintoisia yksittäistapauksia otetaan tarkempaan tarkasteluun.

Korpustutkimuksesta käy ilmi muun muassa, että puhutussa kielessä rakenne adjektiivi + *to* on paljon harvinaisempi kuin kirjoitetussa kielessä. Puhutussa kielessä rakenteet, joissa *to*- infinitiivi on siirretty subjektipaikalta adjektiivin perään, ovat sen sijaan yleisempiä kuin kirjoitetussa. Mielenkiintoinen yksityiskohta, joka tuli ilmi korpusmateriaalista, oli että adjektiivi *possible* esiintyi rakenteessa, jossa komplementtilauseen objekti on korotettu päälauseen subjektiksi, vaikka lähdekirjallisuudessa väitetään, että *possible* ei esiinny tässä rakenteessa.

Avainsanat: adjektiivi, komplementaatio, to, -ing –muoto

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1. Introduction

The aim of this paper is to study the pattern adjective + *to* and the following elements, especially infinitival and *to* + *-ing* complements, and shed some light on how the pattern behaves within the realms of the English language. On one hand the focus is on the matrix adjectives that can be followed by elements beginning with *to*, and on the other hand on the different types of *to*-components. In the end, an effort is made to combine these two perspectives and create a general idea of the pattern, or should I even say phenomenon, in question. The topic of the present thesis covers a wide range of different areas in the field of English grammar and they will be investigated to the extent that is necessary and the scope of this study allows.

First, the methodology section reveals a little of the background and the foundations which the present study is built on. A short look will be taken at the principles of transformational-generative grammar and then some of the central concepts that will come up over and over again in this paper. In addition, a short account on corpus linguistics will appear in order to set the stage for the corpus research part of the thesis.

Second, adjectives in general and *to* are treated separately (sections 3 and 4). The definitions and functions of those constituents will be examined. The discussion on adjectives will be about the characteristics which define adjectives as a word class, the functions of adjectives and a brief semantic note. The section on *to* will concentrate on the distinction between *to* as an infinitival marker and *to* as a preposition. Some of the etymology and meaning is also covered.

In Section 5, not only the elements that follow adjective + *to* are investigated (which would perhaps be the logical path to follow), but the whole pattern. First, the matrix adjectives that can be followed by *to* and some of their properties will be introduced. The next step is to identify the different kinds of *to*-elements and analyse their syntactic

properties. After this, matrix adjectives are divided into semantic groups and it will be investigated if there is any correspondence with these groups and the constructions which the adjectives of a certain group select. The last subsection 5.5. is devoted to matters of special interest.

Section 6 includes the empirical part of the thesis. In that section authentic language data from a large text corpus is used in order to (a) investigate the pattern and (b) examine the usage of the pattern in the selected registers. The usage of the pattern in two selected registers will be compared to each other. Also, the patterns that are in focus, *to*-infinitive and *to + -ing*, will be taken under closer examination. These patterns were chosen for closer investigation because the post-*to* element in both of them is a verb form and based on previous studies this comparison might reveal some interesting results.

Some of the concepts in this study are controversial i.e. there is no consistency in the literature concerning some of the areas of grammar covered by the topic of the present thesis. One of the issues is the identification of the constituent that follows the matrix adjective (a complement or an adjunct). An effort is made to cover all the (problem) areas as widely as possible in the scope of this study and introduce the differing views. The aim is not to judge which is the "best" or "right" approach, but to set the stage for the discussion on the pattern adjective + *to* itself and the corpus research. However, some decisions have to be, and will be made concerning the terminology and concepts. Because of the need of consistency, some terms will be chosen to be used further on in this thesis. This will be explained in more detail if needed.

According to the experience and knowledge of the present author based on previous studies, readings and research, complementation studies have mainly focused on the complementation of verbs. Much less work has been done in the field of adjective complementation, so the present study seems to be valid and defend its position.

2. Methodology

2.1. Transformational-generative grammar

The present thesis is largely based on the theories, ideas and concepts of transformational-generative grammar. Noam Chomsky is considered to be the founder of this theory of grammar in his book *Syntactic Structures* (1957). He (ibid., 13) states that "I will consider a *language* to be a set (finite or infinite) of sentences, each finite in length and constructed out of a finite set of elements." The basic idea is to find a set of rules, which can generate *all* and *only* the grammatical sentences of the language. That is the generative part of the theory. The transformational analysis postulates that there are basic sentences which are generated by phrase structure rules and more complex sentences are derived from them by transformation rules (Gaeng 1971, 94-95). This distinction has led to the idea of deep structure and surface structure.

> The deep structure of a sentence […] contains all the information necessary to determine the semantic interpretation of a given sentence, while the surface structure can be considered as the "final product," that is, the syntactic and phonological representation of a sentence to which transformation rules have been applied. (Gaeng 1971, 103)

The surface structure of two sentences may be identical:

(1) a. John is easy to please.
b. John is eager to please.

but the underlying deep structures are quite different. In (1b) it is John who pleases, but in (1a) John is the object of pleasing. The surface structures are derived from the deep structures by transformation rules (ibid., 103). Transformation rules involve deletions, insertions, additions, linking by conjoining and embedding, and changes in the word order (ibid., 99)

The core of transformational grammar is the syntax of the language i.e. the ordering of the words. This is called the syntactic component. The grammar also includes the phonological component and the semantic component, but since they need syntactic

information in order to be applicable, they are referred to as interpretive components (ibid., 101-102).

Since Chomsky's first formulation of the transformational-generative theory in the 50s, it has undergone many changes, reformulations, correctives (also from Chomsky himself) and a great deal of opposition. Nevertheless, it still today stands as one of the strongest grammar theories.

2.2. Complementation and complement / adjunct distinction

According to Quirk et al. (1985, 65), complementation is "the function of a part of a phrase or a clause which follows a word, and completes the specification of a meaning relationship which that word implies."[1] Applied to the topic of the present study, complementation contributes to, or completes the meaning of the matrix adjective.

According to Bowen (2005, 3), constituents in a sentence are comprised of the head and its *complement*. Complements with adjectives are post-head elements, phrases or clauses, which are selected by the head or are in close relationship with it. In opposition to complements, there are adjuncts that are more loosely related to the predicate than complements. Adjuncts have fixed meanings and they usually denote "manner, spatial or temporal location, duration, condition," etc. (Huddleston and Pullum 2002, 66).

Quirk et al. (1985, 66) say that complementation is not always obligatory. Sometimes obligatoriness is regarded as a marker or a sign that distinguishes complements from adjuncts, although that is not the entire case. Consider the following samples from Quirk et al. (1985, 66):

(2)   a. Mr Gould is *likely to resign*.
        b. *Mr Gould is *likely*.

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[1] Quirk et al. use the term "complement" to refer to elements that follow copular verbs. This is not the usage of the term in this study. However, their definition of "complementation" is applicable to the use of "complement" in the present thesis.

(3)   a. The boat was *ready for departure*.
          b. The boat was *ready*.

As can be seen, in the first example complementation is obligatory and in the second example it is optional. Nevertheless, both *to resign* and *for departure* are considered complements. The possibility to interpret the omitted prepositional phrase as a complement in (3), Quirk et al. (1985, 66) argue, is due to the fact that even though the complement is omitted, the sentence still implies that the boat was ready *for something*. It can be said that if the constituent is obligatory it can only be a complement. If the constituent is optional, it can be either a complement or an adjunct.

With matrix verbs it is sometimes difficult to decide whether a constituent is a complement or an adjunct, but with matrix adjectives the task seems sometimes almost impossible. The fact that most of the adjective complements are optional (Huddleston and Pullum, 2002, 542) does not make it easier. In her book on noun complementation, Bowen (2005, 15ff.) introduces several test to distinguish complements from adjuncts and says that "[a]s the patterns of complementation vary between phrases and clauses, so do the criteria [of the determination of complements] and their applicability to the various types of complements." She lists ten criteria which are applicable when determining noun complements: obligatoriness, semantic restrictiveness, semantic predicates and theta roles, co-occurrence restrictions, preposition stranding, proximity of complement to head, the pseudo-cleft construction, the cleft construction, mobility, and proform substitution. A few of them are also applicable to adjective complementation and will be referred to more closely when going through the different adjective + *to* patterns and deciding the statuses of the *to*-elements in chapter 5.

Langacker (1999, 340ff.) addresses the matter of optional complement clauses and raises a question concerning the omission of the complement clause in sentences which

involve object-to-subject raising (see 2.3.3.). He states that there is no obvious difference in the following sentences:

(4)   a. Wombats are easy.
          b. Wombats are easy to wash.

Langacker says that "[t]he former would be perfectly felicitous […] in the proper context, e.g. if uttered during an employee interview in a marsupial-washing facility." Sentence (4a), which is supposedly derived by raising, lacks the complement clause from which the overt subject would have been raised. In Langacker's active-zone analysis[2] this is not a problematic issue, because the process expressed in the infinitival complement is evident by other means. In valency theory, complements of this kind which are optional if they can be inferred from the context are called *contextually optional complements* (Herbst et al. 2004, xxxii).

Poutsma (1914, 359) divides adjectives into independent and relative adjectives. The latter require "a (prepositional) object" (= complement). According to him, some relative adjectives that used to require a complement have changed during time and can be used as independent adjectives:

(5)   a. I am not very *sensitive to pain*.
          b. I did not know that you were so *sensitive*.

This might account for the awkwardness regarding some matrix adjectives and the identifying of the constituents following them.

Traditionally, the subject is not considered to be a complement. However, in some approaches, like in the model of valency (Herbst et al. 2004, xxv), the subject has the status of a complement, and Huddleston and Pullum (2002, 216) regard the subject as a special case of complement. (more on this, see 2.4.).

Some authors like Kertz (2006, 229ff.) and Huddleston and Pullum (2002, 1256-1257) argue that certain adjectives can be followed by infinitival adjuncts:

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[2] See Langacker 1999, 330ff.

(6)   The government was *smart to bring* the trial to Houston. (Kertz 2006, 233)

(7)   I was *mad to volunteer.* (Huddleston and Pullum 2002, 1256)

Kertz's reasoning is too complex to go through here[3] and Huddleston and Pullum offer somewhat vague arguments for their adjunct analysis. The fact that none of the great grammarians can make a clear-cut distinction between complements and adjuncts indicates that the matter is a slippery fish. Visser (1966, 988ff.) even categorises all infinitives following an adjective as adjuncts. The matter with complements and adjuncts is not black and white. There are constructions that are prototypical of both complement and adjunct, and then in between there is a grey area where the non-prototypical cases dwell. Somers (1984, 520), discussing the complement-adjunct distinction in valency grammar, even suggests abandoning the traditional binary nature of complement-adjunct division and instead presents a six-step scale from the elements most strongly bound by the predicate to extraperipheral elements.

For the present thesis, the distinction is however important and some kind of decisions will be made. Further on in the thesis, when different forms of *to*-elements are encountered, some kind of categorical decisions have to be made. It is not possible to make definitive statements about the status of the elements in question, but to give different aspects and approaches to the matter and use different terms consistently and logically.

2.3. Control and raising

This section introduces the concepts of control and raising (also known as Equi and NP movement respectively). These are fundamental transformation rules for the present thesis and the discussion of matrix predicates that take *to*-infinitive complements. Most of the discussion in the literature concentrates on the control and raising properties of matrix verbs,

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[3] For the full account on the matter, see Kertz 2006.

but most of the theory is also applicable to matrix adjectives. Indeed, Rosenbaum (1967, 100) states that "[t]he behavior of predicate complement constructions in adjectival structures is, in many ways, remarkably similar to the behavior of these same constructions in the verbal structures […]." Carnie (2002, 255) illustrates the difference of control and raising with these two examples:

(8)   a. Jean is reluctant to leave. (subject control)
        b. Jean is likely to leave. (subject-to-subject raising)

The surface structure of the sentences is the same: N-V-Adj-*to*-V. The only difference is the matrix adjective. The choice and the properties of the matrix adjective have a profound effect on the meaning of the sentence and on the deep structure. In the control structure the subject is "semantically linked" to both the matrix adjective and the verb in the lower clause, whereas in the raising structure the subject is "semantically linked" only to the verb of the lower clause (Davies and Dubinsky 2004, 3). Using the sentences above as an example, we can say that in (8a) it is Jean who is reluctant and who will (or will not) leave. On the other hand, in sentence (8b) we cannot say that Jean is the one who is likely, but the whole proposition of the lower clause including the understood subject *Jean*. The difference is illustrated clearly in the underlying structures:

(9)   a. Jean is reluctant [Jean to leave].
        b. [Jean to leave] is likely.

There is a fundamental difference in deriving surface structures from deep structures with control and raising rules. In control constructions *nothing moves*, the main operation is NP deletion in the lower clause. In raising the operation involved is NP movement from the lower clause to the higher.

       The next sections take a closer look at the properties and mechanics of different types of control and raising that involve matrix adjectives, and some tests to distinguish control and raising matrix predicates.

2.3.1. Subject control

This rule, also known as Equi(-deletion), involves the deletion of the subject in the lower clause (Keyser and Postal 1976, 110):

(10)   I am anxious to win.

The deep structure of (10) would be something similar to *I am anxious* and *I win*. Nevertheless, in the surface structure (10) there is no overt subject in the lower clause *to win* due to the application of Equi. This seems to violate the theta criterion (see 2.3.4. below), because *I* can have only one theta role. Thus, in control constructions we postulate the existence of PRO, which is a "null pronoun", a caseless NP which occupies the subject position of the lower clause (Carnie 2002, 255):

(11)   [[I] $_{NP1}$ am [anxious] $_{Adj}$ [[PRO] $_{NP2}$ [to win.] $_{VP}$] $_{S2}$] $_{S1}$

This way the theta criterion is not violated. NP1 and NP2 are co-referential, denoting the same entity. It can be said that the subject controls PRO, thus the term subject control.

2.3.2. Subject-to-subject raising

In subject-to-subject raising constructions the logical subject of the lower clause is raised to the grammatical subject position in the higher clause.

(12)   Jean is likely to leave.

In (12), the subject of leaving is clearly Jean, but it has been raised to the position of the grammatical subject of the whole sentence. There is no implication that *Jean is likely* even though *Jean* functions as the subject (Biber et al. 1999, 716). What is likely is the whole proposition of the deep structure [*Jean to leave*].

(13)   [[Jean] $_{NP}$ is [likely] $_{Adj}$ [*t* to [leave] $_{VP}$] $_{S2}$] $_{S1}$

The *t* marks the trace of the raised constituent.

2.3.3. Object-to-subject raising

This rule differs from subject control and subject-to-subject raising rules in that that it does not apply to any verbs[4]. The rule is called object-to-subject raising (Postal 1971 uses the term *tough*-movement). The rule involves NP movement from the lower clause to the higher. Unlike with subject-to-subject raising, it is not the subject of the lower clause that is raised to the grammatical subject position, but the object. Object-to-subject raising applies to extraposed[5] structures (Postal 1971, 27-28):

> (14)   a. It was difficult for Tony to hit Jack. (extraposed)
>   b. Jack was difficult for Tony to hit.

Here the object of hitting, *Jack*, is raised to the subject position and the dummy *it* is deleted. In his examples Postal uses intervening *for*-prepositional phrases that function as logical subjects for the lower clause. These overt subjects for the complement clause tend to be left out, because object-to-subject raising constructions are normally used in general statements (Langacker 1999, 352).

2.3.4. Tests to distinguish control and raising

There are several fairly simple tests to distinguish control and raising matrix predicates. However, these tests operate only to distinguish subject control predicates from subject-to-subject raising predicates. About object-to-subject raising predicates Postal (1971, 27) encouragingly states that "the behavior [of the adjectives involving object-to-subject raising] seems to involve a myriad of complex and mysterious factors as yet little explored." However, since in object-to-subject raising constructions the grammatical subject originates in the object of the lower clause and there is no similar control structure applicable to

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[4] Object-to-subject raising rule applies to certain adjectives and some NPs (This house is *a breeze* to clean) (Postal 1971, 28).
[5] See 2.4.

adjectival predicates, identification is simpler than between subject control and subject-to-subject raising predicates.

According to Carnie (2002, 262), the best and the most reliable way to distinguish raising predicates from control predicates is to resolve the theta grids. The theta grid of a certain predicate determines the minimal number of arguments that particular predicate takes. Then we apply the theta criterion which is as follows: Each argument is assigned for one and only one theta (semantic) role, and each theta (semantic) role is assigned to one and only one argument. To decipher the matter, let us take example sentences, both control and raising (Carnie 2002, 259ff.):

(15)   a. John is reluctant to leave.
        b. John is likely to leave.

Here we have two predicates in both sentences: *is reluctant* and *leave* in (15a), and *is likely* and *leave* in (15b). Next we have to figure out the arguments they take. First, *is reluctant* takes two arguments: the one who is reluctant (theta role of experiencer) and the object of reluctance (theta role of proposition). Second, *is likely* takes only one argument, the occurrence which is likely (the role of proposition). Third, *leave* needs only one argument: the one who leaves (theta role of agent) (ibid.,). Thus we have theta grids for all three predicates:

[experiencer] *is reluctant* [proposition]
is likely [proposition]
[agent] *leave*

Let us first consider (15a). For *is reluctant* we have the experiencer *John* and the proposition *to leave*. Now all the arguments are assigned for theta roles, but the theta role of agent for *to leave* is still unassigned and there seems to be no more arguments left. Here we need an understood subject for the non-finite lower clause; an argument called PRO (ibid., 260) (see also 2.3.1. above). The theta role of agent is the assigned to PRO and the theta criterion is fulfilled:

(16)   [John]^{experiencer} is reluctant [[PRO] ^{agent} to leave] ^{proposition}

Compare this with the theta roles of the other sentence (15b):

(17)   [____] is likely [[John] ^{agent} to leave] ^{proposition}

The matrix predicate here does not assign an external theta role (ibid., 258), but in the surface structure, the subject is raised from the lower clause to the grammatical subject position in the higher clause. Based on this difference, we can say that if the matrix predicate assigns itself an external theta role (subject) it cannot be a raising predicate.

Langacker (1999, 320) introduces the idiom test. The argument is that in the given frame, only raising matrix predicates form grammatical sentences.

(18)   a. Tabs are *likely* to be kept on all the radicals.
          b. *Tabs are *reluctant* to be kept on all the radicals.

Here *tabs* is limited to the idiom *keep tabs on* and according to Langacker (1999, 319) *tabs* must have its origins in the lower clause because the rest of the idiom lies there. The reason for the ungrammaticality of sentence (18b) is that *tabs* cannot be the subject of a control predicate like *be reluctant*, because *tabs* can only occur as the object of *keep* in the idiom *keep tabs on*. Thus, we can derive a frame for distinguishing control and raising:

[Tabs] (<u>predicate)</u> [to be kept on…]

If the predicate entered results in a grammatical sentence, it is a raising predicate and if not, it is a control predicate.

Carnie (2002, 262) uses a slightly different kind of idiom test, although it is based on the same principle as the test above. This test makes use of idioms, which can have either an idiomatic or a literal meaning. He uses the idiom *the cat is out of the bag* to illustrate the point that with raising constructions the idiom has the idiomatic meaning, but with control constructions only the literal interpretation is possible. Examples from Carnie (2002, 263):

(19)   a. The cat is *likely* to be out of the bag.
          b. The cat is *eager* to be out of the bag.

Sentence (19a) conveys the idiomatic meaning i.e. "there is a good possibility that the secret will be revealed", whereas sentence (19b) can only be read in the literal way (there is a feline mammal in a bag with an appetite for freedom).

The idiom tests both have the same basic idea. As Carnie (2002, 262) states, "[t]he subject of an idiom must at some point be local to the rest of the idiom". Only if this condition is fulfilled, the sentence can be grammatical in the first idiom test and have the idiomatic reading in the second idiom test. This is only possible with raising, because in control constructions *nothing moves*. In raising constructions the subject is raised from the lower sentence where the rest of the idiom lies.

In addition, Langacker (1999, 319-320) states that "syntactic dummies" *it* and *there* can only form grammatical sentences with raising predicates, not control predicates:

(20)   a. It is *likely* to rain this afternoon
        b. *It is *eager* to rain this afternoon.

(21)   a. There are *likely* to be wombats orbiting Jupiter.
        b. *There are *eager* to be wombats orbiting Jupiter.

2.4. Extraposition

Extraposition is an operation in which a heavy constituent in subject position[6] is replaced by dummy *it* and the original subject is postponed. The original subject position may be occupied by different kinds of finite or non-finite clauses[7], for example an infinitival clause (Huddleston and Pullum 2002, 1403):

(22)   a. *To resist* would be pointless. (basic version)
        b. *It* would be pointless *to resist*. (extraposed version)

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[6] Cases of extraposition from object position exist, but are rare. In addition, the extraposed version does not have a basic counterpart (Huddleston and Pullum 2002, 1408):
    *I find *that he got away with it for so long* quite incredible.
    I find *it* quite incredible *that he got away with it for so long*.
[7] Also gerund-participials to some extent and a limited range of NPs (Huddleston and Pullum 2002, 1407)

After the application of extraposition, the clause which in the basic version functioned as the subject appears at the end of the sentence, which Huddleston and Pullum (ibid.) call extraposed subject position. Even though the syntactic relations in the sentence have altered, the semantic relation of the extraposed subject to the matrix predicate remains the same as before extraposition. The dummy *it* now occupies the syntactic subject position, but semantically it is empty (ibid.). It might then be argued that the *to*-clause is a subject and in the traditional view cannot be classified as a complement.

2.5. Corpus linguistics

In linguistics, as in any other field of science, the aim is to create theories about the subject that is studied. For a theory to be valid, evidence is needed to support it. In order to make statements (or theories) about the linguistic field of study, the data we need is language. According to Leech (1968, 88) there are three sources of data: corpora, native speaker reactions, and introspection of the analyst (if s/he is a native speaker of the language). For the present study the last is not possible and the second option would also be difficult to implement. Consequently, the first option, corpus, is utilised in this study. Tognini-Bonelli (2001, 55) defines a corpus as "a computerised collection of authentic texts, amenable to automatic or semi-automatic processing or analysis."

When using a corpus as a source of data, it must be remembered that any corpus consists of only a certain number of possible sentences (Leech 1968, 94). Thus, the data from a corpus is useful in confirming propositions about language but hardly usable in excluding permanently any assumptions or hypotheses. In other words, what is represented in a given corpus is only, to use Chomskyan terms, the linguistic *performance* of a native speaker, not the *competence* (Mair 2006, 12).

One strength corpora have compared to other sources of data is that they make it easy to compare different registers to each other. The comparison of different regional varieties, different text types, and written and spoken language is easy using corpora dedicated to these different registers.

In this study, Collins Wordbanks Online English corpus is utilised. It contains over 57 million words, and an extensive variety of different texts: spoken and written, fiction and non-fiction, magazines, newspapers and British, American and Australian English. More discussion and the corpus research is found in section 6.

3. Adjectives in general

According to Biber et al. (1999, 504), the class of adjectives is one of the four main lexical word classes[8], and despite the fact that adjectives are much less common than nouns and verbs in language, they are still very common. The distribution of adjectives in different registers is quite clear. Adjectives frequently modify nouns and due to this, adjectives are most frequent in academic prose and news texts, which contain relatively more nouns than other registers (ibid., 504-505).

3.1. Defining characteristics

The characteristics that define central adjectives are morphological, syntactic and semantic. (a) Morphological in the way that they can be inflected in order to compare them (*big, bigger, biggest*); (b) syntactic in the way that they can be used in both attributive and predicative roles (*the <u>large</u> garden* and *the garden is <u>large</u>*); and (c) semantic in the way that they are descriptive by nature (ibid. 505-506). They can describe e.g. colour, size, quantity, time, etc. (ibid. 508-509). In addition, some adjectives are gradable but cannot be inflected, so the comparative and superlative variants are formed with *more* and *most* respectively (*beautiful, more beautiful, most beautiful*). Leech and Svartvik (2002, 231) also add that "most adjectives can be modified by degree adverbs like *very*, *quite*, *rather*, etc."

All in all, if the question is of the form "what kind…", the answer is usually an adjective and denotes some quality or feature of the entity in question. Nevertheless, only the so-called central adjectives possess all of these aforementioned characteristics, and peripheral adjectives lack some of these characteristics. The more of these characteristics a certain word lacks, the more difficult it is to decide whether it can be classified as an adjective or not.

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[8] Verbs, nouns, adjectives and adverbs.

Some adjectives are derived from verbs. These are called participial adjectives and have the same suffixes as participles, namely *–ing* and *–ed* (and the other variants of past participles, like *grown*) (Quirk et al. 1985, 413). These can occur in both attributive and predicative position. Due to the similarity in appearance, it is sometimes hard to tell a participial adjective in a predicative role from a participle. However, there are tests to distinguish adjectives of this kind from verbs. For example, inserting the intensifier *very* shows the adjective from the verb (ibid. 414):

(1)　　Verb:　　　　She is *calculating* our salaries.
(2)　　Adjective:　　She is (*very*) *calculating* (but her husband is frank).

This is only one test to differentiate participles from participial adjectives and it is not infallible. However, the purpose of the present thesis is not to argue which words can be classified as adjectives, so in that matter, only fairly clear-cut cases are considered relevant.

3.2. Meaning and functions

Biber et al. (1999, 508) divide adjectives into two major semantic groups: descriptors and classifiers. Descriptors (as the name implies) are adjectives that have descriptive qualities. They denote perception of light i.e. colour and brightness, size, quantity, time, emotive and evaluative stances, and other descriptive characteristics. Descriptors are usually gradable. Classifiers on the other hand are usually non-gradable. They define the referent in relation to other referents, and place it in a category among and in relation to other referents. Classifiers are divided into three subcategories: Relational/classificational/restrictive, affiliative and topical/other.

Adjectives	
Descriptors	**Classifiers**
Colour: *black, white, dark, light, red*	**Relational/classificational/restrictive**: *average, final, similar, various, top*
Size/quantity/extent: *big, heavy, deep, huge*	
Time: *annual, late, new, old, recent*	**Affiliative**: *Chinese, English, Christian, Muslim*
Evaluative/emotive: *bad, good, lovely, nice*	
Miscellaneous: *cold, empty, free, private*	**Topical/other**: *chemical, phonetic, legal*

Table 1: Semantic classification of adjectives (adapted from Biber et al. 1999, 508-509)

Adjectives function as heads of adjective phrases. Adjective phrases may contain complements in a post-head position or modifiers which occur either before the head or after it (Huddleston and Pullum 2002, 542). Of the defining characteristics of adjectives, one is more relevant than the others in this study: the adjectives that occur in the predicative role. According to Biber et al. (1999, 506), predicative adjectives are much less frequent than attributive ones. Regarding different text types, as mentioned above, adjectives are most frequent in academic prose and news, but most of the adjectives in those registers are attributive. Predicative adjectives appear most frequently in written fiction and conversation. Predicative adjectives may occur in two different syntactic roles, as subject predicatives or object predicatives[9] (ibid., 515):

> (3)   a. *She* seems quite *nice* really. (subject predicative)
>   b. I had *it right* the first time, didn't I? (object predicative)

In (3a) the adjective characterises the subject, and in (3b) the adjective refers to the object of the sentence. Predicative adjectives also typically occur with following elements that are related to the adjective. These are phrasal and clausal complements, realised for example by prepositional phrases and *to*-infinitive clauses (ibid.):

> (4)   a. Powerful earphones are also available *to him*. (phrasal)
>   b. In horses, its prevalence is difficult *to establish*. (clausal)

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[9] Quirk et al. (1985, 417) use the terms "subject complement" and "object complement". This usage of the term "complement" is not adopted in this study, as already mentioned in 2.2., footnote 1.

Adjectives which take a complement (a sentential *to*-complement to be precise) are the focus in this thesis and will be discussed in further detail in sections 5.2. and 5.3., alongside with other *to*-elements following adjectives.

4. *To*

To is one of the most frequent words in the English language. In the Collins Wordbanks corpus, the search string "to" gives a result of 1,375,856 matches (23,962.3 instances per million words i.e. 2,4 %). In fact, according to the ranked frequency list[10], *to* is the fourth most frequent word right after *the*, *of* and *and*.

4.1. The meaning of *to*

The *Oxford English Dictionary* lists the following main meaning groups of *to*:

A. *prep.* (in ordinary use, before a n.)
    I. Expressing a spatial or local relation.
    II. Expressing a relation in time.
    III. Expressing the relation of purpose, destination, result, effect, resulting condition or status.
    IV. Followed by a word or phrase expressing a limit in extent, amount, or degree.
    V. Indicating addition, attachment, accompaniment, appurtenance, possession.
    VI. Expressing relation to a standard or to a stated term or point.
    VII. Expressing relations in which the sense of direction tends to blend with that of the dative.
    VIII. Supplying the place of the dative in various other languages and in the earlier stages of English itself.
B. to before an infinitive (or gerund: see 22).
    I. With infinitive in adverbial relation.
    II. With infinitive in adjectival relation.
    III. With infinitive in substantival relation.
    IV. With infinitive equivalent to a finite verb or clause.
    V. Peculiar constructions.
C. to *conj. Obs.*
D. to (tu:) *adv.*

In addition, there are tens of more specified meanings within the meaning groups cited above.

The *OED* acknowledges (under sense A) that in Old English *to* was a preposition and slowly began taking over the position of the inflected dative case.

> […] the simple dative remaining only in pronouns and substantives as the indirect or remoter object, known by its position before the direct object (as in 'give me the book', 'tell John the news'). Both with pronouns and ns., the prepositional construction may, and in some cases must, be used (e.g. 'give the book to me', 'tell it to John').

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[10] http://www.titania.bham.ac.uk/frequency%20lists/corpusrank.txt

Under sense B in the *OED* it is stated that Old English had a dative form which by the time of Middle English became levelled with the simple infinitive. This dative form was preceded by the preposition *tó* 'to'.

> Originally, *to* before the dative infinitive had the same meaning and use as before ordinary substantives, i.e. it expressed motion, direction, inclination, purpose, etc., toward the act or condition expressed by the infinitive; as in 'he came *to help* (i.e. to the help of) his friends', 'he went *to stay* there', 'he prepared *to depart* (i.e. for departure)', 'it tends *to melt*', 'he proceeded *to speak*', 'looking *to receive* something'. But in process of time this obvious sense of the prep. became weakened and generalized, so that *tó* became at last the ordinary link expressing any prepositional relation in which an infinitive stands to a preceding verb, adjective, or substantive. Sometimes the relation was so vague as scarcely to differ from that between a transitive verb and its object.

Furthermore, in the *OED* it is claimed that when preceding infinitives, *to* is sometimes merely a sign of the infinitive without any meaning, "[b]ut after an intrans. vb., or the passive voice, *to* is still the preposition. In addition, the *OED* states that "[t]he infinitive with *to* may be dependent on an adj., a n., or a vb., or it may stand independently. To an adj. it stands in adverbial relation: *ready to fight* = ready for fighting."

Visser (1966, 952) says that *to* has undergone the transition from a preposition denoting direction, motion, purpose, etc. to a semantically empty particle marking the infinitive. Langacker (1999, 321), on the other hand, states that while in the generative theory it is widely accepted that *to* in control and raising constructions is a meaningless marker of the infinitive, according to the principles of cognitive grammar *to* is a meaningful constituent that contributes to the meaning of the constructions in which it occurs.

4.2. The functions of *to*

Basically, the word *to* has two different main functions in the language: first, it is a preposition functioning as the head of a prepositional phrase and denoting primarily direction or transformation from one state to another; and second, it is an infinitival marker, preceding

the infinitive form of verbs. There are conflicting views in the literature, whether these two "*tos*" should be regarded as completely different words, or is it all the same preposition.

Kjellmer (1980, 79-80) supports the notion of two *tos*. He acknowledges that the distinction is not always clear, because the infinitive marker has evolved from the prepositional use. Predicates that take both the gerund and the infinitive as complements might be a proof of this, and also the proof that the evolution is still on-going.

Smith and Escobedo (2001, 552-556) claim that the infinitival marker *to* has semantic content that is in some respect related to the meaning of the preposition. Their arguments that the infinitival marker somehow denotes the same conceptual sense as the preposition seem plausible. However, they distinguish the infinitival marker from the prepositional *to*.

Dirven (1989, 126) says that it may depend on the predicate whether *to* can be classified as a preposition or a particle. He uses the following examples:

(1)   a. He is used *to getting up* early (= general state)
         b. He used *to get up* early (= a series of single occurrences)

Dirven classifies *to* in the first sentence after an adjective as a preposition, and in the second sentence after a verb as a particle. Unfortunately, Dirven does not consider the pattern adjective + *to*-infinitive nor the role of the following verb form in his discussion Nevertheless, he is of the opinion that the two kinds of *to* exist.

Duffley (2000, 233), on the other hand, states that "[t]he *to*-infinitive […] is a prepositional phrase acting as an adverbal goal or result specifier with respect to the main verb." He claims that *to* is a preposition that defines the relation between the matrix predicate in the higher clause and the infinitive in the lower clause, and parallels this view with the phrase *He grabbed at her purse*, where the preposition *at* defines the relation between the matrix verb and the NP in the lower clause.

In his discussion Rosenbaum (1967, 100-101) claims that a sentence like *I am scared to find out the truth* is an instance of prepositional noun phrase complementation. He calls

this "oblique noun phrase complementation". Oblique, because this does not mean that the *to*

would be a preposition even though at first sight the statement seems to indicate that. His

argument, however, is that the pseudo-cleft formulation of the sentence is grammatical: *What*

I am scared of is to find out the truth[11], and here the preposition *of* is present.

Curme (1931, 456) states the following about the status of *to*:

> [...] the *to* of the prepositional infinitive is still in a number of grammatical
> categories more or less vividly felt as the preposition *to* or upon reflection can
> be recognised as such. This *to*, however, is now often not felt as a preposition
> but rather as a part of the infinitive itself, and hence the prepositional infinitive
> is now no longer confined to a prepositional relation, but may be used also as
> the subject or the object of the verb, where *to* cannot be construed as a
> preposition governing the infinitive: '*To err* is human.' 'Learn *to labor and to*
> *wait*.'

Even though Curme acknowledges the drift towards an infinitival marker *to*, he still claims

that in contexts where *to* indicates movement towards something, it is a preposition, despite

that it is followed by the infinitive form of the verb (ibid., 493):

(2)   a. Hunger drove him *to steal*.
        b. I am accustomed *to do* it this way.

Huddleston and Pullum (2002, 1184) say that *to* derives historically from the

homophonous preposition and this can be seen in the way *to* acts with infinitives contrasted

with some prepositions:

(3)   a. I persuaded her *to buy* it.
        b. I dissuaded her *from buying* it.

(4)   a. I warned her *to stay* indoors.
        b. I warned her *against staying* indoors.

Nevertheless, the infinitival *to* "cannot coordinate with any preposition" and "its complement

cannot coordinate with the complement of prepositional *to*" (ibid., 1184-1185). There simply

are not enough arguments to justify the view that the infinitival *to* would be a preposition in

present-day English.

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[11] Further, Rosenbaum (1967, 106-107) states that the pseudo-clefting is not unproblematic. He uses the
example sentence *John was wise to leave early* with which the pseudo-cleft construction is not possible **What*
John was wise in was to leave early.

5. Adjective + to and following elements

Adjectives can select three kinds of complements: *that*-clauses, *to*-infinitive clauses and prepositional phrases (Leech and Svartvik 2002, 272). *That*-clauses are not of high relevance here, since the present study is about *to*-elements following adjectives[12]. As established in section 4, *to* has two functions: it is an infinitival marker and a preposition. There are four kinds of *to*-elements that adjectives can select: *to* + infinitive, *to* + *-ing, to* + *wh*-clause and *to* + NP. *To* in the first pattern is an infinitival marker, and a preposition in the three latter. The first three are sentential complements and the last non-sentential. The following table illustrates the possible patterns:

Matrix adjective	*To* (preposition)	+ NP	-	Non-sentential
		+ *wh*-clause	Finite or non-finite	Sentential
		+ *-ing* clause	Non-finite	
	To (infinitival marker)	Infinitival clause		

Table 2: Possible *to*-elements following adjectives.

It is argued by Ross ((1973) / 2004, 351ff.) that complements cannot directly be divided into sentential and non-sentential. There is in fact a hierarchy system that begins from *that*-clauses which are the "most sentential" and ends in nouns which are the "most non-sentential". Applying Ross's system to the table of *to*-elements above, infinitival clauses are the most prototypical sentential complements, then the post-*to wh*-clauses, *-ing* clauses and lastly NPs,

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[12] Anyway, *that*-clauses will be referred to, since they are sometimes interchangeable with *to*-clauses.

which are prototypes of non-sentential elements. In the pattern adjective + *to* the three latter, of course, appear in prepositional phrases with *to* as the head.

The next subsection contains general discussion on the matrix adjectives that select these patterns (5.1.) and each pattern is then treated separately to achieve a general view of the pattern adjective + *to* (5.2. and 5.3.). Then, section 5.4. is devoted to semantic classification of matrix adjectives complemented by *to*-infinitives. Lastly, section 5.5. includes discussion of additional matters of interest.

5.1. Matrix adjectives

As already established in section 3, the adjectives that select *to*-complements are found in the predicative role. In order for an adjective to occur in a predicative role, the adjective itself has to function as the complement of a verb. Huddleston and Pullum (2002, 530) list verbs that usually take adjectival complements: *be, become, make*[13], *seem, appear, feel, look* and *sound.* Biber et al. (1999, 437) state that "[a]part from copula *be*, the verbs *become, get, look* and *feel* are the four most common copular verbs taking an adjectival complement." To make the relations explicit, consider the following (my own examples):

(1) a. You are [free [to leave.]$_{S2}$]$_{AdjP}$
     b. I am [accustomed [to [coffee.]$_{NP}$ $_{PrepP}$]$_{AdjP}$

In (1a), the adjective phrase is a complement of the copula *be*, and the non-finite clause is the complement of *free*. In (1b), the adjective phrase is likewise the complement of the copula *be*, and the prepositional phrase complements the adjective *accustomed*. Within the prepositional phrase, the NP *coffee* is the complement of the preposition *to*.

With some adjectives complementation is obligatory and with some it is optional. According to Huddleston and Pullum (2002, 542), with most of the adjectives that take complements, the complements are optional.

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[13] In the sense 'cause to be'.

> (2)   a. Kim was very keen (to take part).
>   b. He's happy (to leave it to you).

In the sentences above, if the complement is omitted, the interpretation of the sentence depends on the context (ibid.).

There are some adjectives that require an obligatory complement when they occur in the predicative position. In these cases, if the complement is left out, the sentence will become either ungrammatical or the meaning of the sentence will change (ibid.):

> (3)   a. We were loath to accept their help.
>   b. *We were loath. (ungrammatical)

> (4)   a. They were fraught with danger.
>   b. They were fraught. (change in meaning)

Huddleston and Pullum (ibid., 545) list 48 adjectives that take *to*-prepositional complements. Out of these, only with eight complementation is obligatory: *accustomed, attributable, averse, inclined, liable, prone, subject* and *tantamount.* They also list some adjectives that take *to*-infinitival complements: ten that involve subject-to-subject raising constructions and 55 that involve subject control constructions, stating that the latter are much more numerous (ibid., 1258). According to Biber et al. (1999, 718) there is only one matrix adjective that is "notably common" selecting *to*-clauses: (*Un*)*likely* "occurs more than 50 times per million words in the LSWE Corpus." Other relatively frequent matrix adjectives are *(un)able, determined, difficult, due, easy, free, glad, hard, ready, used* and *(un)willing*.

Quirk et al. (1985, 143) classify some of the constructions which occupy adjectives with *to* as semi-auxiliaries. Constructions like these are for example *be able to, be apt to, be likely to* and *be willing to*. These verb-idioms express modal or aspectual meaning (ibid.). Huddleston and Pullum (2002, 173) list lexical modals which express the same kind of meaning as modal auxiliaries: *possible, necessary, likely, probable, bound, supposed*.

5.2. Constructions with prepositional *to*

Constructions where *to* is defined as a preposition are called prepositional phrases. Prepositional phrases are composed of a preposition that functions as the head of the prepositional phrase, and a complement. Possible complements for a preposition are noun phrases, *wh*-clauses and *–ing* clauses (Quirk et al. 1985, 657). The prepositional phrase forms an adjective phrase with the adjective preceding it (see example (1b) above). Quirk et al. (ibid.) say that when the prepositional phrase functions as a complement for an adjective, the preposition is more closely related to the adjective than to the following complement. They (ibid., 1221) also add that "[t]he lexical bond is strongest with adjectives for which, in a given sense, the complementation is obligatory:"

> (5)   a. Max is averse to games.
>   b. *Max is averse.

5.2.1. *To* + NP

A noun phrase in its simplest form consists solely of a common noun, proper noun, pronoun or nominalised adjective as the head, and the head can be accompanied by determiners, modifiers and complements (Biber et al. 1999, 97). In the construction *to* + NP, the NP functions as a part of a prepositional phrase. Biber et al. (ibid., 105) say that one of the syntactic roles of prepositional phrases is a complement of an adjective:

> (6)   The plant is equally *susceptible to drought* during this period.

Postal (1971, 39ff.) introduces a movement rule that contributes to the formation of some sentences where matrix adjective is followed by a prepositional phrase *to* + NP. Postal calls this *psych*-movement. It applies to verbs and adjectives that have psychological features (hence the name). According to Postal this class contains several hundred members. Adjectives in this class are participial adjectives ending in *–ing* (occasionally *–some* or *–ive*) (ibid., 41):

(7)   a. I am bored with Harry.
        b. Harry is *boring to me*.

(8)   a. I am excited about that.
        b. That is *exciting to me*.

(9)   a. I was horrified at what he did.
        b. What he did was *horrifying to me*.

The rule moves an NP from the grammatical subject position and places it after the matrix predicate with a preposition. The grammatical subject position is taken over by the original complement NP / clause (without the preposition). Postal (1971, 42) also points out that sentence pairs like those above are not synonymous nor do they have the same deep structure. There is however a close meaning relation. The logical subject is the same in both sentences of each pair: the initial NP in the first sentence and the post-*to* NP in the second.

Psych-movement is a controversial formulation. However, if we postulate its existence, it is still debatable whether the prepositional phrase beginning with *to* is a complement or an adjunct. According to Bowen (2005, 26), adjuncts are more mobile than complements, so they can be fronted more easily. If we compare the examples (6) and (7b) above,

(10)   a. The plant is equally *susceptible to drought* during this period.
        b. **To drought* the plant is equally *susceptible* during this period.

(11)   a. Harry is *boring to me*.
        b. *To me* Harry is *boring*.

it seems that it is more sensible to classify the *to*-elements derived by *psych*-movement as adjuncts than complements. Also, the *to*-phrase in *psych*-movement constructions has a strong feel of a fixed meaning of *goal* or *target* which supports the adjunct categorisation.

5.2.2. *To* + *wh*-clause

Wh-clause is a finite or non-finite clause[14] that begins with a *wh*-word. These words begin

with the letters *wh* (except *how*). Biber et al. (1999, 103) say that prepositions also take *wh*-

clauses as complements (a corpus example):

(12)   But that is *contrary to what Ferrari have told me* […] (today)

Wh-clauses that function as complements of the preposition *to* are nominal *wh*-clauses (apart

from adverbial *wh*-clauses) (ibid., 194). These clauses are not of high importance in this

study, and are included here only for the sake of completeness of the introduction of the

pattern adjective + *to*.

5.2.3. *To* + *-ing*

The *-ing* form, or the gerund, is derived from a verb and functions "as or like" a noun

(Huddleston and Pullum 2002, 81). Even though gerundial nouns and participle forms of

verbs look alike, it is easy to distinguish them by several syntactic properties like

complementation, modification, determiners they take and plural inflection (ibid., 81-82). An

example with differences in complementation and the determiner *the*:

(13)   a. He was expelled for *killing the birds*. (verb)
        b. He was expelled for *the killing of the birds*. (gerundial noun)

A transitive verb (*killing*) can take an NP object (*the birds*) while a noun (*the killing*) needs a

prepositional phrase (*of the birds*). Also the determiner *the* can only be used with nouns, not

verbs.

Bearing the distinction in mind, let us turn our attention to an example provided by

Huddleston and Pullum under a section on adjectives that take prepositional phrases (2002,

545):

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[14] Non-finite *wh*-clauses following the pattern adjective + *to* seem to be rare. In the Collins Wordbanks corpus consisting of over 57 million words, only one instance could be found: *Vets must be alert to <u>what to look for</u> and how to handle it.* (oznews)

(14)　　Accustomed to *getting* his own way.

We can infer that the *-ing* form in the example is a verb, since it takes a direct object and there is no determiner.

Sweet (1900, 116) identifies the gerund as a noun-verbal. He illustrates its noun-like qualities with the sentence *I had not the pleasure of knowing him*, where the gerund can be attached to a noun by means of a preposition. The distinction between gerunds and nouns can be seen comparing *seeing* and the equivalent noun *sight* (ibid.):

(15)　　a. seeing a thing
　　　　　b. the sight of a thing

The difference in grammatical construction is obvious. Nevertheless, the gerund, of course, possesses verbal qualities. "Seeing is believing" is almost identical to "to see is to believe" (ibid.). So, gerunds possess both verbal and nominal characteristics.

Quirk et al. (1985, 657) call this type of prepositional complement "a nominal *–ing* clause". Even though we established that at least according to its syntactic behaviour it is a verb, the *–ing* clause has quite a strong nominal character. Indeed, Huddleston and Pullum (2002, 1188) state that " [t]he distribution of gerund-participial complements is much closer to that of an NP than is that of any of the other non-finite form types, or indeed of finite subordinate declaratives."

(16)　　a. It's a matter of *breaking the seal*.
　　　　　b. *It's a matter of *to break the seal*.

As can be seen, gerund-participial complements (*-ing* complements) can occur as prepositional complements. They can also follow the verb in constructions where there is subject-auxiliary inversion (ibid.):

(17)　　a. Is *breaking* the seal wise?
　　　　　b. *Is *to break* the seal wise?

Biber et al. (1999, 77) say that the *-ing* form, or *-ing* clauses, are preceded by the prepositional *to* and the adjectives that select *to + -ing* complements can also sometimes have *to*-infinitive complements.

5.3. Constructions with *to*-infinitive

Regarding complementation by *to*-infinitive clauses, Biber et al (1999, 716-717) have come up with four different grammatical patterns. Pattern 1 involves subject control, Pattern 2 is subject-to-subject raising and Pattern 3 is object-to-subject raising. Pattern 4 consists of superficially similar cases as Patterns 2 and 3, except that with the cases in Pattern 4 complementation is optional:

(18)   Pattern 1:   Millar was obstinately *determined to change* the content
                          of education.
(19)   Pattern 2:   The government is *unlikely to meet* the full cost.
(20)   Pattern 3:   He would be very *difficult to reach*.
(21)   Pattern 4:   a. You're *lucky* (*to be* alive). (resembles Pattern 2)
                          b. That would be very *bad* (*to do*). (resembles Pattern 3)

As can be seen, this approach is based on the syntactic requirements of each matrix adjective.

Quirk et al. (1985, 1226) have distinguished seven different patterns with the *to*-infinitive clause. They say that the first four are identified by the fact that the subject of the higher clause is also the understood subject of the lower clause, and in the three latter types the subject of the infinitive is unspecified. Quirk et al's (ibid., 1230) seventh and last category consists of constructions with extraposition. In these sentences the *to*-infinitive clause, which is the subject, is postponed and introductory *it* is inserted in the subject position of the higher clause:

(22)   *It* is *essential to spray the trees every year*.

The extraposition is not obligatory:

(23)   *To spray the trees every year* is *essential.*

However, it is more common to use extraposition than to begin the sentence with the *to*-infinitive clause (Biber et al. 1999, 722).

Francis et al. (1998, 404ff.) have the same basic approach to the pattern adjective + *to*-infinitive as Quirk et al. and Biber et al. above. They distinguish only two basic types: sentences where the higher clause subject is not understood as the lower clause subject (Type 1) and sentences where the subject of the higher clause is also the understood subject of the lower clause (Type 2). These two basic types are then divided further into 17 meaning groups of which five belong to Type 1 and twelve to Type 2 (see section 5.4.). Closer inspection reveals that Type 1 resembles object-to-subject raising constructions, and Type 2 subject control and subject-to-subject raising constructions. Furthermore, out of the twelve Type 2 categories, eleven represent subject control and only one seems to contain subject-to-subject raising adjectives.

Here is a rough formulation of the patterns and their division in the aforementioned reference works:

	Biber et al. 1999	**Francis et al. 1998**	**Quirk et al. 1985**
Higher subject also identified as the understood subject of the lower clause	Pattern 1: Subject control	Type 2, meaning groups 6-17	Constructions i-iv
	Pattern 2: Subject-to-subject raising		
Higher subject different from the understood subject of the lower clause	Pattern 3: Object-to-subject raising	Type 1, meaning groups 1-5	Constructions v-vi
Additional	Pattern 4: Optional *to*-elements	-	Construction vii (extraposition)

Table 3: Treatment of the pattern adjective + *to* in Biber et al., Francis et al. and Quirk et al.

The next three subsections follow roughly Biber et al's division in the spirit of control and raising and the fourth subsection is dedicated to extraposed *to*-infinitives.

5.3.1. Subject control

In the example (18), Biber et al's Pattern 1 (*Millar was obstinately determined to change the content of education*), the subject of the higher clause, Millar, is also the subject of the lower clause i.e. it is Millar who is determined, and it is also Millar who is going to change the content of education. Here is the structure of sentence (18):

(24)   [[Millar]$_{NP1}$ was [obstinately [determined]$_{Adj}$ $_{AdjP}$ [[PRO]$_{NP2}$ to [change the content of education.]$_{VP}$]$_{S2}$]$_{S1}$

The PRO represents the understood subject of the lower clause. In a subject control structure, NP1 is co-referential with NP2.

With subject control, the matrix adjectives usually need an animate subject, or something with volition. For example, *a rock* cannot be *hesitant*, *determined* or *unwilling* in normal circumstances in the real world.

5.3.2. Subject-to-subject raising

Biber et al's Pattern 2 involves subject-to-subject raising. As the name implies, here the subject of the lower clause is raised to the higher clause subject position. Despite this syntactic transformation (using sentence (19) above as an example) it cannot be said that the government is unlikely. It is the whole proposition of the lower clause (including the raised subject) that is unlikely. Here is the illustration of the structure (*t* marks the trace of the raised subject):

(25)   [[The government]$_{NP}$ is [unlikely]$_{Adj}$ [*t* to [meet the full cost.]$_{VP}$]$_{S2}$]$_{S1}$

This can be paraphrased as

(26)   It is unlikely for the government to meet the full cost.

The extraposed construction with the intervening subject shows how the subject logically belongs with the lower clause of the original sentence. However, in an extraposed

construction with a subject-to-subject raising predicate, the subject must be overtly

expressed, or otherwise the sentence is ungrammatical.

5.3.3. Object-to-subject raising

The grammatical construction in Biber et al's Pattern 3 is called object-to-subject raising and

according to Postal (1971, 27-28) this rule applies to extraposed constructions. The logical

object of the lower clause is raised to the subject position of the higher clause. In the example

sentence (20), *He would be difficult to reach*, *he* is the object of reaching. The trace of the

raised object is marked with *t*:

(27)   [[He]$_{NP}$ would be [very [difficult]$_{Adj}$]$_{AdjP}$ [to [reach *t*.]$_{VP}$]$_{S2}$]$_{S1}$

Biber et al. (1999, 717) state that "[t]he logical subject of the *to*-clause […] usually has

generic reference". That means, using the example sentence above, that to reach him would

be difficult *for anyone*. Thus, the example sentence could be paraphrased as

(28)   a. He would be very difficult (for anyone) to reach.
          b. (For anyone) to reach him would be very difficult.

The raising from object position of the lower clause does not involve only direct objects but

also prepositional objects (ibid.):

(29)   You're easy to *cook for.*

However, Postal (1971, 28) rises a question which NPs in the complement clause actually can

object-to-subject raising apply to. He gives examples[15]:

(30)   a. Mary is easy to visit.
          b. ?Mary is difficult to take a picture of.
          c. ?Mary is difficult to get disgusted with.

It might be that the NP is less available to raising if the distance which the NP has to "travel"

is long. If the lower clause is longer than a word or two, like in the examples, and also the

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[15] Postal's original examples include overt subjects for the embedded clauses (*Mary is easy for Bill to visit).*
Even though overt subjects would contribute to the length of the sentence, they can be omitted, because they are
omitted from all three examples.

matrix adjective is long, the human brain perhaps cannot process the fact that the object

already appeared at the beginning of the sentence and therefore these "long raisings" may not

be entirely acceptable.

It seems that object-to-subject raising has quite a significant contribution to the

meaning of the sentence. Compare the following (my own examples):

(31)   a. *To smell the flowers* was nice.
        b. *It* was nice *to smell the flowers*.   (extraposed)
        c. *The flowers* were nice *to smell*. (object-to-subject raising)

It is quite clear that there is an obvious change in meaning if the two first examples are

compared to the last, to which object-to-subject raising has applied. In the first two it is the

whole proposition of *smelling the flowers* that is nice, whereas in the raised construction it

seems to be only *the flowers* that are nice. Object-to-subject raising seems to shift the focus

from the action to the object of that particular action.

5.3.4. *To*-infinitives and extraposition

Huddleston and Pullum (2002, 1252) list adjectives that license infinitival subjects: *easy,*

essential, foolish, good, hard, impossible, necessary, possible, ridiculous and *usual*. In

extraposition the infinitival subject is postponed after the predicate and introductory *it* takes

the place of the grammatical subject. The adjectives that involve extraposition usually denote

the attitude of the speaker towards something; its importance, necessity, etc. (Biber et al.

1999, 1020):

(32)   It is *important* to distinguish between the processes of growth and
        development.

Sometimes *to*-infinitival complements are interchangeable with finite *that*-clauses. However, in certain cases there are semantic differences between these two extraposed constructions[16].

As already stated in section 2.4., it is not reasonable to classify extraposed *to*-infinitives as complements. Thus, further on in the present thesis, constructions with extraposed *to*-infinitive clause are considered separate from other *to*-infinitive constructions. That is, the discussion about *to*-infinitives does not include extraposed cases unless otherwise specified.

5.4. Semantic classifications of adjectives complemented by *to*-infinitive clauses

Francis et al. (1998, 404ff.) offer a model of how to group adjectives that select infinitival complements (pattern "ADJ to-inf" in their terms). They have distinguished 17 different groups according to the meaning. As already stated in section 5.3., there is also a division according to syntactic behaviour: in the first five groups, the subject in the main clause is not the understood subject of the lower clause. In the rest 12 groups, the two subjects are thought to be the same. The following table illustrates the groups and their properties and gives examples of each group:

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[16] Huddleston and Pullum (2002, 1253) provide an example:
    (i)   It was possible for him to walk to school.
    (ii)   It was possible that he walked to school.
In the first example the focus is on his *ability*, and in the second it is on the truth of the proposition: *maybe he walked to school*.

Title of the meaning group	Definition	Example(s)
1. The 'pretty' group	Appearance, feel or taste of something (the verb in *to*-complement usually a verb of sensation).	Horses are *pretty* to look at. Healthy food can be *delicious* to eat.
2. The 'terrible' and 'wonderful' group	Something is good or bad.	The printing is *easy* to read.
3. The 'cheap' and 'expensive' group	Advantage or disadvantage of something.	Children's homes are *expensive* to run and *difficult* to staff.
4. The 'boring' and 'interesting' group	Reaction or stance towards something.	This book is *interesting* to read.
5. The 'adequate' group	Suitability for something.	The place is *fit* to live in.
6. The 'astonished' group	The bafflement caused by the event in the *to*-infinitive clause.	They were *puzzled* to find the kitchen door locked.
7. The 'sorry' group	The negative emotion or reaction caused by the event in the *to*-infinitive clause.	I'm *sorry* to hear he has died. She was very *angry* to find him still with the circus.
8. The 'delighted' group	The positive emotion or reaction caused by the event in the *to*-infinitive clause.	You've got to be very *thankful* to win once.
9. The 'unwilling' group	Reluctance towards doing the act of *to*-clause.	A spokesman was *reluctant* to reveal the actual figures.
10. The 'willing' group	Desire towards doing the act of *to*-clause.	He is most *anxious* to avoid appearing weak.
11. The 'quick' and 'slow' group	Indication of the duration of the act in the *to*-clause.	People are *slow* to learn.
12. The 'certain' group	Something will certainly or probably happen, or often happens; someone should do something; something is intended to do something	The Labour Party looks increasingly *certain* to win the next election.
13. The 'sure' group	Imperative, to tell someone to do something.	Be *sure* to check the list of ingredients carefully.

14. The 'able' group	Ability or suitability to do something.	Both men were *unavailable* to comment.
15. The 'right' group	Evaluation of the subject and its action.	I wasn't *stupid* to go there.
16. The 'lucky' and 'unlucky' group	Some event cast upon the subject is good or bad.	He was *lucky* to escape with his life.
17. Adjectives with other meanings	Two adjectives are mentioned here: *alive* and *welcome*.	All of them are still *alive* to tell the tale. Members of the public will be *welcome* to attend the meetings.

Table 4: Meaning groups of adjectives that license infinitival complements (adapted from Francis et al. 1998, 404ff)

Some adjectives that have multiple meanings can of course appear in more than one group.

Francis et al. (ibid.) make some comments regarding some of the groups. In group 7 *sorry* (and also *sad*), and in group 8 *delighted, happy, pleased* and *proud* are often used in contexts where they introduce what someone wants to say (ibid., 407):

(33)   a. I'm *sorry to have to tell* you that Janet West is dead.
       b. I'm *pleased to say* that we're running on schedule.

Francis et al. (ibid., 408) have placed *glad, interested* and *pleased* in the 'willing' group, but they say that these adjectives have this meaning only with *will be* or *would be*, or when making a general statement (ibid.):

(34)   a. I'd be *interested to see* what other women thought about it.
       b. "Always *glad to help* the police," he said.

In addition, Francis et al. (ibid., 410) state that the type of usage as indicated in group 15, 'right', is productive and any adjective can be used this way as long as it indicates some attitude towards a person or what s/he is doing.

Some groups, like 2 and 3, which are fairly close to each other could be joined together. Groups 6, 7 and 8 could also be grouped together in the sense that they all can be used in the same environments, but the stance towards the event in the lower clause is just different; bafflement in 6, negative in 7 and positive in 8. In addition, many adjectives in

these groups are participial, e.g. *surprised, puzzled, disappointed, disturbed, amused, pleased.* Groups 9 and 10 'unwilling' and 'willing' indicate the opposite attitudes towards the act in the lower clause and could also be placed under the same heading.

Kiparsky and Kiparsky (1970, 143ff.) divide predicates into factive and non-factive. The division is based on both syntactic and semantic differences, and these are in correlation. In sentences with factive predicates, "the speaker presupposes that the embedded clause expresses a true proposition, and makes some assertion about that proposition", for example *It is odd that the door is closed* the presupposition is that the door is closed and the speaker makes a further assertion that it is odd. (ibid., 147-148). According to Kiparsky and Kiparsky (ibid., 160), these factive predicates behave syntactically like control predicates. On the contrary, non-factive predicates involve subject-to-subject constructions. Nevertheless, this division has faced opposition. Wierzbicka (1988, 56) points out that Kiparsky and Kiparsky could not explain the fact that some predicates they call non-factive (*probable, possible*) cannot undergo subject-to-subject raising[17].

5.5. Further matters and observations

5.5.1. *To*-infinitive vs. *to + -ing*

Curme (1931, 491) points out that the infinitive and the gerund often compete with each other in certain categories. One of them is the post-*to* position. As stated earlier in section 4.2., in Curme's (ibid., 493) view *to* is a preposition when it denotes movement. In the light of this, a gerund would be the assumed form used in these cases. However, the infinitive is often used:

(35)   I am accustomed *to do* it this way. (*to doing* it this way.)

Curme (ibid., 494) says that the infinitive denotes that the activity of the matrix predicate is "a result pure and simple" whereas the gerund denotes something on-going; a process or

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[17] For the whole Wierzbicka's account on the matter, see Wierzbicka 1988, section 3.3

something more regular activity. According to Dirven (1989, 125) gerund is rather more noun-like than verb-like and it denotes not a single event that has ceased, but a "unbounded and non-individualised phenomenon" and "more general activity", and the gerund can be compared to mass nouns in that respect that the gerund denotes the unspecified duration of an event. Dirven refers to his example "As a child, I loved watching the trains go by." Wood (1956, 11) also says that the infinitive denotes something individual and the gerund something in general.

Kjellmer (1980, 80-81) presents his findings from the Brown Corpus regarding the difference between *to*-infinitive and *to + -ing*. Amongst the findings are predicates that take only the infinitive *willing to agree*, *unprepared to accept* and *able to achieve*; predicates that take only the gerund *equivalent to throwing*, *essential to evaluating* and *vital to winning*; and predicates that take both the infinitive and the gerund *accustomed to supply*; *accustomed to studying* and p*rone to break, prone to trapping*. He states that in the data, there were more than a 100 instances of infinitives versus each gerund (preceded by noun, verb or adjective).

Kjellmer (ibid.,) divides the varying infinitive-gerund group into two: apparent and genuine variation (i.e. obvious and subtle (if at all) semantic distinction). There is an obvious semantic distinction when the two variants cannot be used interchangeably when speaking of a one particular situation. (The genuine variation group variants can be used of the same situation, although Kjellmer notes that they are not perfectly synonymous.) So, Kjellmer has four groups: infinitive only, gerund only, apparent variation and genuine variation. The following table makes Kjellmer's division clearer:

Predicates that take		examples
only *to*-infinitive		*willing to agree*
only *to* + gerund		*equivalent to throwing*
both	apparent variation	[no examples]
	genuine variation	*accustomed to supply*; *accustomed to studying*

Table 5: Kjellmer's division.

Apparent variation is omitted from the discussion because it is, yes, apparent. Regarding the other three groups, Kjellmer (ibid., 91) states in his conclusion that when there is variation, the tendency is to use the gerund. He says that the situation is the same as with any preposition + gerund (decide on adopting; accustomed to swimming) and infinitive marker + infinitive (decide to adopt, accustomed to swim). The situation with *to* is special only because the infinitive marker resembles the preposition.

Kjellmer (ibid., 92) says that predicates which tend to take more NP complements, usually more readily select also the gerund and not the infinitive. Rudanko's (2000, 89ff.) analysis of diachronic corpus material regarding adjective complements supports this notion at some extent. He (ibid., 106-107) says that if the adjective, in addition to *to*-infinitival complements, selected *to* + NP complements in the eighteenth century, it was prone to license also *to* + *-ing* complements in the future. This and Kjellmer's results show that there is a some sort of interconnection between the sentential *to* + *-ing* pattern and the non-sentential *to* + NP pattern.

5.5.2. Extraposition and object-to-subject raising: the connection

As already introduced, some matrix adjectives appear in constructions with extraposition. In extraposed constructions the original subject is postponed and replaced by the dummy *it* (my own examples):

(36) a. $_S$[To count the pigs] is difficult.
          à extraposition
      b. $_{dummy}$[It] is difficult $_S$[to count the pigs].

Despite the syntactic change, it is still the act of counting the pigs that is difficult. One's intuition might say that the *to*-clause is a complement of the matrix adjective. Anyway, in the traditional view, subjects cannot be classified as complements. So, in the extraposed

construction the *to*-infinitive clause does not complement the matrix adjective, because it is still classified as a subject, even though an extraposed one.

Furthermore, Postal (1971, 27-28) claims that *tough*-movement, or object-to-subject raising, applies to extraposed constructions. Let us take the example above and apply the rule:

(37)   a. It is difficult ₛ[to count the pigs].
                à Object-to-subject raising
         b. ₛ[The pigs] are difficult to count.

What happens here is that from the lower clause, which functions as the subject in the extraposed construction, the object is raised to the higher clause and it replaces the dummy subject *it*. Now the former object of the lower clause functions as the subject and the lower clause can be counted as a complement.

If the extraposed subject clause does not have an object (e.g. *It is difficult to run*), it is clear that object-to-subject raising cannot apply because there is nothing to raise. However, even if there is an object, object-to-subject raising is not necessarily applicable:

(38)   a. To spray the trees is essential.
         b. It is essential to spray the trees.
         c. *The trees are essential to spray.

This behaviour apparently depends on the properties of the matrix adjective and some adjective constructions that can undergo extraposition cannot undergo object-to-subject raising.

5.5.3. Subject control, subject-to-subject raising and the "grey area"

When discussing subject control and subject-to-subject raising, most of the discussion in literature concentrates on verbs. The division is also applicable to adjectives, at least to some extent. It seems that with verbs the division is simpler and more clear-cut than with adjectives. There are quite a many adjectives in the so-called "grey area". In this section the

present author will bring up some problematic areas within the domain of adjective

complementation and the control / raising distinction.

As is well known, there are so-called prototypical cases which possess all the

characteristics of the group they belong to. These are usually used in scholarly texts,

grammars and so on, to illustrate the matters as clearly as possible. With subject control,

matrix adjectives like *determined* and *reluctant* come up over and over again in the literature.

With subject-to-subject raising the usual example adjective is *likely*. When we want to

identify which group a certain adjective belongs to, we compare the properties of that

particular adjective with the properties of these aforementioned prototypical adjectives.

On the basis of this, there seems to be a large group of adjectives that are somewhere

between control and raising. *Cruel* is one of those adjectives and Postal (1974, 367) addresses

the matter using this adjective as an example:

(39) a. It was *cruel <u>for Bob</u>* to hit the bird.
    b. It was *cruel <u>of Bob</u>* to hit the bird.

For sentences like (39a), a raising analysis of the predicate would be appropriate, because

replacing *cruel* with a prototypical raising predicate results in an acceptable sentence

(40) It was *likely <u>for Bob</u>* to hit the bird.[18]

whereas a control predicate would not do:

(41) *It was *determined <u>for Bob</u>* to hit the bird.

However, with (39b) a control predicate would be just fine:

(42) It was *determined <u>of Bob</u>* to hit the bird.

This then would allow a control analysis for *cruel*. According to Postal (ibid.) the difference

between (39a) and (39b) is that in (39a) the cruelty is assigned to "some unspecified

individual(s), not excluding Bob" but in (39b) the cruelty is assigned only to Bob. As already

discussed in section 2.3.4., subject-to-subject raising predicates do not assign an external

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[18] For an authentic example, see section 6, example (1).

theta role (Carnie 2002, 258), whereas subject control predicates do. That is the argument for why (42) is fine, but (41) is not. *determined* (and other control predicates) needs an understood, specified subject, and that criterion is not fulfilled by *for*, but with *of* the cruelty is assigned to Bob.

Nevertheless, the idiom test sheds more light on the matter of adjectives like *cruel*. If the predicate allows the idiomatic reading, it is a raising predicate and if not, it is a control predicate:

(43)   The cat is *cruel* to be out of the bag. (literal meaning)

So it seems that *cruel* and other adjectives like it (*nice, mean, silly*, etc.) which are in the "grey area" have, at least according to the idiom test, a strong bias towards control analysis. Also the syntactic dummy test supports this:

(X)   *It is *cruel* to rain this afternoon.

If extraposed constructions are not considered, sentences like

(44)   Bob was *cruel* to hit the bird. (Postal 1974, 368)

are difficult to interpret. Even Postal (ibid.) himself says he has no solution to offer. Hopefully the corpus material gives some answers concerning this problem.

6. Corpus research

The empirical section of the present thesis is constructed as follows: First, the corpus and the data gathering process are introduced. Second the phenomenon adjective + *to* in the data is studied at a very general level, the focus being mainly on quantitative analysis. Third, some particular cases of interest which have risen during this study will undergo more detailed scrutiny, and also the possible connections between infinitival and *to* + *-ing* complements will be investigated separately.

For this empirical part of the research, corpus material was used. The data is from the Collins Wordbanks Online English corpus, a part of the Bank of English corpus jointly owned by HarperCollins Publishers and the University of Birmingham, which consists of over 57 million words. The data is divided into subcorpora according to different types of texts as follows:

Subcorpus	Abbreviation	Size (words)
Australian newspapers	oznews	5,337,528
BBC World Service radio broadcasts	bbc	2,609,869
US National Public Radio broadcasts	npr	3,129,222
UK Times newspaper	times	5,763,761
UK Today newspaper	today	5,248,302
UK books; fiction and non-fiction	ukbooks	5,354,262
UK ephemera (leaflets, adverts, etc.)	ukephem	3,124,354
UK magazines	ukmags	4,901,990
UK transcribed informal speech	ukspok	9,272,579
UK Sun newspaper	sunnow	5,824,476
US books; fiction and non-fiction	usbooks	5,626,436

US ephemera (leaflets, adverts, etc.)	usephem	1,224,710
Total		**57,417,489**

Table 6: Collins Wordbanks corpus structure.

The whole 57-million-word corpus was searched using the search string "JJ+to" (JJ being the tag for 'adjective' including possible comparative and superlative forms). This search string is the simplest one and it only covers the cases where the pattern occurs in "basic" sentences. This leaves out many sentences involving the pattern adjective + *to*. Examples of these are sentences where there is, for example, an intervening prepositional phrase

(1)   He said that from October tighter controls will make it less *likely for alleged rapists to* be freed on bail before their cases are heard. (today)

fronting,

(2)   *To me* it is *inconceivable* […] (today)

or negation:

(3)   a. It would have been *easy never to* have left the hotel. (today)
        b. Gascoigne was *lucky not to* be booked for a stupid foul on Kilbane […] (sunnow)

The output of the search string "JJ+to" is illustrated in table 7 which is organised according to the frequency of the pattern:

Subcorpus	Total number of instances	Frequency per million words
ukbooks	14,269	2,665.0 / million
ukephem	7,965	2,549.3 / million
usbooks	13,159	2,338.8 / million
times	13,002	2,255.8 / million
bbc	5,791	2,218.9 / million
usephem	2,682	2,189.9 / million
ukmags	10,582	2,158.7 / million
npr	6,255	1,998.9 / million
today	10,452	1,991.5 / million
oznews	10,605	1,986.9 / million
sunnow	11,532	1,979.9 / million
ukspok	12,476	1,345.5 / million
Whole corpus	**118,770**	**2,068.5 / million**

Table 7: The pattern adjective + *to* in Collins Wordbanks corpus.

The pattern adjective + *to* occurs most frequently in UK fiction and non-fiction books (ukbooks), from where the frequency quite steadily decreases towards the bottom of the table. The only notable decline is between the penultimate and the ultimate subcorpora. The frequency of the pattern decreases by approximately 600 tokens per million between the Sun newspaper data and informal UK speech data. A this point it is good to remember that the raw numbers from the corpus also include cases that are not relevant for the present thesis (see discussion in section 6.1.). Nevertheless, these numbers give some perspective and prospects for the empirical research. The overall number of tokens in the whole corpus is 118,770 and it would be impossible in the scope of this thesis to study all of them. So, based on the frequencies above and some preliminary searches, the first and the last subcorpora in the list, ukbooks and ukspok, will be chosen for closer study. There are three points that

support this decision: (a) using both spoken and written material gives a good general idea of the pattern, (b) this allows us to compare spoken and written data and possibly explain why there is so huge difference in the frequencies of the pattern, and (c) both subcorpora represent British English, so the comparison between spoken and written language will not be interfered by possible differences in regional varieties of English[19]. In addition, it is a linguistic fact that the changes in language usually arise from spoken language. One disadvantage in this selection of corpora is that the word counts do not match. The size of ukbooks is only 58 % of the size of ukspok. This difference will be taken into account when the frequencies of certain items between the two corpora are compared.

The pattern adjective + *to* occurs 14,269 times in ukbooks and 12,476 times in ukspok. The number of tokens is bigger in ukbooks, even though it is just over a half of the size of ukspok (5.4 and 9.3 million words respectively). Nevertheless, the number of tokens in both corpora are still too large for the present study. In order to conduct the study, the number of tokens will be reduced to 10 % of the original. That means that the raw sample consists of 1,427 tokens from ukbooks and 1,248 tokens from ukspok.

6.1. Excluded tokens

As mentioned above, the search string "JJ+to" is not infallible, and the results the string gives cannot be used as such. The corpus is tagged by a computer programme and there is an error rate around 5 %[20]. That means that some words which are tagged as adjectives may not in fact be adjectives at all:

(4)   a. The idea of one *key to* the whole was not new. (ukbooks)

          b. For while Mr Chamberlain had *travelled to* Bad Godesberg, to Munich, Europe had, indeed, appeared close to war. (ukbooks)

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[19] The differences in the pattern between, for example, British and American English would indeed be worth investigating, but is for now left for another research.

[20] According to The Bank of English user guide at http://www.titania.bham.ac.uk/docs/svenguide.html

In some examples the adjective and *to* did not belong to the same clause, sentence or construction:

> (5)   […] the use of heroin would be due not to cannabis but to the condition of the prohibition of cannabis, which forces cannabis smokers to go into the black market, where heroin may also be *available, to* buy their cannabis. (ukbooks)

There were also cases where the preposition *to*, usually together with *from*, formed a construction denoting transformation, temporal change or such:

> (6)   Semi-prostrate Plumosa Compacta" and Youngstown" change colour after first frosts *from soft blue-grey to* distinctive bronze-purple, effective next to a golden-foliaged heather, conifer or shrub. (ukbooks)

> (7)   In the transition *from intermediate to* modern society […] (ukbooks)

The instances which include some kind of a degree expression (primarily *too*) preceding the matrix adjective are excluded from the research, because it may be argued that the following *to*-construction is licensed by that degree expression, not the adjective (Huddleston and Pullum 2002, 1256).

> (8)   a. […] but Douglas is *too smart to* buy the cow when the milk is free. (ukbooks)
>
> b. This came *as close as possible to* a Eucharist while marking `the pain of division". (ukbooks)

As already mentioned in several occasions, with some constructions it is difficult to decide whether the *to*-element following an adjective is a complement or an adjunct. Nevertheless, in the data, there were fairly clear cases of adjuncts in *to* infinitival constructions and those were discarded. According to Huddleston and Pullum (2002, 66), adjuncts have fixed meanings. Many adjuncts found in the data were of the type that denoted *purpose*, and the phrase *in order to* would have been possible to insert:

> (9)   a. Look tidy and *clean to* start the day, even though your work entails getting dirty. (ukbooks)
>
> b. Correct technique is not only *essential to* avoid injury but also necessary to get the most out of your exercise programme. (ukbooks)

c. Once again the school did their *best to* help him.(ukspok)

In addition to the excluded types of cases above, some matrix adjectives were disregarded because of their strong adverbial character. As noted in section 3.1., it is not the purpose of the present study to argue which words can be classified as adjectives, and therefore only so-called central adjectives were included in the final sample. Also, some adjectives that frequently form what some might call an idiom with adjacent words (at least in constructions with *to*) were excluded from the investigation. Adjectives / adverbs excluded by the criteria mentioned were: *adjacent, close, early, enough, last, late, least, more, much, near, next* and *open*.

The last excluded cases were for a reason or another too unclear to interpret or beyond the comprehension of the present author:

(10)   The second guard caught Ruiz across the back of the head with the butt of his rifle, and Ruiz crumpled *unconscious to* the ground. (ukbooks)

Especially in the ukspok corpus there were instances that were unclear:

(11)   a. But I think that especially snakes they're so *difficult to* <ZGY> in the wild anyway. (ukspok)

b. And then <ZF1> i <ZF0> in a sense that might not *sorry to* interrupt but <F02> Yeah. (ukspok)

After the elimination of irrelevant instances (276) in the ukbooks corpus, there were 1,151 relevant tokens of the pattern adjective + *to* which will be taken into consideration in the discussion. In the ukspok corpus, there were 280 irrelevant cases which leaves us with 968 relevant tokens.

In the following sections the data from ukbooks (6.2.) and ukspok (6.3.) corpora will be investigated separately. The same procedure will be applied to both corpora: first, the pattern is discussed from the point of view of the different adjectives found in the data. Second, the focus is shifted to the different *to*-elements and their distribution in the data. Third, sections are devoted to discussion of the infinitival complements and *to + -ing*

complements found in the corpora. Lastly, some interesting instances that came to light during the corpus research process will be investigated more closely.

6.2. Ukbooks data

In the ukbooks material there were 1,151 relevant tokens of the pattern adjective + *to*. It should be remembered that the raw sample was only 10 % of the whole ukbooks corpus. If we apply the results to the whole ukbooks corpus, we might assume that there are 11,510 relevant cases of adjective + *to* which means that the frequency of the pattern would be 2,149.7 instances per million words. In the following two subsections the findings will be considered primarily in relation to numbers and frequencies. The third and fourth subsections deal with infinitival and *to + -ing* complements. In the last subsection some interesting cases are taken into closer consideration.

6.2.1. Matrix adjectives

This section unravels the ukbooks data from the perspective of the different matrix adjectives. In the data, there were 225 different adjectives represented in the pattern adjective + *to* (for the whole list, see Appendix 1). The most frequent was *able* with 188 tokens. Other relatively frequent adjectives were *likely* (79 tokens), *difficult* (63), *easy* (58), *unable* (43), *hard* (39), *due* (34), *possible* (29), *important* (28) and *ready* (23).

The following table displays the number of different adjectives in the data in relation to the patterns with which they occurred:

Pattern(s)	The number of adjectives
only with *to* + NP	105
only with extraposed infinitive	46
only with *to*-infinitive	42
to + NP and extraposed infinitive	17
to-infinitive and extraposed infinitive	6
to-infinitive and *to* + NP	4
only *to* + *-ing*	2
to + NP and *to* + *-ing*	2
to-infinitive, *to* + NP and extraposed infinitive	1
Total	**225**

Table 8: Distribution of patterns among different adjectives in the ukbooks data.

It must be remembered that there is a great number of adjectives licensing the pattern

adjective + *to*, and in the scope of this study, it is impossible to find and go through all the

possible instances. For example, in the sample gathered for this study, *uncomfortable* only

occurs once and in an extraposed construction. That does not mean that it could not be found

with infinitival complements or NPs in a larger sample. However, Table 8 above gives a nice

overall picture of the distribution of the numbers of adjectives in relation to different patterns

Illustrations of the most frequent adjectives in each category are presented below. The

most frequent adjectives occurring only with the pattern *to* + NP were *similar* (13 instances)

and *clear* (8 instances):

(12)   a. A man named Hargreaves noticed that the mountains there were very
similar to those in California where he had been gold-digging. (ukbooks)

b. Two things soon become *clear to the sympathetic reader* […] (ukbooks)

The most frequent adjective occurring only with extraposition was *impossible* with

twelve instances:

(13)   It was *impossible* to think of Olly in that way. (ukbooks)

Out of the 42 adjectives that occurred only with *to*-infinitive the most numerous was

able with 188 instances:

(14)   She herself was *able to reconstruct* a parallel scenario. (ukbooks)

Averse and *equivalent* both occurred only with the pattern *to* + *-ing* in the ukbooks data, thrice and twice respectively. More discussion on these in section 6.2.4.

The most interesting adjectives are the ones that have variation in the *to*-elements. Most of the adjectives (195) occur only with one pattern in the data, but 29 adjectives occur with two patterns, and one adjective (*hard*) with three patterns. The adjectives that occur with more than one pattern are illustrated in Table 9:

Patterns	Adjectives
to + NP and extraposed infinitive	*Acceptable, appropriate, beneficial, common, good, helpful, important, kind, natural, necessary, nice, painful, responsible, useful, valuable, vital, worthless*
to-infinitive and extraposed infinitive	*Difficult, easy, possible, right, sad, wise*
to-infinitive and *to* + NP	*Available, due, grateful, welcome*
to + NP and *to* + *-ing*	*Essential, vulnerable*
to-infinitive, *to* + NP and extraposed infinitive	*Hard*

Table 9: Adjectives with two or three patterns in the ukbooks corpus.

Of the adjectives occurring with both *to* + NP and extraposition, *important* was notably the most frequent with twelve instances with *to* + NP and sixteen instances with extraposition:

(15)   a. Affairs of the heart are particularly *important to the Goat* and he will often have many romances before he finally settles down. (ukbooks)

b. So it is *important* to capture the mind and heart of Paul VI before all those who knew him personally die off. (ukbooks)

Difficult and *easy* were the most numerous adjectives occurring with both infinitival complements and extraposed constructions. *Difficult* occurred 25 times with the infinitival and 38 times with extraposition:

(16)   a. Such dramatic unity seems to me *difficult to sustain*. (ukbooks)

b. It is *difficult* to read reports of some calculating or musical prodigy […] (ukbooks)

Easy was found thirteen times with the infinitival and 45 times with extraposition:

(17)   a. By contrast, salary increases and promotions are relatively straightforward and reasonably *easy to utilize*. (ukbooks)

b. It was *easy* to advance his own leave by a day. (ukbooks)

As can be seen in Table 9, four adjectives occurred with both *to*-infinitive and *to* + NP. *Due* was the most frequent with fifteen instances of *to*-infinitives and nineteen *to* + NPs (more discussion on *due* in section 6.6.):

(18)   a. They were *due to come* into service in the USSR in 1983 or 1984 […] (ukbooks)

b. The idea that Joan's success was *due to the Devil's intervention* rather than solely to her own talents seems to have been first thought of by Stephen […] (ukbooks)

Essential and *vulnerable* were the only adjectives in the ukbooks data that licensed both *to* + NP and *to* + *-ing* constructions. *Vulnerable* occurred six times with *to* + NP and two times with *to* + *-ing*:

(19)   a. Our modern tendency to see the Church in terms of individual healthy-mindedness, as a selfhood that is *vulnerable to bouts of low self-esteem*, is light years removed from the Church as a fellowship of faithfulness to God's promises. (ukbooks)

b. This can make friendships uniquely flexible, and yet also *vulnerable to taking* second or third place amongst other more legitimized relationships. (ukbooks)

Essential occurred six times with *to* + NP and once with *to* + *-ing*:

(20)   a. But exclusivity is *essential to the Hindu hierarchy* […] (ukbooks)

b. The verbal key, *essential to deciphering* the message, must be remembered although not necessarily the message itself. (ukbooks)

Lastly, there was one adjective, *hard*, that was found with three patterns in the data: *to*-infinitives (19 instances), *to* + NP (1) and extraposed infinitives (19):

(21)   a. Somewhere under there was a basically good-looking man, but he was *hard to spot*, and I had no desire to search. (ukbooks)

b. I think it made his conscience even worse, seeing me used so, and he was very *hard to her* that day. (ukbooks)

c. It will be *hard* to find a finer example of endurance and discipline in all the annals of British arms 13 By 15 September the front stabilised. (ukbooks)

It seems that the pattern *to* + NP can follow virtually any adjective (if the matrix verb is appropriate) and that the pattern is rarely obligatory, and when it is optional, it is likely to be an adjunct (see discussion in section 5.2.1.). In addition, in the data it was observed that adjectives like *clear* which can occur with extraposed *that*-clauses may have an intervening *to* + NP construction before the extraposed *that*-clause to indicate the experiencer of the attitude or such expressed by the adjective:

(22)　　a. She regretted the necessity of making it clear *to Father Battersby* that he was not wanted in this parish […] (ukbooks)

b. It was clear *to Haig* that he had to escape the Indian morass. (ukbooks)

In fact, out of eight instances of *clear* + *to* + NP, seven were of this type. Postal (1971, 45) claims that cases like these also manifest the *psych*-movement rule (see 5.2.1.). In this study, however, the matter of the pattern *to* + NP is not considered in great detail, for the focus is on infinitival and *to* + *-ing* complements. These are discussed further in sections 6.2.3. and 6.2.4. below.

6.2.2. *To*-elements following adjectives

Out of the four possible *to*-patterns following adjectives (*to*-infinitive, *to* + *-ing*, *to* + NP, *to* + *wh*-clause), three were represented in the sample of 1,151 instances. There were no instances of *to* + *wh*-clauses in the sample[21]. In the following table, proper infinitival complements and extraposed constructions are counted separately.

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[21] The pattern adjective + *to* + *wh*-clause is quite rare. In the whole Collins Wordbanks corpus there were only 348 instances.

Pattern	Instances
To-infinitive	576
Extraposed infinitive	288
To + NP	279
To + *-ing*	8
Total	**1,151**

Table 10: The number of instances of each pattern in the ukbooks data.

In the data, infinitival complements were by far the most frequent elements with 576 instances, almost exactly half of the whole sample. A major contributor to this was *able* with 188 instances and also *likely* with 79 tokens.

Extraposed constructions were the second most numerous pattern in the data. There the most frequent adjectives were *easy* (45 tokens), *difficult* (38), *possible* (28), *hard* (19), *good* (18), *important* (16) and *impossible* (12). *Difficult*, *easy* and *hard* also occur frequently with infinitival complements (see Appendix 1).

NPs are the third most frequent elements after the pattern adjective + *to*. However, NPs assign the largest number of different adjectives, due to the fact that there is a very large group of adjectives that can assign the pattern *to* + NP, and adjectives of this kind occur mostly only from one to three times in the data (see Appendix 1). Whether all of these cases are complements is debatable (see for example section 5.2.1.), and in this study which concentrates on infinitival and *to* + *-ing* complements, the matter is mostly left open.

There were eight instances of the pattern *to* + *-ing* found in the data which was delightful, considering the topic of the present study. Adjectives that assign *to* + *-ing* elements in the data were *averse, equivalent, essential,* and *vulnerable*. These will be discussed in more detail in section 6.2.4.

6.2.3. *To*-infinitive complements

In the data, there were 576 instances of *to*-infinitive complements, which is 50.0 % of the whole sample. 53 different matrix adjectives were found to license *to*-infinitive complements (see Appendix 1). The most frequent one was *able* (188 tokens with infinitival), and the next most frequent were *likely* (79), *unable* (43), *difficult* (25), *ready* (23) and *hard* (19). The next step is to identify which adjectives belong to the control paradigm and which to the raising paradigm.

Paradigm		
subject control	**s-to-s raising**	**o-to-s raising**
able, afraid, angry, anxious, available, careful, content, correct, desirous, desperate, eager, fortunate, free, glad, grateful, happy, keen, loath, lucky, powerless, possible[22], privileged, proud, quick, ready, reluctant, *right*, *sad*, silly, slow, sorry, thankful, unable, unwilling, welcome[23], willing, *wise*	apt, certain, due[24], liable, likely, sure, unlikely, wont	*difficult*, *easy*, fun, *hard*, inexpedient, legal, *right*, simple, straightforward

Table 11: the distribution of infinitival complementation paradigms in ukbooks.
Note: adjectives in *italics* also occur with extraposition in the ukbooks data.

The majority of adjectives in the data found with *to*-infinitives belong to the subject control paradigm. Raising paradigm adjectives were not so well represented. In the data, there was one adjective, *right*, that was found in two paradigms:

> (23)   a. The Prince was `quite *right to move about* and see people in a natural way […] (ukbooks)
>
> b. Anyway I do thank God for you, my love, and I always will, whether that's *right to do* or not. (ukbooks)

Example (23a) is a control construction in which the understood subject of the lower clause is the same as the subject of the matrix clause. In (23b) the grammatical subject of the higher

---

[22] For discussion of *possible*, see section 6.2.5.3. and 6.3.5.2.

[23] Does *the cat is welcome to be out of the bag* allow the idiomatic reading? Possibly a raising predicate?

[24] To the present author this is somewhat unclear. Sentences like *it is due to rain tomorrow* or *there is due to be a hurricane tomorrow* sound good, which would postulate raising analysis, but there is no corpus evidence found to support this (although Google gives instances aplenty).

clause is the understood object of the lower clause, so it belongs to the object-to-subject

raising paradigm. In Francis et al's grouping (see section 5.4., Table 4) *right* is noted only as

a control adjective under the 'right' group. Among the object-to-subject raising groups there

is no mention of *right* but it could be put under group 2 ('terrible' and 'wonderful') or group

3 ('cheap' and 'expensive').

As discussed in section 5.5.3., there is a "grey area" in which belong the cases that are

not prototypical. The adjectives in italics in the subject control column may be classified as

subject control predicates, but prototypical subject control predicates do not allow

extraposition, whereas the adjectives in italics occur in extraposed constructions in the data .

This is discussed further in section 6.5.

6.2.4. *To + -ing*

As already mentioned in section 6.2.2., there were eight instances of *to + -ing* complements

in the data. Three with *averse*, two with *equivalent* and *vulnerable*, and one with *essential*:

> (24) a. Even articulationists are not *averse to referring* to the transitional elements
> […](ukbooks)
>
> b. Not that Marty was *averse to causing* that sort of havoc in real life.
> (ukbooks)
>
> c. Her suspicions were mixed with pleasure in that she was in no way *averse
> to getting* to know him better. (ukbooks)

> (25) a. The doctrine of no-self is not easy to understand. It is not *equivalent to
> saying*, `I have no self" for that, too, implies a separate being. (ukbooks)
>
> b. So admitting you don't know is *equivalent to admitting* you were an ape to
> begin with? (ukbooks)

> (26) a. […]children who are *vulnerable to being* abused and, especially if they are
> boys, to become abusers. (ukbooks)
>
> b. This can make friendships uniquely flexible, and yet also *vulnerable to
> taking* second or third place amongst other more legitimized relationships.
> (ukbooks)

(27)   The verbal key, *essential to deciphering* the message, must be remembered although not necessarily the message itself. (ukbooks)

Two of these four adjectives, *essential* and *vulnerable* also occurred (more frequently) with NPs in the data (see Appendix 1). A further search in the ukbooks corpus shows that also *averse* and *equivalent* occur with the construction *to* + NP (and never with *to*-infinitive, which supports Kjellmer's ideas (see section 5.5.1.)). Francis et al. (1998, 466-467) mention these adjectives under the pattern "ADJ *to* n". *Averse* is in the 'partial' group (that indicates someone's liking or disliking someone or something), and *equivalent* is under the 'similar' group. For both groups, it is stated that *to* may sometimes be followed by an *-ing* clause. Also *essential* and *vulnerable* are under the pattern "ADJ *to* n". *Essential* belongs to the 'important' group and *vulnerable* to the 'sensitive' group. Regarding the 'important' group there is no mention of the pattern *to* + *-ing*, but vis-à-vis the "sensitive" group Francis et al. (ibid., 468) say that *vulnerable* is often followed by *to* + *-ing*.

6.2.5. "Lonely" tokens

In this subsection, a closer look will be taken at some constructions that might be seen as rare instances (for example, the adjective *available* occurs seven times with NP and only once with infinitival complement), and the aim is to point out the cause, whether it is an anomaly, an emerging new usage or just a coincidence caused by the random sample.

6.2.5.1. *Available*

Available occurs only once with an infinitival complement and seven times with a *to* + NP construction. It might be worthwhile to take a closer look at the instance with the infinitival complement:

(28)   On the front of attack, besides a superiority of at least four to one in

infantry, we have a more numerous artillery, practical supremacy in the air, and a large mass of cavalry immediately *available to exploit* to the full a successful assault by the other arms. (ukbooks)

The subject that is *available* is clearly *a large mass of cavalry*. The verb in the lower clause, *exploit*, needs two arguments, agent and patient. The agent is the subject of the higher clause, the aforementioned cavalry, and the patient is *a successful assault by the other arms*. *Available* seems to be a subject control adjective and it just happens to be not so frequent with this construction as with NPs. A further search in the corpus confirms this. On the other hand, the lower clause could be interpreted as an adjunct. First, it is not obligatory and could easily be omitted, and second, it has a strong meaning of purpose and it could be rephrased *[…] cavalry immediately available in order to exploit to the full a successful assault by the other arms*. Quirk et al. (1985, 1229) mention the adjective *available* and say that it can occur in two constructions. They give an example *Are these cups available (to use)?* where the subject of the higher clause is "identified with the object of the infinitive clause." The other construction (ibid., 1228; 16.79) *available* can occur in is of the type as in the example (28) discussed above. But as already mentioned, this construction bears a strong bias towards adjunct.

6.2.5.2. *Good*, *hard* and *nice*

Good occurs 18 times with extraposition and only once with *to* + NP:

(29) If we crash it'll be no *good to anyone*. (ukbooks)

Good belongs to the very large group of adjectives that can take *to* + NP constructions of this type. Usually the NP is a pronoun or a proper noun denoting a human, and it represents the target or the experiencer of the attitude or suchlike expressed by the adjective. Many times it would be possible to replace *to* with *towards*. A further search in the corpus shows that with

good 32 instances of 108 were of the form *to* + NP, and with the forms *better* and *best* NPs were very rare.

The matter of NPs with *hard* resembles the situation with *good* except that with *hard* NPs are even rarer. In the data, there were 19 instances of both infinitival and extraposition constructions, and one instance of *hard + to* + NP was found:

(30)　　[…] and he was very *hard to her* that day. (ukbooks)

In fact, this is the only example of the pattern *hard + to* + NP in the ukbooks corpus, so it appears to be rare. Also the adjective *nice* manifests this tendency with six instances of extraposition and one instance of *to* + NP in the data.

6.2.5.3. *Possible*

The *to*-elements following *possible* also display an inconsistency in the data. There are 29 tokens with extraposition and only one with infinitive:

(31)　　For the first time in the history of brain research it is now
　　　　becoming possible to reconcile the genesis and development of ideas with the
　　　　neural machinery that makes them *possible to see*, albeit imperfectly at
　　　　present, what goes on in the thinking brain. (ukbooks)

This is a strange sentence which seems to mix two kinds of constructions, being perhaps an instance of anacoluthon in print or just a human error. If we assume the absence of what comes after *possible to see*[25], and try to define the structural components, it is *them* (*the genesis and development of ideas*) that is the subject[26] of *possible*. However, the lower clause is a little trickier. It is difficult to decide what is the subject, but, on the other hand, the verb *see* here needs an object. Here the object of seeing is the aforementioned *them* (*the genesis and development of ideas*). This seems then to be a case of object-to-subject raising.

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[25] If we keep the sentence as it is and the clause *what goes on in the thinking brain* is the grammatical object of seeing, then *them* should be replaced by the dummy *it* for the sentence to make sense and then it would be an instance of extraposition of a *wh*-clause.
[26] To say that an accusative form is a subject seems quite fishy, though.

However, Langacker (1999, 352) addresses the matter of *possible* and says that it cannot

occur in object-to-subject constructions[27]:

> (32)   *Those wombats are *possible to wash*.

Consequently, the following scheme would be true of the example sentence (31):

> (33)   a. To see them is possible.
>   b. It is possible to see them. (extraposed)
>   c. *They are possible to see. (object-to-subject raising)

However, the simplified reformulation of the example sentence appears to be quite

grammatical,

> (34)   ?It is now becoming possible to reconcile the genesis and development of
>   ideas with the neural machinery that makes them *possible to see*.

which might be due to the verb *make* that requires the pronoun to be in the accusative form.

Nevertheless, considering the lack of native speaker's evaluation of the sentence, the final

judgement of the present author at this point would be that it is not acceptable and the whole

example (31) is somewhat dubious.

6.3. Ukspok data

There were 968 relevant cases in the ukspok corpus of transcribed informal British English.

The original raw sample of 1,248 tokens with the search string "JJ+to" was 10 % of the

tokens in the whole ukspok corpus, so it might be assumed that in the whole ukspok corpus

there are 9,680 relevant instances. By that number the frequency of the pattern would be

1,044.0 instances per million words. The next two subsections will consider the frequencies

from the point of view of the matrix adjectives and then the different patterns. Subsections

6.3.3. and 6.3.4. discuss infinitival and *to + -ing* complements, respectively. The last

subsection is devoted to instances of special significance.

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[27] Whereas with the negative counterpart the construction is acceptable: *Those wombats are impossible to wash.*

6.3.1. Matrix adjectives

In the ukspok data, 165 adjectives that precede *to* were represented (for the entire list, see Appendix 2). The most frequent was *able* with 219 tokens and far behind came *nice* (78 tokens), *difficult* (74), *easy* (49), *likely* (38) and *good* (37).

The distribution of the types of constructions the adjectives took in the data is illustrated in the following table:

Pattern(s)	Number of different adjectives
Only with *to* + NP	71
Only with *to*-infinitive	35
Only with extraposed infinitive	31
To + NP and extraposed infinitive	8
To-infinitive and extraposed infinitive	8
To-infinitive, *to* + NP and extraposed infinitive	4
To-infinitive and *to* + NP	3
Only with *to* + *-ing*	2
To + NP and *to* + *wh*-clause	2
Only with *to* + *wh*-clause	1
Total	**165**

Table 12: Distribution of patterns among different adjectives in the ukspok data.

As with the ukbooks data, examples of the most frequent adjectives will be introduced. Of the adjectives occurring only with *to* + NP, *available* was the most frequent with ten instances and both *new* and *similar* occurred nine times:

(35)   a. Penicillin was *available to the Army*. (ukspok)

b. I didn't know the names of anybody you see er all these well-known Birmingham names were completely *new to me*. (ukspok)

c. The <ZF0> the crime levels were very *similar to all the rest of the estates* but […] (ukspok)

As in the ukbooks data, in the ukspok data *able* was the most numerous adjective licensing only *to*-infinitives (219 tokens):

(36)   He thought er Olivier was er a much better macbeth because he was *able to play* the murderer (ukbooks)

The distribution of adjectives occurring only with extraposed infinitives was broad. There

were 25 adjectives that occurred only once (see Appendix 2). *Lovely, necessary* and *right*

were the most frequent, each with four instances:

> (37)   a. Oh mm well John it's *lovely* to talk to you. (ukspok)
>
>   b. Mm <F02> but otherwise it's *necessary* to go to France. (ukspok)
>
>   c. Especially for an Asian girl it's not *right* to have a job like that. (ukspok)

There were two adjectives with only *to + -ing* complements in the ukspok data and they will

be discussed in section 6.3.4. below. One adjective occurred only with a *wh*-clause,

unrecognisable (one instance):

> (38)   And when I look at the printed version which was printed in nineteen-eighty-six nineteen-eighty-seven which is ten years after Tall and Short appeared er it is <tc text=pause> *unrecognizable to what is being performed at the moment er in Cardiff* […] (ukspok)

Most of the adjectives (137) in the data occur only with one pattern (which, as already

mentioned in section 6.2.1., does not exclude the possibility of them occurring with other

patterns in English). However, variation is always more interesting than consistency, at least

in linguistics, so the following table illustrates the adjectives that select two or three different

patterns:

Patterns	Adjectives
To + NP and extraposed infinitive	*appropriate, cheap, helpful, horrible, important, okay, true, useful*
To-infinitive and extraposed infinitive	*difficult, easy, fascinating, hard/harder, impossible, possible, quick, terrible*
To-infinitive, *to* + NP and extraposed infinitive	*fair, good, interesting, nice*
To-infinitive and *to* + NP	*due, grateful, responsive*
To + NP and *to* + *wh*-clause	*accountable, different*

Table 13: Adjectives with two or three patterns in ukspok corpus.

Important (as in the ukbooks data) was the most frequent adjective selecting both *to* + NPs

and extraposed infinitives, eleven and twelve tokens respectively:

> (39)   a. That seemed really *important to me*. (ukspok)

b. [...]ninety-six per cent of people think it's *important* to recycle household waste [...] (ukspok)

The ukspok data follows the tracks of the ukbooks data in relation to adjectives that most frequently occur with *to*-infinitives and extraposed infinitives: *difficult* and *easy* were here the most frequent ones too. *Difficult* was found sixteen times with *to*-infinitives and 58 times with extraposed infinitives:

(40)   a. the solution is notoriously *difficult to explain*. (ukspok)

b. I find Alastor <ZF1> a <ZF0> an unsatisfactory poem er mostly because it's *difficult* to <tc text=pause> understand the attitude to the substance of the poem. (ukspok)

Easy occurred fifteen times with *to*-infinitives and 34 times with extraposed infinitives:

(41)   a. Didn't invade lots of places that would have been a lot *easier to invade* than Britain. (ukspok)

b. So <ZF0> so you found it very *easy* to deal with all metalwork and woodwork equipment <F02> Mm. (ukspok)

In the ukspok data four adjectives occurred with three different constructions: *to*-infinitive, *to* + NP and extraposed infinitive. All four, *fair*, *good*, *interesting* and *nice*, were most numerous in constructions with an extraposed infinitive. *Nice* was the most frequent with 73 instances with extraposed infinitives[28], three with *to* + NPs and two with *to*-infinitives[29]:

(42)   a. [...] because it's very *nice* to hear how appreciative you are of him <F06> Oh yes. (ukspok)

b. They're not very *nice to me* (ukspok)

c. That's *nice to hear* (ukspok)

---

[28] Many examples in the data were of the type *Nice to see you all here*. (ukspok) where the higher subject and verb are omitted in conversation. These cases were interpreted as if they had the missing *it is* and thus counted in with the extraposed instances.
[29] For the other three adjectives, see the distribution in Appendix 2.

Due, grateful and *responsive* were found with both *to*-infinitives and *to* + NPs in the ukspok data. *Due* was the most frequent one with six instances with *to*-infinitives and eleven instances with the pattern *to* + NP (more discussion on *due* in section 6.6.):

(43)   a. Erm well basically in February erm I was *due to receive* a giro and I didn't receive it […] (ukspok)

b. It's *due to the shock.* (ukspok)

Grateful occurred once with *to*-infinitive and twice with *to* + NP. *Responsive* was found once with both constructions:

(44)   a. So I'm getting to the stage where I'm quite *grateful to be around* (ukspok)

b. And erm I'm particularly *grateful to my schooldays* […] (ukspok)

(45)   a. how do you find it rides? Is it <M02> <ZF1> It's <ZF0> it's good <ZF1> it's very <ZF0> it's very *responsive to ride* erm it has er index shifting gears (ukspok)

b. it has to be *responsive to expectations* and requirement of the purchasers (ukspok)

In the ukspok data there were instances of *to* + *wh*-clauses which did not occur at all in the ukbooks data. *Accountable* and *different* occurred with both *to* + NPs and *to* + *wh*-clauses:

(46)   a. So it's not a question of taking things on board from out there it's a question of being in there in part of the community being responsible to the community <ZF1> and <ZF0> and *accountable to the community* <ZF1> and <ZF0> and vice-versa. (ukspok)

b. I didn't agree with the poll tax but I agreed with the theory that they do need to be *accountable to what people need* […] (ukspok)

(47)   a. Are they any *different to the teachers* who don't smoke […] (ukspok)

b. […] schooling was totally *different to what it is today.* (ukspok)

The *wh*-clauses occurring with adjectives in the data are finite. Being nominal, there is no restrictions why they could not occur in the same environments as NPs with these adjectives. In Francis et al's (1998, 464ff.) discussion of the pattern "ADJ *to* n", *accountable* is under the

'responsible' group that indicates commitment or responsibility, and *different* is grouped

under the 'similar' group that indicates some kind of comparison.

6.3.2. *To*-elements following adjectives

The ukspok corpus data of 968 instances contained all four possible constructions (*to*-

infinitive, NP, *-ing*, *wh*-clause) which can follow the pattern adjective + *to*. The number of

different patterns is illustrated in the following table, where extraposed constructions are kept

separate from *to*-infinitive complement constructions:

Pattern	Number of instances
To-infinitive	436
Extraposed infinitive	334
To + NP	191
To + *wh*-clause	5
To + *-ing*	2
Total	**968**

Table 14: The number of instances of each pattern in the ukspok data.

Constructions with *to*-infinitive complements were the most frequent ones in the ukspok data.

Also extraposed constructions and the pattern *to* + NP were relatively frequent. The last two

patterns *to* + *wh*-clause and *to* + *-ing* were rather marginal.

In the *to*-infinitive pattern, the most dominating adjective was *able* with 219 tokens.

Also *likely* was quite frequent with 38 tokens. In extraposed constructions *nice* and *difficult*

were the most frequent with 73 and 58 tokens respectively. With the construction *to* + NP

there were a lot of adjectives and the distribution was therefore quite even. The most frequent

adjectives with this pattern were *important* and *due*, both with eleven instances.

Constructions with *to* + *wh*-clause and *to* + *-ing* were much rarer than the three

aforementioned constructions. *Wh*-clauses occurred with *different* (3 tokens), *accountable* (1)

and *unrecognizable* (1):

(48)   But er I mean as I say schooling was totally *different to what it is today*.
        (ukspok)

(49)   I didn't agree with the poll tax but I agreed with the theory that they do need to be *accountable to what people need* […] (ukspok)

(50)   And when I look at the printed version which was printed in nineteen-eighty-six nineteen-eighty-seven which is ten years after Tall and Short appeared er it is <tc text=pause> *unrecognizable to what is being performed at the moment er in Cardiff* […] (ukspok)

To + -ing complements occurred with *preferable* (1) and *susceptible* (1) and they will be discussed in section 6.3.4. below.

6.3.3. *To*-infinitive complements

To-infinitive complements covered 45.0 % of the ukspok sample of 968 tokens with 436 instances. There were 50 different adjectives that selected infinitival complements (see Appendix 2), of which *able* was clearly the most frequent with 219 instances. Other frequent adjectives in this pattern were *likely* (38 tokens), *willing* (20), *difficult* (16), *easy* (15) and *happy* (14). In the following table the adjectives found in the ukspok data are divided according to their properties into subject control, subject-to-subject raising and object-to-subject raising adjectives:

Paradigm		
subject control	s-to-s raising	o-to-s raising
able, afraid, anxious, ashamed, competent, content, curious, desperate, fortunate, free, glad, grateful, happy, keen, lucky, mad, prone, proud, quick, ready, reluctant, sad, sorry, unable, unworthy, welcome[30], willing, worthy	apt, certain, due[31], likely, sure, unlikely	*difficult*, *easy*, enjoyable, *fair*, *fascinating*, *good*, *hard*, *impossible*, *interesting*, marvellous, *nice*, *possible*, *quick*, ready, responsive, safe, silly, *terrible*

Table 15: the distribution of infinitival complementation paradigms in ukspok.
Note: adjectives in *italics* also occur with extraposition in the ukspok data.

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[30] see section 6.2.3., footnote 23
[31] see section 6.2.3., footnote 24

The distribution is quite similar to the distribution in the ukbooks data between the subject control adjectives and subject-to-subject raising adjectives. However, in the spoken data, object-to-subject raising adjectives were more numerous compared to the ukbooks data.

In the ukbooks data there was one adjective (*right*) found that appeared in two paradigms. In the ukspok data, two adjectives were found to appear in both subject control and object-to-subject raising constructions, *quick* and *ready* (*ready* will be discussed in detail in section 6.3.5.3. below):

(51)　a. I'm not sure if you caught just er an earful of that Douglas Craig always *quick to* er *voice* his opinion during a match. (ukspok)

　　　　b. However once it's been done once it will be much *quicker to repeat*. (ukspok)

Francis et al. (1998, 408) account only for the control construction when they put *quick* in the 'quick' and 'slow' group. It is not easy to fit the latter use (51b) of *quick* into any category offered by Francis et al., but the closest one might be the 'cheap' and 'expensive' group which indicates that something has an advantage or disadvantage.

In addition, it is worth mentioning that in the ukspok data the adjective *silly* occurs in an object-to-subject raising construction whereas in the ukbooks data it occurred in a subject control construction:

(52)　a. I know it sounds *silly to say* but he always does it […] (ukspok)

　　　　b. I looked at that number - only nineteen - and felt *silly to be afraid* of someone so young […] (ukbooks)

The latter, subject control construction, is categorised under the 'right' group in Francis et al. (ibid., 410), but the raising construction is not mentioned and it is difficult to label in terms of Francis et al's categories (Table 4).

6.3.4. *To + -ing*

In the ukspok data there were only two instances of the pattern *to + -ing*. The adjectives that

selected this pattern were *preferable* and *susceptible*:

> (53)   Well anything was *preferable to going* to school at that age. (ukspok)

> (54)   Will they spend more time at school trying to educate themselves
> <tc text=pause> and so be less *susceptible to going* out on the street and
> committing <M01> Mm. <M02> crime. (ukspok)

Both adjectives occurred only once and with this pattern in the ukspok data. In the whole

Collins Wordbanks corpus there were 14 instances of *preferable* with this pattern, and 9

instances of *susceptible*. Both are much more frequent with the pattern *to + NP*.

In Francis et al's (1998, 467-468) discussion *preferable* and *susceptible* are under the

'similar' and 'sensitive' groups, respectively, in the discussion of the pattern "ADJ *to* n". It is

stated that in the 'similar' group adjectives are sometimes found with the pattern *to + -ing*,

but no comments are made about *to + -ing* in the 'sensitive' group (except for *vulnerable*, see

section 6.2.4.).

6.3.5. "Lonely" tokens

As with the examples of ukbooks corpus, the "lonely" tokens found in the ukspok corpus will

be examined in more detail.

6.3.5.1. *Good*

In section 6.2.5.2. it was noted that *good* usually occurs in extraposed constructions and

sometimes with following *to + NP* constructions. In the ukspok data this was also the

situation (eight instances of *to + NP* and 28 of extraposition). In addition, there was one

instance where *good* occurred with a *to*-infinitive complement:

> (55)   […]chronic condition cystic fibrosis that sort of thing <F01> Mhm <M01>
> was *good to see* here […] (ukspok)

It seems that here *good* appears in an object-to-subject raising construction, where the object of seeing, *that sort of thing*, is raised to the grammatical subject position. However, this construction appears to be quite rare and extraposed construction is usually preferred.

6.3.5.2. *Impossible* and *possible*

The situation with *impossible* and *possible* is quite similar to the situation of *good* above. They usually occur with extraposition, but in the ukspok data both were found with infinitival complement:

> (56)   Senate was almost *impossible to run*. (ukspok)

> (57)   Because the activity arises from three separate radioactive <ZGY> points <ZGY> But er I mean it is all *possible to do* and in principle if […] (ukspok)

Impossible occurs in a typical object-to-subject raising construction. As already discussed in section 6.2.5.3., it should not be possible for *possible* to occur in this construction (Langacker 1999, 352). In section 6.2.5.3.. the example found in the corpus was dubious, but this example (57) proves that *possible* may occur in this construction, contrary to Langacker's claim. However, the example is spoken language and this might be just a slip of the tongue. On the other hand, it is usually the spoken language that spawns new ways to use the language.

6.3.5.3. *Ready*

The following example appeared in the spoken data and it was the only instance of *ready* appearing in an object-to-subject raising construction:

> (58)   […] and I've already had the sterilizer on so everything in here <ZF1> is <ZF0> is *ready to use*. (ukspok)

This seems to be a object-to-subject raising construction, but there is no equivalent sentence with the infinitival clause as a subject, and consequently, extraposed version of the sentence is not possible[32]:

(59)   a. *To use everything is ready.
         b. *It is ready to use everything.

Quirk et al. (1985, 1229) have a separate group for adjectives or cases like this. They state that with these cases it is usually possible to omit the infinitival clause (60a) or replace the active infinitival clause with a passive one without a change in meaning (60b):

(60)   a. […] so everything in here <ZF1> is <ZF0> is ready [ ].
         b. […] so everything in here <ZF1> is <ZF0> is ready to be used[33].

Quirk et al. (ibid.) add that some adjectives (e.g. *available, free, ready*) which behave this way also belong to another group in which the grammatical subject is also identified as the understood *subject* of the lower clause (not as the understood *object* of the lower clause like here). This makes sentences like *The lamb is ready to eat* ambiguous.

In addition, Francis et al. (1998, 407-410) mention *ready* in four meaning groups: 'adequate', 'willing', 'certain' and 'able' (see section 5.4., Table 4). The three latter groups belong to Type 2; that is, the subject of the higher clause is also the understood subject of the lower clause (subject control or subject-to-subject raising). Starting from the last, *ready* in the 'able' group, there is a reference to *Collins Cobuild English Dictionary* entry of *ready*, senses 1 and 2:

> 1. If someone is **ready**, they are properly prepared for something. If something is **ready**, it has been properly prepared and is now able to be used.
>
> 2. If you are **ready** for something or **ready** to do something, you have enough experience to do it or you are old enough and sensible enough to do it.

---

[32] Extraposed sentence is not possible in the surface structure, but we have to postulate it in the deep structure for the object-to-subject raising to be applicable.

[33] This seems to be a subject control construction which is passivised and the original subject is omitted:
      [subject] is ready to use everything in here.
            à passivisation
      Everything in here is ready to be used (by [subject]).

Both entries are accompanied by a note in the margin that they are found with the *to*-infinitive. Example (60b) appears to exhibit sense 1, especially the second sentence in the definition. These senses represent subject control.

With *ready* in the 'willing' group, there is a reference to sense 3 of *ready* in *Collins Cobuild English Dictionary*:

> 3. If you are **ready** to do something, you are willing to do it.

This use is basically synonymous with *willing*, as indicated in the margin beside the entry. This is also subject control.

Ready in the 'certain' group has a reference to sense 5:

> 5. If someone or something is **ready** to do something, they are about to do it or likely to do it.

This is a particularly interesting use of *ready*, because it seems that in this sense subject-to-subject raising analysis is applicable to *ready*. First, Francis et al's (1998, 409) 'certain' group consists of adjectives that appear to be all subject-to-subject raising predicates, like *apt, certain* and *likely*. Second, the dictionary entry also uses raising adjectives to paraphrase the meaning. Lastly, the idiom test (in this particular sense of *ready*) seems to work:

(61)   The cat is *ready* to be out of the bag. (idiomatic meaning)

From the corpus data this meaning is extremely difficult to discern, so no instances of *ready* in this sense with subject-to-subject raising analysis could be recorded reliably.

The 'adequate' group belongs to Type 1 which means that the subject of the higher clause is not the same as the understood subject of the lower clause, and further, Type 1 adjectives are object-to-subject raising adjectives. Francis et al. (ibid., 407) do not give dictionary references with this use of *ready*, but it can be observed that this meaning and use is the one in example (58).

6.4. Comparison between ukbooks and ukspok

In this section, the findings from the two corpora are compared to each other and it will be investigated if there are notable differences between the written and spoken language data concerning the pattern adjective + *to*.

The most obvious difference is that the pattern is much more frequent in ukbooks than in ukspok. If we count the frequencies per million words using the samples from which the irrelevant tokens are excluded, there are 2,149.7 instances per million words in the ukbooks corpus and 1,044.0 instances per million words in the ukspok corpus. So, the pattern adjective + *to* is over twice as frequent in the written corpus as in the spoken corpus. Biber et al. (1999, 517-18) say that "unlike many predicative adjectives in other registers, those in conversation typically lack complements" and that might be one factor explaining the difference in frequency. Additional proof for the fact that complements are frequently omitted in conversation are the numbers of different adjectives in the two corpora, which are not as different as one might assume based on the difference in overall frequency of the pattern adjective + *to*. In the ukbooks data there were 225 adjectives in the sample of 1151 tokens, and in the ukspok data 165 adjectives in 968 tokens. Relatively, the number of different adjectives in the ukspok data is 84.2 % of the number of different adjectives in the ukbooks data. This shows that almost the same number of adjectives occur in the spoken data as in the written data, but in conversation complements are sometimes omitted.

Despite the difference in overall frequency, the distribution of adjectives taking different *to*-constructions is remarkably similar between the written and spoken corpora:

Pattern(s)	different adjectives			
	ukbooks		ukspok	
Only with *to* + NP	105	46.7 %	71	43.0 %
Only with *to*-infinitive	42	18.7 %	35	21.0 %
Only with extraposed infinitive	46	20.4 %	31	18.8 %
To + NP and extraposed infinitive	17	7.6 %	8	4.8 %
To-infinitive and extraposed infinitive	6	2.7 %	8	4.8 %
To-infinitive, *to* + NP and extraposed infinitive	1	0.4 %	4	2.4 %
To-infinitive and *to* + NP	4	1.8 %	3	1.8 %
Only with *to* + *-ing*	2	0.9 %	2	1.2 %
to + NP and *to* + *wh*-clause	-	-	2	1.2 %
Only with *to* + *wh*-clause	-	-	1	0.6 %
to + NP and *to* + *-ing*	2	0.9 %	-	-
Total	**225**	**100 %**	**165**	**100 %**

Table 16: Comparison between the corpora of adjectives taking different *to*-constructions.

It may be observed that there is no drastic difference between the written and spoken registers concerning the distribution of which patterns the different adjectives take. In both corpora, the adjectives that occur only with *to* + NP are clearly the most frequent, and after come adjectives that occur only with *to*-infinitives and extraposed infinitives. Between the two latter the difference between the two corpora is marginal and nothing definite can be said in the light of this little amount of corpus evidence. The adjectives occurring with two or more patterns are much less frequent than the three patterns mentioned above, and so are adjectives with only *to* + *-ing* or *to* + *wh*-clause.

Setting aside the adjectives and looking just the distribution of the different patterns, we have some differences:

The pattern	Instances			
	ukbooks		ukspok	
To-infinitive	576	50.0 %	436	45.0 %
Extraposed infinitive	288	25.0 %	334	34.5 %
To + NP	279	24.2 %	191	19.7 %
To + *-ing*	8	0.7 %	2	0.2 %
To + *wh*-clause	-	-	5	0.5 %
Total	**1,151**	**100 %**	**968**	**100 %**

Table 17: Distribution of patterns in the two corpora.

Even though it can be said that there is again very little difference between the two corpora, there are some things to be pointed out. *To*-infinitive complements are the most frequent with roughly a half of the sample in both corpora. If we take a closer look at the *to*-infinitives, and divide them into control and raising paradigms, we get the following results:

Paradigm	Instances			
	ukbooks		ukspok	
Subject control	395	68.6 %	327	75.0 %
Subject-to-subject raising	116	20.1 %	50	11.5 %
Object-to-subject raising	65	11.3 %	59	13.5 %
Total	**576**	**100 %**	**436**	**100 %**

Table 18: The distribution of *to*-infinitive paradigms in ukbooks and ukspok.

Regarding the subject control and object-to-subject raising paradigms, the data from the two corpora do not differ too much from each other. What is interesting, however, is that even if in the ukspok data there were twice as much object-to-subject raising adjectives (see Tables 11 and 15) as in the ukbooks data, the frequencies of object-to-subject raising instances are almost the same in the two corpora. Subject control constructions are slightly more dominant in the spoken corpus that in the written corpus. However, the subject-to-subject raising paradigm stands out from the table. This paradigm is almost twice as frequent in the written corpus as in the spoken corpus. The reason for this is not easy to infer from the data. There were almost the same number of adjectives (of which *likely* was the most frequent in both corpora) in this paradigm in both corpora, eight in ukbooks and six in ukspok. So it seems that the only difference is in the frequency, and it is probable that the subject-to-subject raising construction just is not as frequent in conversation as in written language.

If we revisit Table 17, there is quite a clear difference between the frequencies of extraposed constructions. They seem to be far more frequent in the spoken data, with the percentage of 34.5 % compared to written data's 25.0 %. This is somewhat surprising, because according to Biber et al. (1999, 722), "extraposed *to*-clause[s] complementing [sic] an adjective" are rare in conversation but common or moderately common in written texts.

Further divergence can be seen in the pattern *to* + NP which is more frequent in the written corpus data. This might be due to the fact that nouns are altogether most frequent in academic prose and news texts (Biber et al. 1999, 504-505). This again would implicate that it is not necessarily the adjective that selects the NP, which strengthens the hypothesis that most NPs in the pattern adjective + *to* + NP are in fact adjuncts (or at least optional complements).

In addition, it is worth mentioning that *wh*-clauses occurred in the ukspok data five times, whereas there were no instances in the ukbooks data. The sample being small as it is, no reliable conclusions can be drawn, taken into consideration that the pattern *to* + *wh*-clause is altogether very rare.

6.5. Further remarks

In section 5.5.3., there was discussion about adjectives that are somewhere between subject control and subject-to-subject raising. It was established that these adjectives, like *cruel*, can occur in extraposed constructions whereas prototypical control predicates cannot (at least not without overtly expressed subject, *of* + S). In Table 11 there are three adjectives in the subject control column, *right*, *sad* and *wise*, which also occur in extraposed constructions in the data[34]. These apparently belong to the "grey area". Further, looking at the paradigm tables, tables 11 and 15, it can be observed that many object-to-subject raising predicates also occur in extraposed constructions, which is only natural adopting Postal's claim that object-to-subject constructions are derived from extraposed constructions. However, in the subject-to-subject raising columns there are no adjectives that occur with extraposition. In fact further searches in the corpus show that subject-to-subject raising adjectives occur very rarely with extraposed *to*-infinitives.

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[34] Many other control adjectives like *silly* and *mad*, also found in the data, could also occur in extraposed constructions, but the sample did not contain any instances.

Another interesting issue concerns Huddleston and Pullum's (2002, 1256) claim, already introduced briefly in section 2.2., that the *to*-clause in the sentence

(62)   I was *mad <u>to volunteer</u>*

is an adjunct. This relates to the matter discussed above, the "grey area" between subject control and subject-to-subject raising, because *mad* is one of those adjectives that in this study have been categorised as subject control adjectives but can occur in extraposed constructions:

(63)   He thinks that it is *mad* to involve yourself in a long-term relationship […]
         (ukmags)

Adjectives like *mad* seem to belong to the "grey area" also in the complement-adjunct categorisation. The *to*-clause in Huddleston and Pullum's example (62) is not as closely related to the adjective as in, for example:

(64)   Bob is *hesitant* to agree with you. (Quirk et al. 1985, 1228)

 It is not easy to find a test among the tests introduced by Bowen (2005, 15ff.) that would apply to cases like *mad* and would reliably distinguish complements and adjuncts. There seems to be no such test and the present author is not able to conjure up one. So for now, the "grey area" cases, in lack of a better analysis, are categorised as subject control adjectives which may take either complements or adjuncts.

6.6. *To*-infinitive vs. *to + -ing* in the corpora

Because the number of the pattern adjective + *to + -ing* was so small in the samples from ukbooks and ukspok with the search string "JJ+to", a new search was done in order to investigate the matter of *to*-infinitive vs. *to + -ing* better. The new search was done using the string "JJ+to+VBG" (VBG is the tag for verb *-ing* forms). The raw samples were 93 instances in ukbooks and 70 instances in ukspok.

The same criteria of exclusion (see 6.1.) were applied to these examples as was applied to the previous examples. Search for *-ing* forms nevertheless brought forward a new problem. Sometimes it is not easy to decide whether an *–ing* form is a verb or a noun[35]. The criteria for the decisions made came from various dictionaries and other sources but it is not needful to go through them here. After the irrelevant cases like

(65)   […] you know we were primarily *new to modelling* <tc text=pause> and the models […] (ukspok)

where the *-ing* form was analysed as a noun, were excluded, the number of instances was 60 in ukbooks and 31 in ukspok (for the list of all the adjectives and how many instances of *to +
-ing* pattern they were found with, see Appendix 3). Remembering that the ukspok corpus is almost twice the size of ukbooks, the frequency of the pattern adjective + *to + -ing* is remarkably greater in the written data than in the spoken data. Other significant differences between these two registers are hardly detected.

Further searches show that most of the adjectives that occur with the pattern *to + -ing* do not occur at all with infinitival complements (see Appendix 3). However, some of them occur occasionally in extraposed constructions with the infinitival,

(66)   It is *essential to have* an understanding of each other's style and philosophy […] (ukbooks)

and also with infinitival adjuncts:

(67)   […]but all I can do is reach out for whatever words seem *appropriate to* describe the feelings that I have in my solar plexus. (ukspok)

In the ukbooks data there were two adjectives, *due* and *prone*, that occurred with both infinitival complements and *to + -ing*. *Due* occurred 66 times with the infinitive and only once with the pattern *to + -ing*:

(68)   a. Kaspar was *due to arrive* on 5th February […] (ukbooks)

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[35] See discussion in section 5.2.3.

b. Even without the characteristic bulge in the nail, curled nails may indicate lung damage, possibly *due to smoking* too much. (ukbooks)

Prone occurred eight times with infinitival complement and five times with *to + -ing*:

(69)   a. Women in particular seem *prone to believe* they should be perfect […] (ukbooks)

b. The essential assumption of dangerousness is that there are a few individuals, or combinations of individuals, in the population *prone to causing* serious and lasting violence, whether physical, sexual, or psychological. (ukbooks)

In the ukspok corpus three adjectives with both constructions were found. *Due* occurred 36 times with the *to*-infinitive complement and four times with *to + -ing*, *prone* was found four times selecting the infinitival and once *to + -ing*, and *eligible* occurred once with both constructions. Examples of each adjective with both patterns:

(70)   a. Australia are *due to play* a home series against New Zealand in July […] (ukspok)

b. I think that my writing's terrible I think it's *due to being* left handed […] (ukspok)

(71)   a. […]surcharges that many hotels are er *prone to add* to their normal telephone calls […] (ukspok)

b. I don't think that doors British Rail doors are going to be any more *prone to opening* on one stretch of railway line than any other. (ukspok)

(72)   a. Erm in April nineteen-ninety-seven if all goes well you should be *eligible to shop around* and get your gas from other people (ukspok)

b. The type of account you hold we are only paying gross interest if all parties ar to the account are *eligible to receiving* er the er interest back". (ukspok)

To use Kjellmer's terminology (see section 5.5.1.), *due* seems to belong to the group of apparent variation. It means that both variants, infinitive and *to + -ing*, are used, but there is a clear semantic distinction. *Due* with the infinitival complement refers to something that is going to happen in the future. For example (70a) could be paraphrased *Australia are going to play* or *are meant to play[…]*. *Due* with *to + -ing* construction on the other hand refers to

some kind of consequence. The situation is expressed in the higher clause and the cause in

the lower clause. This latter meaning is introduced in the *OED* under sense A9c:

> as an effect or result *to* its cause or origin; owing to, caused by, in
> consequence of. *rare* bef. 19th c.; according to Johnson 'proper, but not
> usual'.

The construction with the infinitival complement most likely goes under *OED* sense A10,

even though there is no examples of this pattern in the *OED* entry:

> Under engagement or contract to be ready, be present, or arrive (at a defined
> time); reckoned upon as arriving; as *the train is already due* = ought,
> according to the time-tables, to be already here (or *at* such a place).

This use is also acknowledged in Francis et al's (1998, 409) discussion of the pattern "ADJ

to-inf", with a reference to *Collins Cobuild English Dictionary* entry of *due*, sense 3:

> If something is **due** at a particular time, it is expected to happen, be done, or
> arrive at that time.

In the margin, it is noted that *due* in this sense occurs often with a *to*-infinitive.

Unlike *due*, *prone* belongs to genuine variation in Kjellmer's categorisation. That is,

the two constructions, *to*-infinitive and *to* + *-ing*, are virtually interchangeable, with no

apparent semantic difference. Both mean that something or someone has a tendency towards

some activity. In the *OED* these patterns relate to sense I1a:

> I. Senses relating to a tendency or disposition.
> 1. Having an inclination or tendency to something; (naturally) disposed,
> inclined, or liable. With *to* (also †*unto*) or infinitive.
> a. With reference to a disposition to a particular action, behaviour, mental
> attitude, etc.

Francis et al. (1998, 409) list *prone* in the pattern "ADJ to-inf" under the 'certain' group, and

also in the pattern "ADJ *to* n" under the 'liable' group (ibid.,469). In the latter, they note that

"[i]n the case of […] *prone*, the preposition *to* is sometimes followed by an '-ing' clause."

The third adjective that was found in the data with both constructions, *eligible*, also

seems to belong to the genuine variation group. However, in the whole 57-million-word

Collins Wordbanks corpus there was only one example ((72b) above) of the *to* + *-ing* pattern

and 163 instances of infinitival complements, so nothing certain cannot be said about this particular adjective.

7. Conclusion

On the surface, the pattern adjective + *to* appears to be quite straightforward. There is an adjective in a predicative position and then there are four kinds of *to*-elements (*to*-infinitive, *to* + NP, *to* + *-ing* and *to* + *wh*-clause) that can follow the adjective. Then there is still the complement-adjunct distinction to consider and also the control and raising paradigms with adjectives that take *to*-infinitive complements. When all these variables are mixed with corpus material from two different registers, we have this thesis. Basically, this paper is only an introductory presentation of the pattern adjective + *to* without much profound analysis of particular items or constituents.

The adjectives that occur with *to*-elements vary a great deal semantically. Considering only the adjectives that take *to*-infinitive complements, there are seventeen different meaning groups in Francis et al's (1998, 404ff.) grouping (section 5.4.). In addition, there is even a greater number of different adjectives that take the pattern *to* + NP and those Francis et al. (ibid., 464ff.) have divided into twenty meaning groups (these were not considered in detail in the thesis). As was observed with *ready* (6.3.5.3.), some adjectives can have several meanings that have very subtle differences which are difficult to notice, but which are essential to the analysis of that particular adjective. Two senses of the same adjective may belong to totally different control or raising paradigms.

The patterns *to* + NP and *to* + *wh*-clause were not given much attention for the focus was on *to*-infinitive and *to* + *-ing*. In the study, it was observed that the *-ing* form possesses many noun-like characteristics semantically, although syntactically it behaves much like a verb. However, according to the corpus evidence, the distribution of the pattern *to* + *-ing* is closer to that of *to* + NP than that of *to*-infinitive. This was also observed in Francis et al's (ibid.) framework, in which the section on the pattern "ADJ *to* n" contained many of the adjectives that also license the pattern *to* + *-ing* and this was acknowledged by Francis et al;

there were many notes that *-ing* forms occur sometimes alongside with NPs. This also provides further support to Kjellmer's and Rudanko's observations discussed in 5.5.1.

The reference works almost unanimously made the following division of *to*-infinitives following an adjective: instances where the subject of the higher clause was also identified as the understood subject of the lower clause, instances where the subject of the higher clause was not identified as the lower clause subject (which was unspecified), and instances where the following *to*-infinitive was extraposed. The cases of the last type, extraposed infinitives, were not analysed as complements because they originate as subjects. Other *to*-infinitives (though debatable) were treated as complements. With these *to*-infinitive complements, a further division was made into subject control, subject-to-subject raising and object-to-subject raising adjectives. In the first two, subject control and subject-to-subject raising, the subject of the matrix clause is also the understood subject of the embedded clause, whereas with the last, object-to-subject raising, the subject of the higher clause is raised from the object position of the lower clause, and the understood subject of the lower clause is unspecified.

The corpus research was conducted along these theoretical lines and regarding them, no exceptional cases were found. The data for the corpus research came from two different registers, written and spoken British English. First clear-cut difference between these two registers was that the whole pattern adjective + *to* is much more frequent in the written register. The normalised frequency for the ukbooks corpus was 2,149.7 instances per million words and for the ukspok corpus only 1,044.0 instances per million words. The evidence showed that complements are sometimes omitted in conversation, perhaps because they are evident by other means. Rather surprising was that extraposed infinitives were more frequent in the spoken corpus, contrary to Biber et al's (1999, 722) claim. A notable difference was also the lack of subject-to-subject raising constructions in the spoken corpus compared to the

written corpus. In the end, considering the many variables, it was quite unexpected how little there were differences between these two different registers.

Although the purpose was to examine the pattern adjective + *to* as a whole, as a phenomenon, some individual cases were considered in more detail. Perhaps the most interesting was *possible*. Langacker (1999, 352) claimed that this adjective cannot occur in an object-to-subject raising construction, but in the corpus data two cases were found (6.2.5.3. and 6.3.5.2.). Although one example was rather dubious, the other was perfectly fine example of *possible* in an object-to-subject raising construction. This is definitely a matter that would require further investigation.

Special attention was given to the interconnection of *to*-infinitive and *to* + *-ing*. In the corpora studied, only three adjectives were found with both constructions and only two of them with genuine variation, *prone* and *eligible*. Of these, *eligible* was found only once in the whole Collins Wordbanks corpus, so *prone* was the only adjective that could evoke further discussion.

The topic of this thesis was a broad one, and some connections were left untouched, for example the effect of the matrix verb, the relation of different adjectives to *that*-clauses and complements with other prepositions, which adjectives occurring in the pattern adjective + *to* can also occur in an attributive position, and with which adjectives the *to*-element is obligatory. However, this thesis provides a nice overall review of the pattern adjective + *to* and the usage of it in two different registers. Moreover, it brought to light several matters for further research.

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Appendices

Appendix 1: Adjectives and patterns in the ukbooks data.

ADJECTIVE	PATTERN *to* +				EXTRA-POSITION	CONTROL/RAISING		
	INF	NP	ING	WH		SC	S-to-S	O-to-S
Able	188					x		
absurd					1			
acceptable		1			1			
accessible		3						
accurate		1						
adaptable		1						
adequate		1						
afraid	6					x		
akin		1						
alert		1						
alien		2						
allergic		2						
angry	1					x		
antagonistic		2						
antecedent		1						
anxious	10					x		
apparent		1						
applicable		1						
appropriate		2			1			
apt	2						x	
attractive		5						
attributable		1						
available	1[36]	7				x		
averse			3					
beautiful		1						
beneficial		3			1			
blind		1						
careful	3					x		
certain	2						x	
chargeable		1						
charitable		1						
charming					1			
clear		8						
common		2			2			
commonplace					1			
complementary		1						
complimentary		1						
considerate		1						
content	2					x		
contradictory		2						

---

[36] see discussion in 6.2.5.1.

contrary		1					
convenient					1		
correct	1					x	
courteous		1					
critical		1					
crucial		2					
dangerous		1					
decent					1		
desirous	1					x	
desperate	1					x	
different		6					
difficult	25				38		x
disproportionate		1					
distasteful		1					
due	15	19				x[37]	
eager	11					x	
easy	13				45		x
equal		6					
equivalent			2				
essential		6	1				
excessive					1		
exciting					1		
exclusive		1					
expedient					1		
fair		1					
faithful		2					
false					1		
familiar		4					
fashionable					1		
favourable		2					
fitting					1		
foreign		2					
fortunate	1					x	
free	11					x	
fun	1						x
fundamental		1					
glad	8					x	
good		1			18		
grateful	1	3				x	
gratifying					2		
guilty		1					
hamstrung		1					
happy	14					x	
hard	19	1			19		x
harmful		2					
hateful		1					
hazardous					1		

---

[37] See section 6.2.3., footnote 24

helpful		3			3			
holy		1						
honest		1						
honourable					1			
horrible					1			
hostile		3						
identical		3						
idle					1			
immaculate		1						
impervious		1						
impious					1			
important		12			16			
impossible					12			
inaccurate					1			
indifferent		3						
indigenous		1						
indispensable		1						
inevitable					1			
inexpedient	1							x
inimical		1						
instructive					1			
interesting					5			
invaluable		1						
invisible		1						
keen	3					x		
kind		1			1			
legal	1							x
liable	3						x	
likely	79						x	
loath	2					x		
logical					2			
loyal		4						
lucky	3					x		
marginal		2						
meaningless		1						
native		2						
natural		1			1			
necessary		4			7			
needless					5			
new		4						
nice		1			6			
obedient		1						
oblivious		1						
odd		1						
offensive		1						
opportune		1						
painful		2			1			
parallel		1						

peculiar		1						
perpendicular		1						
pertinent					1			
plain		1						
possible	1[38]				28	x		
powerless	2					x		
preferable					1			
prior		3						
privileged	1					x		
privy		2						
problematical		1						
profitable					1			
prone		5						
proper		3						
proportionate		1						
protective		1						
proud	2					x		
prudent					1			
quick	9					x		
ready	23					x		
real		1						
realistic					1			
reasonable					3			
relative		1						
relevant		2						
reluctant	5					x		
repugnant		1						
resistant		2						
responsible		2			1			
responsive		5						
right	3				2	x		x
risky					1			
rude		2						
sacred		1						
sad	2				1	x		
safe					7			
satisfying					1			
sensible					2			
sensitive		3						
silly	1					x		
similar		13						
simple	3							x
slow	5					x		
sorry	7					x		
specific		1						
straightforward	1							x
strange					1			

[38] See discussion in section 6.2.5.3.

subject		4						
subordinate		2						
subsequent		1						
sufficient					3			
suicidal					1			
superior		2						
sure	7						x	
surprising					1			
susceptible		4						
symmetrical		1						
sympathetic		1						
thankful	1					x		
tiresome					1			
tough					1			
true		1						
unable	43					x		
unacceptable		2						
unaccustomed		1						
uncomfortable					1			
unfair		3						
unfaithful		1						
unfamiliar		1						
ungenerous		1						
unkind		1						
unknown		2						
unlikely	7						x	
unnecessary					1			
unrelated		1						
unusual					3			
unwilling	9					x		
unwise					2			
useful		1			3			
useless					2			
usual					2			
valuable		1			1			
vital		2			2			
vulnerable		6	2					
welcome	1	2				x[39]		
willing	12					x		
wise	1				4	x		
wont	1						x	
worthless		1			1			
wrong					2			
Adjectives: 225	**576**	**279**	**8**	**-**	**288**	**37**	**8**	**9**

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[39] See section 6.2.3., footnote 23

Appendix 2: Adjectives and patterns in the ukspok data.

ADJECTIVE	PATTERN *to +*				EXTRA-POSITION	CONTROL/RAISING		
	INF	NP	ING	WH		SC	S-to-S	O-to-S
able	219					x		
absurd					1			
abusive		1						
acceptable		2						
accessible		1						
accountable		1		1				
afraid	2					x		
akin		3						
allergic		1						
amenable		1						
anxious	1					x		
apparent		1						
appealing		1						
applicable		1						
appropriate		4			1			
apt	2						x	
arrogant					1			
ashamed	1					x		
attractive					1			
available		10						
awful					1			
bad					1			
beholden		1						
certain	2						x	
cheap		1			1			
clear		3						
comfortable					1			
common		1						
comparable		1						
competent	3					x		
compulsory					1			
conditional		1						
considerate		1						
constant		1						
content	1					x		
cool					1			
creditable		1						
cruel		1						
curious	4					x		
daft					1			
dangerous					1			
dear		1						
demonstrative		1						
desperate	1					x		

detrimental		1					
different		7		3			
difficult	16				58			x
disadvantageous		1					
due	6	11					x[40]
easy	15				34			x
educational					1		
empathetic		1					
enjoyable	1							x
equal		4					
equivalent		1					
essential					2		
exciting		1					
exhilarating					1		
fair	1	2			5			x
faithful		1					
familiar		1					
fascinating	1				1			x
favourable		1					
foreign		1					
fortunate	2					x	
free	6					x	
friendly		1					
glad	4					x	
good	1	8			28			x
grateful	1	2				x	
gratifying					1		
great					2		
happy	14					x	
hard	8				21			x
harmful		1					
healthy					1		
helpful		5			4		
horizontal		1					
horrible		2			1		
hostile		1					
hygienic					1		
ignorant		2					
illegal					1		
immune		1					
impolite		1					
important		11			12		
impossible	1				8			x
inferior		1					
inherent		1					
intelligible		1					
interesting	4	3			17			x

[40] See section 6.2.3. footnote 24

keen	8					x		
kind		3						
likely	38						x	
lovely					4			
lucky	1					x		
mad	1					x		
manageable					1			
marvellous	1							x
meaningful		1						
naughty		1						
necessary					4			
new		9						
nice	2	3			73			x
oblivious		1						
offensive		1						
okay		1			5			
oppressive		1						
pleasurable					1			
possible	1				12			x
powerful					1			
preferable			1					
profitable		1						
prone	1					x		
proud	2					x		
quick	3				1	x		x
rational					1			
ready	10					x		x
real		1						
reasonable					1			
relative		3						
relevant		2						
reluctant	5					x		
responsible		2						
responsive	1	1						x
right					4			
romantic		1						
rude		4						
sad	1					x		
safe	2							x
scary		1						
sensitive		2						
silly	1							x
similar		9						
snappish		1						
sorry	8					x		
spicy		1						
standard					1			
subject		4						

suitable		1					
superior		3					
sure	1					x	
surprising					1		
susceptible			1				
sympathetic		4					
tactical					1		
terrible	1				1		x
transferable		1					
treacherous		1					
true		1			3		
truthful		1					
unable	5					x	
unlikely	1						x
unreasonable					1		
unrecognizable				1			
unrelated		1					
unworthy	1					x	
useful		5			4		
visible		1					
vital		1					
vulnerable		1					
welcome	2					x[41]	
willing	20					x	
worthy	2					x	
wrong					3		
adjectives: 165	**436**	**191**	**2**	**5**	**334**	**28**	**6**	**17**

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[41] See section 6.2.3. footnote 23

Appendix 3: Adjectives occurring with *to* + *-ing* complements in ukbooks and ukspok.

ukbooks *to + -ing*

	to + -ing	inf-compl
agreeable	1	-
akin	1	-
appropriate	1	-
attributable	1	-
averse	6	-
comparable	1	-
conducive	3	-
crucial	1	-
due	1	66
equivalent	3	-
essential	3	-
inadequate	1	-
preferable	2	-
preparatory	1	-
prone	5	8
resistant	4	-
sensitive	1	-
similar	2	-
susceptible	2	-
tantamount	9	-
tense	1[42]	-
unaccustomed	2	-
unused	3	-
vulnerable	6	-
Adjectives: 24	**60**	**74**

ukspok *to + -ing*

	to + -ing	inf-compl
akin	1	-
appropriate	1	-
complementary	1	-
conducive	2	-
crucial	1	-
different	8	-
due	4	36
eligible	1	1
new	1	-
preferable	1	-
prone	1	4
receptive	1	-
sensitive	1	-
similar	3	-
subject	2	-
susceptible	1	-
vulnerable	1	-
Adjectives: 17	**31**	**41**

---

[42] *And why was his mind tense? Tense to breaking, I mean?* (ukbooks) This is the only example in Collins Wordbanks corpus. Perhaps an anomaly.